E33 Adding Value to Your Learning Event

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The goal of this presentation is to explain how to design an effective learning event through the implementation of the concepts of constructive alignment and Bloom's taxonomy.

This presentation will impact the forensic science community by creating awareness about the optimization of the process of teaching/training-learning forensic science. Although the content/example is given within the context of criminalistics at the professional level, the pedagogical and didactical concepts and methods are applicable to all levels and all fields.

Have you tried getting oranges from a fig tree? Would you use a trace elemental chemical profile to identify a substance as cocaine? Intuitively in daily work, activities are aligned with the expected products in mind. Forensic scientists constantly build and (re)validate knowledge and skills that could be applied to the respective fields in order to strengthen the justice system; however, when it comes to transferring that knowledge and skills, the goal is sometimes forgotten. It does not help the situation that the topics are incredibly interesting or that the interdisciplinary character of the profession is fascinating. As a matter of fact, the highly motivated learners and their perception of what they have actually learned may obscure the measuring of the learning results, which are used to calculate the Return On Investment (ROI). Effectively teaching forensic scientists has become a difficult task, especially when the relevancy and amount of knowledge is changing at a rapid rate. Instructors are expected to adapt their programs with a minimal time investment. In addition, they are expected to do so without sacrificing the content or the essential academic/professional skills that new practitioners need to have, such as scientific critical thinking and independent learning.

Traditional one-way (instructor-led) learning events as the only teaching modality has become ineffective with the new generations of learners, some accustomed to cutting corners and studying for the assessments. The instructor is expected to assume diverse roles such as organizer, planner, coach, and facilitator of the learning process. In other words, the role of the instructor as an effective instructional designer has become highly relevant. This is especially true when considering both the increasing scrutiny of the accreditation agencies responsible for the control of the quality of the educational curricula and the competences desired by the future employers.

Taking a closer look at how people learn and how this process can be optimized are necessary activities for all instructors, old or new. Although there are multiple teaching-learning theories available, the preferred ones agree that stimulating deep learning is an effective teaching practice. Constructive alignment is "a design for teaching calculated to encourage deep engagement."[1] As with other approaches to active learning, the essence of the constructive alignment theory is that the instructor/trainer doesn't have the central role in the knowledge transfer, but that the learner does. Integrating the Bloom's taxonomy of the cognitive domain in the design of a learning event becomes a necessity.[2] In other words, the cognitive skills desired as a consequence of the learning event have to be explicit. The alignment process starts by defining the desired results — they can be as high as strategic organizational results or a hypothetical assessment — and translating them to the operational learning outcomes according to Bloom's taxonomy for the cognitive domain. Next, the beginning situation is assessed and the learning activities are designed to "practice" the cognitive processes chosen for those learning outcomes.

This process will be exemplified with a curriculum for coordinators of forensic investigations within the Dutch police. This curriculum was the product of a team effort of the police academy, the Dutch police expertise center, the Netherlands Forensic Institute, and two universities. During this presentation, the process of designing, developing, implementing, and evaluating two modules of this curriculum, pertaining to criminalistics, will be discussed.

References:

1. J Biggs, C Tang. (2007) *Teaching for Quality Learning at University* (3e). McGraw-Hill: Buckingham. P32.
2. Anderson LW et al. (2001) A taxonomy for the learning, teaching, and assessing: A revision of Bloom's taxonomy of Educational Objectives. Longman: New York.

Constructive Alignment, Bloom's Taxonomy, Education and Training

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