



## FIRST-YEAR STUDENTS AND DEEP LEARNING: PILOTING THE FYRE PROGRAM

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## THE FIRST-YEAR RESEARCH EXPERIENCE (FYRE) PROGRAM AT MONTANA STATE UNIVERSITY



- Piloted in 2014-15 with 6 students for the purpose of involving students in research early in their undergraduate career and promoting retention and persistence.
- 2015-16; 30 students
- 2016-17; 30 students
- FYRE part of the Undergraduate Scholars Program, joint venture of Academic Affairs and Undergraduate Studies, led by Colin Shaw, faculty in Earth Sciences

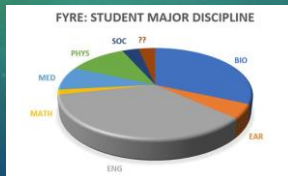
### FYRE PROGRAM COMPONENTS: SEMINAR

- One credit seminar for fall and spring semesters:  
Goals:
  - ❖ Demystifying the research process
  - ❖ Developing an understanding of the research process
  - ❖ Building a cohesive peer group focused on research
  - ❖ Meets during fall semester and spring semesters

### FYRE PROGRAM COMPONENTS: THE RESEARCH

- Staff have developed relationships with faculty mentors across campus interested in working with a FYRE student
- Students receive a list of faculty in their area of interest from the Undergraduate Scholars Program, and reach out to faculty to express interest/interview
- Each student conducts research with their faculty mentor during fall and spring terms, 6-10 hours/week
- Students are paid a stipend through the Undergraduate Scholars Program; Faculty are paid \$500 stipend.

### MAJORS AND HOURS SPENT ON RESEARCH



### PROGRAM ASSESSMENT

- Approaches and Study Skills Inventory for Students (ASSIST) (Entwistle, McCune & Tait, 2006): Measures student's approaches to learning in three areas: deep, strategic, and surface learning.  
Three sections:
  - What is learning to you?
  - Approaches to studying: deep, strategic, surface
  - Preferences for different types of courses and teaching

## SUBSCALES OF THE ASSIST

### Deep Approach to Learning

- Seeking meaning
- Relating ideas
- Use of evidence
- Interest in ideas
- Monitoring effectiveness

### Strategic Approach to Studying

- Organized studying
- Time management
- Achieving
- Alertness of assessment demands

## SUBSCALES OF THE ASSIST

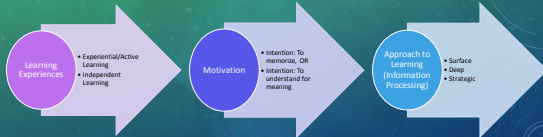
### Surface Approach

- Lack of purpose
- Unrelated memorizing
- Syllabus-bound-ness
- Fear of failure

### Preferences for Teaching

- Encouraging understanding (deep approach)
- Transmits information (surface approach)

The Theoretical Basis of the ASSIST: Based in theories of metacognition, information processing, and self-regulation



## RESEARCH DESIGN

- Pre-Post Design with comparison group (propensity score matching)
- Control group was matched on multiple pre-college variables from the BCSSE
- FYRE students took the ASSIST in fall and then in spring during program; control students took only in spring
- T tests conducted (Paired and Independent)

## FYRE OUTCOMES



- FYRE students overwhelmingly prefer deeper approaches to learning compared to control students
- FYRE students increase their surface approach to learning over the course of their first year at MSU.
- FYRE students continued to involve themselves in research experiences after their FYRE year (38% funded research)



## CHALLENGES

- Interest in recruiting at-risk students to the program, but cannot obtain the data to identify them until fall, when FYRE begins. Currently recruit through orientations and involvement fairs, and get students who tend to have high HS GPAs and academically successful
- Interest in recruiting more students interested in social science and humanities research, but currently have mostly STEM students
- Did not hear about issues between students and faculty mentors until end of year when too late to intervene
- Need more grant funding; interest in becoming more like UT Austin's program: <https://cns.utexas.edu/fri>
- Need more data on students after they leave FYRE



## TAKEAWAYS

- FYRE, an experiential undergraduate research experience involving peer learning and faculty mentoring, appeared to influence students to prefer deeper approaches to learning (compared to other similar students at MSU).
- Developmental and college transition issues appear to have been captured as well: FYRE students had an increase in preferences for surface learning, including "lack of purpose"
- FYRE students continued to involve themselves in undergraduate research after the FYRE year



THANK YOU!

Questions?