

Learning Engineering Special Event:

Learning Engineering as an Academic Discipline and as a New Engineering Profession

Author: Avron Barr

Background: Learning Engineering (LE) is a proposed new discipline needed to prepare the people who will create solutions and solve problems in the increasingly complex world of technology-supported education and training. Learning Engineers must be familiar with the various technologies, products, and tools of the trade, but they must also have a deep background in education theory and its application.

Discussion:

1. **What is an Engineer?** First and foremost, a Learning Engineer is an engineer. Engineers use mathematics and science to solve practical problems in the physical world. They share some fundamental concepts, methodologies, and ways of thinking, in addition to their specific area of expertise, such as aeronautical engineering or civil engineering. For example, the first year of a masters program in Learning Engineering should include the basic courses all engineers take.
2. **Future Demand.** We are only beginning to see the possibilities for transforming education and training created by computer and communications technologies. Today's LE-type workers, e.g. learning data analysts or instructional designers, can already meet the challenges they currently face. If we believe that much more ambitious applications of technology will be possible in K12, higher ed, enterprise training, and other learning markets, then we need to prepare a new cadre of professionally-trained Learning Engineers to build, operate, and maintain system solutions that don't even exist today.
3. **Related Disciplines.** Learning Engineers will not be experts in every related discipline. They don't need to take the same classes that data scientists take, for example, or have years of experience in instructional design. They just need to know enough about data science, or instructional design, or privacy regulations, to know how to approach the specific problems that arise in their projects. They need to know the terminology, basic principles; capabilities and limitations; and basic pros and cons of alternative approaches in each related discipline, in order to converse with the experts.

Recommendations

1. **Curriculum.** Bring together working LEs and academics to develop a model curriculum for degree and certificate granting institutions to use to begin to design their programs.

2. **Certification.** Develop a thorough and diverse set of assessment criteria and instruments that organizations can use as guidance for what abilities must be demonstrated by a Learning Engineer. These criteria might differentiate different specialized types of Learning Engineers and different levels of mastery.
3. **Job Classifications.** Work with organizations that are already doing learning engineering, including the US military services, to define new job classifications and re-classify employees appropriately.