

LEARNING DIFFERENTIATED CURRICULUM DESIGN IN HIGHER EDUCATION

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BY

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ABOUT THE AUTHOR

John N. Moye is a native of Jacksonville, Florida, where he attended Jacksonville University. During his undergraduate and master's degree experience, he studied with a series of forward-looking thought leaders in education from which he developed an interest and belief in the science of learning and the power and importance of education for all learners. These interests have accompanied him throughout his career and led to a focus on the performance, effectiveness, and responsibilities of higher education.

Dr Moye continued his pursuit of the science of learning through his PhD studies at Florida State University, where he focused his research in the field of psychophysics. Heavily impacted by the burgeoning field of neuroscience, he examined the response of the human perceptual systems to sensory stimuli as a model for understanding learning as a psychophysical process for individuals and organizations. The conceptual frameworks contained in this text are based on the evidence of the psychophysics of learning that is still emerging in the academic learning literature.

Dr Moye has held curriculum development positions with numerous institutions of higher learning in the United States including Saint Mary's University of Minnesota, Capella University, and De Paul University, Chicago, Illinois, in which he has researched, developed, and applied these approaches to the development of relevant, innovative, and

effective learning environments. In addition, he has contributed to a wide array of other institutions of higher learning as a consultant, which has provided a comprehensive multidisciplinary perspective on the science of curriculum development.

Dr Moye believes the complexity of twenty-first-century disciplines requires a similarly complex approach to curriculum and instructional systems, which ensures access to learning for all learners, increases completion rates, ensures that learning prepares learners for the future, reflects the expectations of the external environment, and promotes life success. The research and development of learning differentiated curriculum for higher education is a focus of his ongoing professional efforts.

PREFACE

This work presents a systematic process for the design of the curriculum at all levels of higher education, which organizes and optimizes the learning experience for learners who pursue it. The learner is the recipient and consumer of the learning planned in a curriculum. To be effective, curricula articulate the intended learning from the perspective of the learner.

This work is intended to function as a quasi-handbook to offer a process without engaging in the broader debates while losing the articulation of thought upon which the system is based. It offers a systematic, aligned, interconnected approach to consider for effective curriculum design, which may be adopted or adapted to address multiple conceptions of the subject.

While there are many design curriculum design strategies in the literature, the growth of curricula designed by theories of learning has steadily grown over the past 15 years and has emerged as a major discussion in the creation of instruction for higher education. This work focuses on the configuration and organization of each component of the curriculum to create the most effective and efficient learning experience *for the learner* (Dinç, 2017). The additional consideration that sets this current offering apart is the use of the psychophysics of learning as the driver in the differentiation of component structure. This approach is driven by the view of the design

of the curriculum as the stimulus for individual learning. In other words, the curriculum is designed to present the shortest path to learning and create barriers to failure by considering the psychophysical attributes of the learner. To design effective learning experiences, defined as those that are successful with 90–95% (educational research significance level) of the learners, requires the designer to understand the performance attributes and processes involved in learning, which is the focus of psychophysical research.

The term “differentiation” describes the design variations created by applying discrete models of learning, instruction, and environment to optimize each component to provide the structure, processes, and conditions for the intended learning. In this design system, differentiation is achieved by using different templates to construct the language and syntax, which communicate the content and the structure of the total learning experience (Goldie, 2016).

The processes and procedures in this work describe a learning-driven, research-informed, and discipline-differentiated approach to curriculum design that is adoptable or adaptable to any learning situation. As proposed by Diamond (1998), the goal is to develop an “ideal” curriculum, which promotes and enhances learning. This approach assumes an “ideal curriculum” to be one that provides intellectual access to the content as the profession defines it (engagement), learning events (learning experiences) that reflect the intellectual organization, the thought systems contained within each discipline or profession (Gardner, 1999), and a learning environment that respects the noncognitive considerations that convert the social constraints of learning into social drivers of learning (Dinç, 2017; Goldratt, 1998). In this system, the overall curriculum structure is categorized by five different models of learning outcomes, including cognition, behavior, values, performance, and competence (Jones, Baran, & Cosgrove, 2018).

Each curriculum contains three functional dimensions of learning. These dimensions include learning engagement, learning experience, and learning environment, which are differentiated to reflect and accommodate the characteristics of the learning and the learner. This differentiation is achieved by applying the research of the psychophysics of perception, cognition, and learning to plan an effective and efficient learning experience (Ausubel, Novak, & Hanesian, 1978; Do Carmo Blanco, 2016; Kricos, Robert-Ribes, & Bernstein, 1996; Maia, Lefèvre, & Jozefowicz, 2018; Tsushima & Watanabe, 2009; Willingham, 2009). The result is a learning-centered curriculum design, which mirrors the intellectual structure of each discipline and the psychophysics of learning (Kornell & Bjork, 2008; Plaisted, Saksida, Alcántara, & Weisblatt, 2003).

This offering provides templates to design each component of a curriculum to facilitate efficient and effective learning. The collection of theories used in this work represent only a fraction of the theories that are available to curriculum designers to configure the components of curriculum (Culatta, 2018; Kebriaci, Rahimi-Kian, & Ahmadabadi, 2015). This group of theories focuses on the intellectual, psychological, and social processes involved in learning from a psychophysical perspective. The strategies and techniques used in this work transfer to other theories to align the curriculum with the faculty's conception of the "best way for a learner to learn the discipline" (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013).

The complexity of contemporary disciplines benefits from a curricular design that brings optimal order to the instructional system (Do Carmo Blanco, 2016; Kricos et al., 1996; Maia et al., 2018; Tsushima & Watanabe, 2009), which provides the scientific basis for this work. The curricula in this work may appear to be quite different than those used in

most institutions of higher education. However, the strategies presented in this work apply equally well to all disciplines, and delivery models as the driver of the design decisions are the psychophysics of the human learning system.

In addition to the content of the discipline, the curricula presented in this system also structure the learning process through the alignment and interconnectedness of the curricular components (Matthews & Mercer-Mapstone, 2018). This alignment and interconnectedness have a powerful effect on the ability of the learner to access the content and intellectually construct the learning. The format and structure of this verbiage are configured by adapting the theories of learning, instruction, and environment as templates with which to design each component to match the unique structure of each discipline.