A MACHINE LEARNING, ARTIFICIAL INTELLIGENCE APPROACH TO INSTITUTIONAL EFFECTIVENESS IN HIGHER EDUCATION

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BY

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Author Biography

John Moye is a native of Jacksonville, FL, 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 Ph.D. 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 in individuals and organizations. The conceptual frameworks contained in this text are based on the evidence of the psychophysics of learning that are still emerging in the academic learning literature.

Dr. Moye has held effectiveness 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, IL, 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 perspective on the science of measurement and assessment in complex organizations.

Dr Moye believes the leverage point in the system of institutional improvement to be the availability of authentic, credible, and trustworthy information to make sense of institutional performance for effectiveness improvement efforts. The research and development of systematic assessments to measure the effectiveness of unique institutions is a focus of his ongoing professional efforts.

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Foreword

This work seeks to catalyze discussion and thinking about the information required to measure, assess, and make sense of institutional performance with credible and trustworthy data. To those who believe it is possible to improve the performance of our institutions this work offers a method to improve service to students and society through data-informed problem-solving and decision-making.

To achieve this outcome requires data that objectively describe the "actual" performance of the institution, which the faculty and staff use to understand current performance and improve the future performance of their programs and institutions (Tadesse, Manathynga, & Gillies, 2018). The result is a system in which the principles of machine learning define the data processing functions and create a credible and trustworthy artificial intelligence for institutional effectiveness (Yousef, Allmer, Baştanlar, Özuysal, & Walker, 2013). The purpose of this work is to offer a fully aligned system of authentic assessments, which provide faculty and staff with credible and trustworthy information to monitor, demonstrate, and enhance institutional performance (Swaggerty & Broemmel, 2017).

The processes and procedures in this work adapt recent and current strategies of performance measurement, assessment, and sensemaking in the discipline of organizational effectiveness into a science-based approach to the assessment and sensemaking of institutional effectiveness in higher education (Cameron & Whetten, 2013). The principles of organizational assessment and the sciences of educational and psychological measurement and assessment define the content and structure of the information collected in this system (Knight, McLaughlin, & Howard, 2012). As such, this approach is a "best science" approach to institutional assessment and effectiveness. In this work, the goal is to present a fully-aligned system of assessments for institutional effectiveness, which are disciplined by appropriate technologies.

The methods and instruments employed in this assessment system emerged from research, design, development, and testing the results of their use as institutional effectiveness assessments for a cross-section of higher education institutions. These instruments have consistently yielded stable, statistically powerful, credible, and trustworthy data about the performance of the institution. These data inform authentic assessments, data modeling, and sensemaking functions to evaluate the effectiveness of the institution (Swaggerty & Broemmel, 2017).

The principles of machine learning and artificial intelligence frame the data modeling and sensemaking strategies to visualize actual institutional performance from multiple perspectives. The output of this approach is a system that provides credible, trustworthy, and meaningful data for the evaluation of effectiveness, which the human intelligence in the institution evaluates.