U.S. Army Pvt. Kaitlyn N. Hartigan learns about the single channel ground and airborne radio system during her advanced individual training at Fort Sill, Oklahoma, April 21, 2020. (U.S. Army photo by Sgt. Amada Hunt)

Optimizing Learning Outcomes and Development

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Future operating domains will require leaders who can translate and apply their learning and experience in different environments to achieve optimal results. According to the *Army Learning Concept 2020-2040*, "As the mix of traditional and non-traditional threats, or the operational environments change, learning products, processes, and supporting systems will adapt to support a new mix of capabilities, formations, equipment, and learning mediums" (U.S. Army Training and Doctrine Command [TRADOC], 2017, p. 11). Army institutions are committed to measuring the outcomes and transfer of knowledge and skills from the classroom to the operational environment (OE). This article describes several different learning philosophies, and their differences, and how instructors can utilize these to increase a learner's capacity.

Purpose and Importance

General learning outcomes and the transfer of knowledge is not only important to the Army's education system, but also to academia. The more knowledge that can be transferred from the classroom to the OE, the more successful the course of instruction. The question is what is the best way to optimize learning and knowledge transfer? The following sections are an explanation of the most common learning philosophies as well as the most common teaching principles.

Theories and Definitions

Learning Outcomes

Learning outcomes are what students are able to demonstrate concerning facts, information, skills, and val-

(U.S. Army photo by Sgt. Jeremiah Woods taken July 30, 2019) U.S. Army Sgt. Thomas Kempf, a CH-47 Chinook flight crew member with the 1st Combat Aviation Brigade, instructs Soldiers with 1st Armored Brigade Combat Team, 1st Infantry Division on sling load operations prior to a training exercise at Grafenwoehr Training Area, Germany, July 30, 2019.

ues upon completion of a course or program (for example a midterm or final exam). Brooks et al. (2014) investigated learning outcomes from the perspective of students in higher education using focus groups and a questionnaire for students across three disciplines. The research indicated learning outcomes were more successful when stated clearly and early on rather than not stated at all. Students were able to use these projected outcomes as a guide when taking notes or revising their work.

Learning Transfer

Learning transfer is the process of using newly acquired knowledge or skills and applying them to work/life/or an OE (Roumell, 2019). Learners must be able to recognize the connections to previous situations and internalize them for future situations. For example, a young U.S. Army private learns how to use a compass and map for land navigation during training, and then is able to use these same skills in an OE with degraded electromagnetic capabilities—a possibility in the future fight (Waxler, 2019).

Constructivism

Constructivism is the act of taking in information and creating it into knowledge based on factors from the learning environment, culture, and previous experiences. Driscoll described constructivism as knowledge "constructed by learners as they attempt to make sense of their experiences. Learners, therefore, are not empty vessels waiting to be filled, but rather active organisms seeking meaning" (Driscoll, 2005, p.387). This orientation to learning provides a developmental perspective where learning transfer is at play as the learner integrates knowledge with past thoughts, experiences, and reflection.

The role of the instructor is critical to understanding how learners think and reason, and aids learners in higher order skills as illustrated by the final step in

Bloom's taxonomy, where the instructor outlines not what to think but how to think. To gain knowledge from new experiences, questions must be asked and curiosity encouraged. This enables students to construct their own conclusions. Activities such as case studies, experiments, real-world problem solving, and collaboration bridge learners' experiences to a deeper understanding.
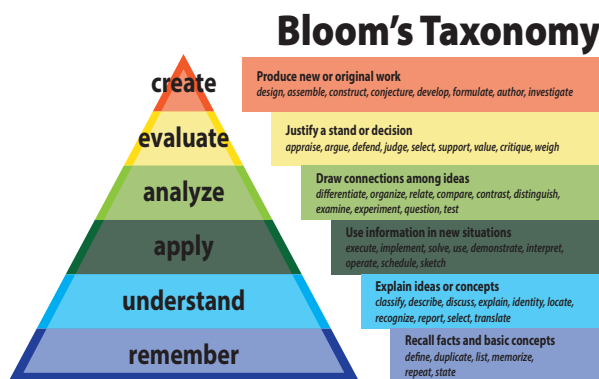
Experiential Learning

Experiential learning is when learners reiterate information and skills in a variety of forms and contexts. John Dewey, one of the fathers of experiential and interactive learning, wrote, "Experience occurs continuously because the interaction of live creature and environing condition is involved in the process of living" (Boucouvalas & Lawrence, 2010, p.39). Dewey believed that learning was a process that involved applying prior experiences to new situations. The typical pedagogical cycle is for a student to learn a subject or theory in class and only later in life is the knowledge put to practical use. The urgency behind experiential learning in the U.S. Army is that subjects and theories are learned, are backed with prior knowledge and experience, and then are immediately used in the OE as the student finishes their schooling and deploys with their unit (Salmon, 2017).

The staff ride is one method for creating effective experiential learning. The staff ride has three distinct phases: (1) a preliminary study of the incident in detail, including background of the case; (2) a planned visit to study the field site of the incident or a recreation of the site, and (3) a discussion integrating the first two phases to identify lessons taught (Becker & Burke, 2014). The staff ride empowers individuals, encourages interaction, and allows reflection and analysis of an event within a specific context ("Staff Ride Team," n.d.).

Competency-Based Learning

This final methodology emphasizes the individual learner and allows them to progress in content as soon as they master identified skills. The strength in this approach is its

Bloom's Taxonomy

create — Produce new or original work
design, assemble, construct, conjecture, develop, formulate, author, investigate

evaluate — Justify a stand or decision
appraise, argue, defend, judge, select, support, value, critique, weigh

analyze — Draw connections among ideas
differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

apply — Use information in new situations
execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

understand — Explain ideas or concepts
classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

remember — Recall facts and basic concepts
define, duplicate, list, memorize, repeat, state

(Graphic courtesy of Vanderbilt University Center for Teaching*)

flexibility as learners advance at their own pace. According to the U.S. Department of Education:

> ❝This type of learning leads to better student engagement because the content is relevant to each student and tailored to their unique needs. It also leads to better student outcomes because the pace of learning is customized to each student. ("Competency-Based Learning," n.d., para. 1)❞

Optimizing Learning Outcomes

For learning to be effective in the U.S. Army it is essential to follow modern content design and practices, but there must also be a process to transfer what students have learned by creating objectives in practical exercises and applications (Weber, 2014). To further optimize learning outcomes, the U.S. Army should include curriculum design, technology, deliberate study, group learning, mentoring, and learner motivation.

Curriculum

Curriculum and summative assessments allow learners to progress beyond the analysis stage in Bloom's categorization to the evaluation and creation stages. Bloom's taxonomy presents a starting point for determining learning outcomes and progresses beyond just memorizing facts. In the previously mentioned study conducted by Brooks et al. (2014), students struggled to understand expectations when the learning outcomes were poorly communicated. Concrete learning outcomes, communicated clearly, provide focus for the curriculum and orient the student towards the curriculum's goals and measures.

Technology

Technology enhances student learning because it increases flexibility, provides access to expertise, increases

U.S. Army Soldiers with the 25th Division Sustainment Brigade, 25th Infantry Division learn about and inspect a food truck as part of initial training at Schofield Barracks, Hawaii, July 22, 2020. (U.S. Army photo by Spc. Michael Bradle)

learner autonomy, progresses at the learner's pace, and supports collaborative learning. Computer-based technology also aids in coordination of individual and team activities, positively influencing learning outcomes (Corter et al., 2011). The Army must engage Soldiers using products such as interactive games and simulations replicating that experience within the classroom environment. Progress in command post technology is one example of creating shared understanding and learning (Mayfield, 2019).

Deliberate Study

Deliberate study before, during, and after a learning experience encourages students to investigate assumptions and influences on their learning. Instructors are key to helping students relate to the objectives and conceptualize how to apply the taught skills or information to the real world. Case studies, narratives, and group collaboration function to restructure new understandings for future situations (Burke & Hutchins, 2007).

Group Learning

Interaction with peers enhances learning and skill application. According to Corter et al. (2011), learning outcomes were higher for activities performed as a team rather than as individuals. Also of note, motivation levels increased when students spent more time with hands on activities rather than using simulated data.

Mentoring

Mentorship actually benefits both the mentor and the mentee. It provides the student access to the greater experiences of the mentor, while also allowing the mentor to expand their communication and empathy skills (Aspfors & Fransson, 2015; Bhattacharya, 2020).

Motivation

Critical to optimizing learning outcomes is learner motivation, which can be intrinsic or extrinsic. Intrinsic motivation is the internal desire to do something personally rewarding because of enjoyment. Extrinsic motivation derives from an outside source such as praise, fame, or money. It is critical to balance teaching activities that appeal to both types. Setting clear expectations, engaging students' interaction through discourse, and group activities are tools that demonstrate teaching variety and motivate students to learn (Dysvik & Kuvaas, 2013).

Conclusion

Optimizing learning outcomes to increase learner capability is necessary to prepare the U.S. Army for the future. Incorporating a full range of capabilities, practices, and philosophies within a course curriculum is critical to advancing a learner's flexibility, adaptiveness, and agility. This will prepare Army leaders for an evolving and dynamic OE. ■

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