North Carolina Agricultural and Technical State University

BRIDGING THE GAP 2017
UNITING NORTH CAROLINA K-16 STEM EDUCATION

Adapting Course-based Undergraduate Research Experiences For Middle And High School Students

Creating College Readiness

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AGGIES DO

Why engage students in RESEARCH?

- Hands-on experience
- Broaden perspective
- Solve problems
- Nurture an analytical and critical thinking skill set

What are CUREs?

Course-based Undergraduate Research Experiences

- One research project for the entire class
- Different than a prescribed lab

Adapting CUREs for Grade School Students

- Experiment for the entire class to conduct together
- Use a relevant issue to research
- Discuss findings

CURE Process

- Assist students with coming up with one idea
- Assign working groups
- Help them determine the method for collecting the data
- Give a time period for all data to be collected
- Have the working groups to analyze data
- Have groups report out findings

Creating an Impactful Middle/High School Research Experience

Goals:

- To demonstrate use of research practices and methods.
  - These skills are used to learn about the world; observing a wide range of occurrences and discerning (inducing) patterns; questioning; and, formulating testable deductive hypothesis.
- To apply interdisciplinary research methods.

Course Content Objectives through Applied Inquiry:

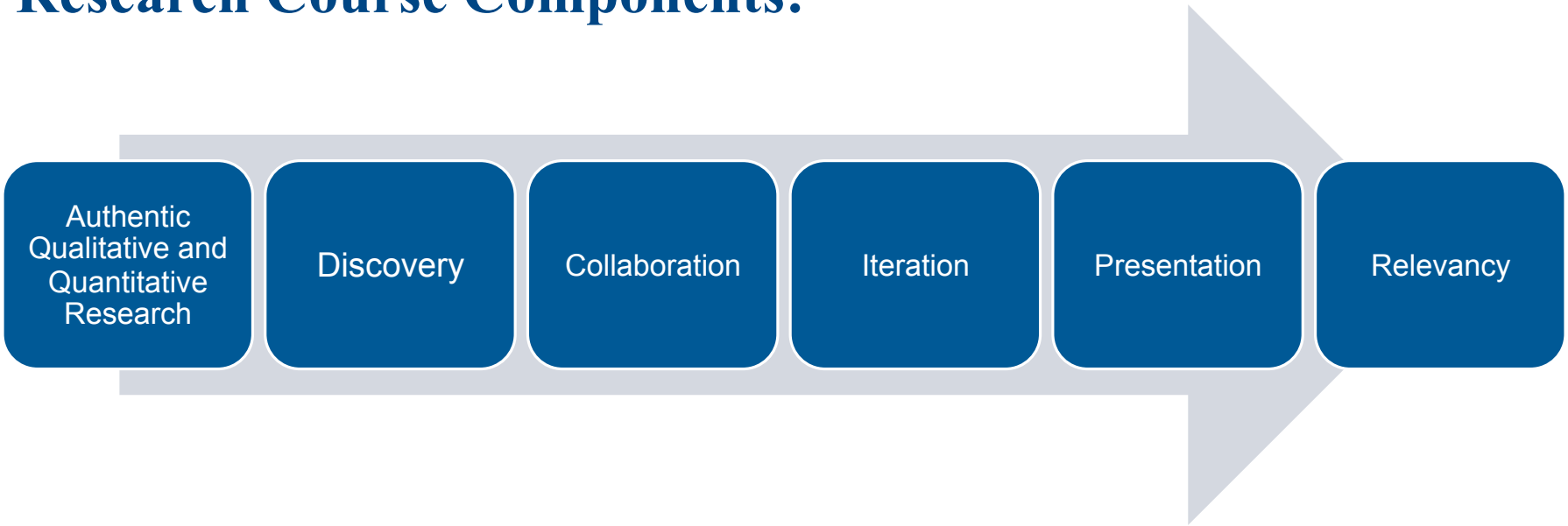
- Entire class works on one or two research questions. For example:
  - RQ1 - “Should sugar intake be regulated similarly to tobacco intake due to the long term adverse affects on health?”
  - RQ2 - “If sugar is regulated similarly to tobacco, will some societal norms change significantly?”

ACTIVITY: Break RQs Down into Learning Chunks

RQ1 - "Should sugar intake be regulated similarly to tobacco intake due to the long term adverse affects on health?"

RQ2 - "If sugar is regulated similarly to tobacco, what societal norms will change significantly?"

Research Course Components:



ACTIVITY: Describe one class assignment for each component.

Grade Allocation

Assignment	Maximum # of Points	% of Overall Grade
Participation	100	10%
Hypothesis	75	8%
Project Design	75	8%
Scope & Limitations	35	4%
Literature Review	50	5%
Midterm	100	10%
Data Collection Results	100	10%
Results & Discussion	50	5%
Conclusions & Recommendations	100	10%
PowerPoint Presentation	100	10%
Peer Evaluations	15	2%
Abstract & Introduction	100	10%
Complete Research Paper	100	10%
TOTAL	1000	

Student Learning Outcomes:

- Interdisciplinary Research Inquiry and/or use of the Scientific Method
- Planning and completing a formal research project
- Technical skills to effectively complete their research project using Excel, PowerPoint, ePortfolio
- Effective oral and written communication presentation
- Proper use of formal research terms, concepts, and theories in final presentation

Questions?