

EBLI Manifesto

Understand: The Most Misunderstood Verb in Education

As instructional designers schooled in Bloom’s Taxonomy, we were taught to always write behavioral learning objectives with overt, action-oriented verbs. For example, words like *describe*, *compare*, *list*, *select*, and *perform* should be used to derive measurable results from learners. There has been such a tight connection between learning objectives and learning outcomes, that we have allowed ourselves to get into the position of saying that if we cannot come up with a behavior-oriented verb to measure a skill or knowledge, we cannot include it as a learning objective.

Hence, the dilemma with the word “understand” and its use in creating measurable outcomes for learners. However, this strategy of leaving the word “understand” as an unmeasurable lexicon has reached a breaking point with the Fourth Industrial Revolution (4IR). The ability to *understand* has become a required capability, as the outcome and measurement of *understanding* is strategic and urgent to knowledge, skills, and attributes in 4IR thinking.

To *understand* means to comprehend the meaning and know the reasons of why we do what we do. It means we take a metacognitive approach to solving problems and coming up with creative solutions. This means we can do more than repeat the current answer – we can infer new answers. It is like the difference between just memorizing the driving directions to a new location versus having a map where we can infer new directions as detours occur. So, the ability to correctly *infer* is one example of measuring understanding. This is the kind of thinking we need in the 4IR, as the robots take on more routine tasks and more people take on creative and strategic tasks.

The history of why *understand* is misunderstood

Instructional design first began as a discipline during World War II when a number of behavioral psychologists and education practitioners were assembled to develop training materials for the armed forces. Pioneers such as B.F. Skinner, Benjamin Bloom, and Robert Mager were early thought leaders that helped the military determine measurable outcomes for soldiers to validate they had the right skills and knowledge to perform in critical wartime activities. These tasks tended to be rote, repetitive procedures, with predictable outcomes. While this learning strategy may have worked in the 1st, 2nd, and 3rd industrial revolutions, it certainly won’t work in the 4th. Here’s why:

The **first** industrial revolution was based on *steam* and mechanical production. The work environment shifted from using horses and physical labor towards using large steam engines to increase productivity. So, learners spent less time with handcrafts and horses, and more time learning how to quickly perform repetitive tasks.

The **second** industrial revolution was based on *electricity* and assembly lines. Management incorporated the strategy called “division of labor” to speed up individual productivity by focusing the work on smaller

increments of the overall process. So, learners required less overall knowledge about the job and could be quickly trained to perform their individual tasks.

The **third** industrial revolution was based on *computing* and online workflow. While there were still manual jobs, much of the work was also performed using computers. So, some learners required programming skills, but most learners just needed to be trained to use the software for their job.

Now, the **fourth** industrial revolution is based on *intelligence* and digital connectivity. The repetitive tasks are being performed by robots and Robotic Process Automation (RPA), not people. So, learners cannot simply be retrained in another repetitive job as in previous industrial revolutions. For example, we used to transition workers skilled at putting horseshoes on a horse by retraining them to put fenders on a car as it came down the assembly line. However, the work of humans now requires less repetitive tasks and more of a demand for their strategic thinking, creative innovation, and problem-solving abilities. Learners need to develop and be tested on their metacognitive skills, not just their physical skills. They need to demonstrate their abilities to determine, infer, deduce, explain, interpret, justify, and prioritize, which measure different aspects of understanding.

We used to test for an ability to infer, before automated multiple choice tests and number-two pencils became the norm. The classical learning objectives related to “determine” and “deduce” came from the field of electrical engineering where it arose as a problem given to students, known as the “Black Box.” Given a sealed (usually black) box with input terminals and output meters, an engineering student would have to determine the function and components inside the box by connecting the input terminals to various voltages, etc., and observing the output. The concept of determining the contents and configuration of the “Black Box” through outside interactions has spread beyond the engineering lab and is a great example of a creative learning objective requiring higher-order thinking skills. For any workplace domain, the ability to understand how things are supposed to work allows us to infer how to work them, fix them, and innovate them.

Summary

The Fourth Industrial Revolution can either be viewed pessimistically, as a job-killer from mass automation, or it can be viewed optimistically, where humans are freed from mindless, repetitive, routine work. This shift in thinking allows learners to become more wholly human, operating with greater capacity to solve problems and innovate. The ability to design, deliver, and measure learning that produces *understanding* is what stands in the way of this optimistic vision for the Fourth Industrial Revolution.

As instructional designers who were schooled in Bloom’s Taxonomy, we need to change our way of thinking about learning outcomes, for individuals and organizations. The Evidence-Based Learning Institute (EBLI) provides research, thought leadership, and best practices for evidence-based learning in academia, business, government, and all knowledge-driven performance-based organizations. Our members leverage human performance, technology processes, tools, and story thinking concepts, to empower learners at all levels to prosper within today’s Fourth Industrial Revolution.

EBLI’s imperative is about changing the way we think and feel about education, exploring new methodologies for learner engagement, and measuring outcomes that are focused on results.

Authors: John Lewis, Ed.D. and Jamie R. Mulkey, Ed.D.