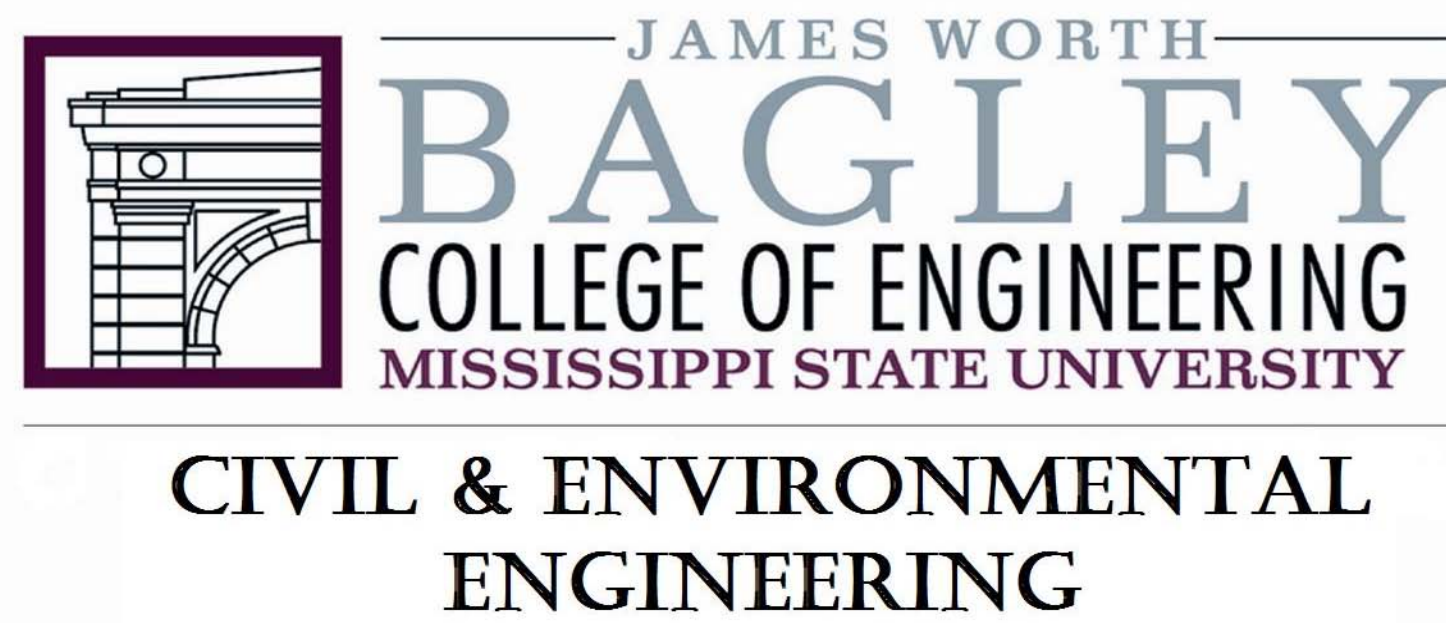


Higher-Order Learning in Engineering Education Using Active Teaching Pedagogies



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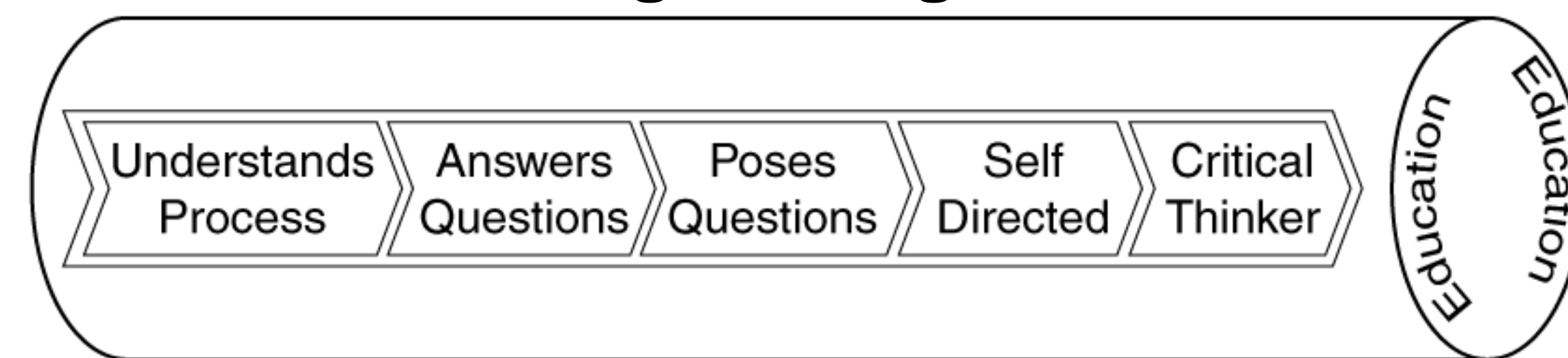


Objective

Develop the dynamic, inquisitive, creative, and ethical engineer of the future called for by the National Academy of Engineering

Pedagogies

Problem-Based-Learning (PBL)
 Learning-Through-Service (LTS)

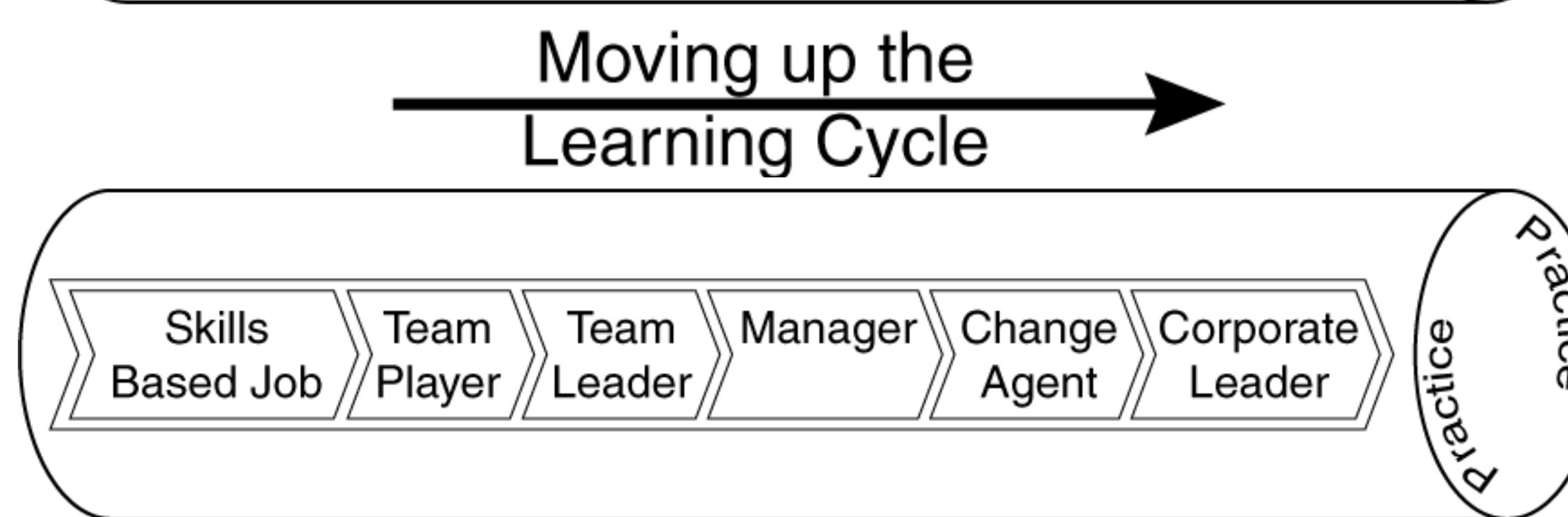


Outcome-Based Assessment

“Qualitative and Quantitative”

Design

Unstructured Vs Well-Structured
 Basic Vs Applied
 Individual Vs Teams



Focus Groups
 Questionnaires
 External Observations
 Advisory Boards

Moving up the Practice Cycle

Sustainable Infrastructure Systems

Learning Modules

Design, Delivery and Operation
 Structured System Analysis
 Modeling and Simulation
 Public Policy and Institutional Controls

Applications

Community Services (campus and regional)
 National Case Studies

Outreach

Engineering is Elementary
 SimCity
 First-Year-Experience Program
 Day-One-Mentoring Program



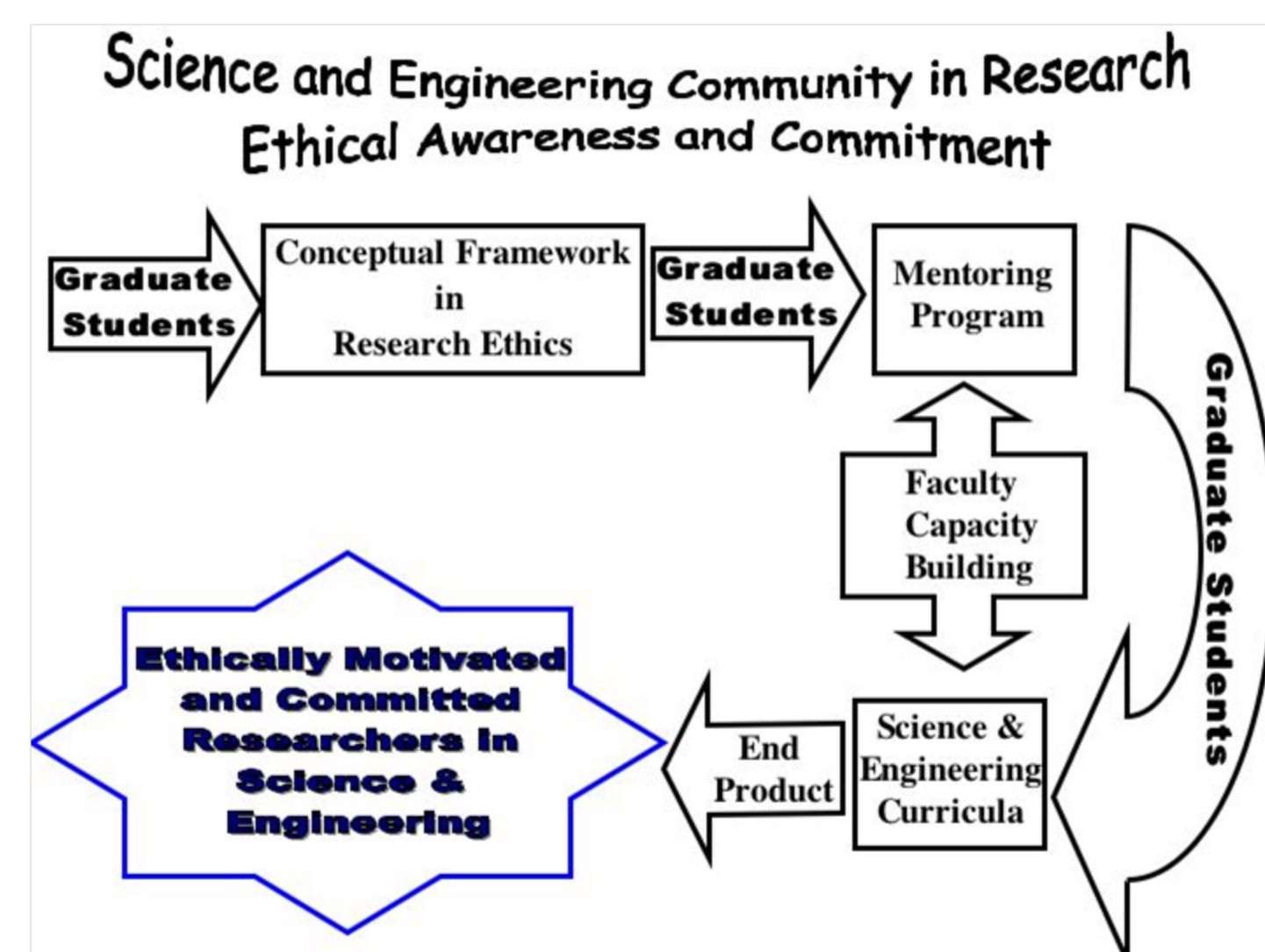
Research Ethics

Learning Modules

Research Misconduct
 Multiple-Authored Research and Publication
 Definitions, Duties, and Responsibilities
 Types of Authorship
 Standards and Regulations

Applications

National and International Case Studies
 Outreach
 Summer Academies
 Women-In-Action
 Increasing Minority Access to Graduate Education
 Social Channels: Facebook and YouTube



References: Beliveau and Peter (2002); Frey 2012)