

Assessment of undergraduate research learning outcomes: Poster presentations as artifacts

Rachel Hayes-Harb
University of Utah

For slides & poster rubric
bit.ly/cur2018

Collaborators



Mark St. Andre

Associate Dean

Assessment & General Education



Megan Shannahan

Undergraduate Research Advisor

Office of Undergraduate Research

Mission Statement

...to facilitate and promote undergraduate student-faculty collaborative research and creative works in all disciplines throughout the University of Utah campus

Assessment in Context

- Undergraduate research offices on university campuses have become increasingly accountable for assessing the impact of their programs
 - Numbers of students served
 - **Students' achievement of learning outcomes** (see, e.g., Crowe & Brakke, 2008; Laursen, 2015)

Challenges

- **Challenges associated with the development of high-quality assessment techniques for this purpose include:**
 1. identifying discipline-general assessment criteria;
 2. accessing the artifacts that allow for direct assessment; and
 3. large-scale implementation of an assessment protocol

Learning Outcomes

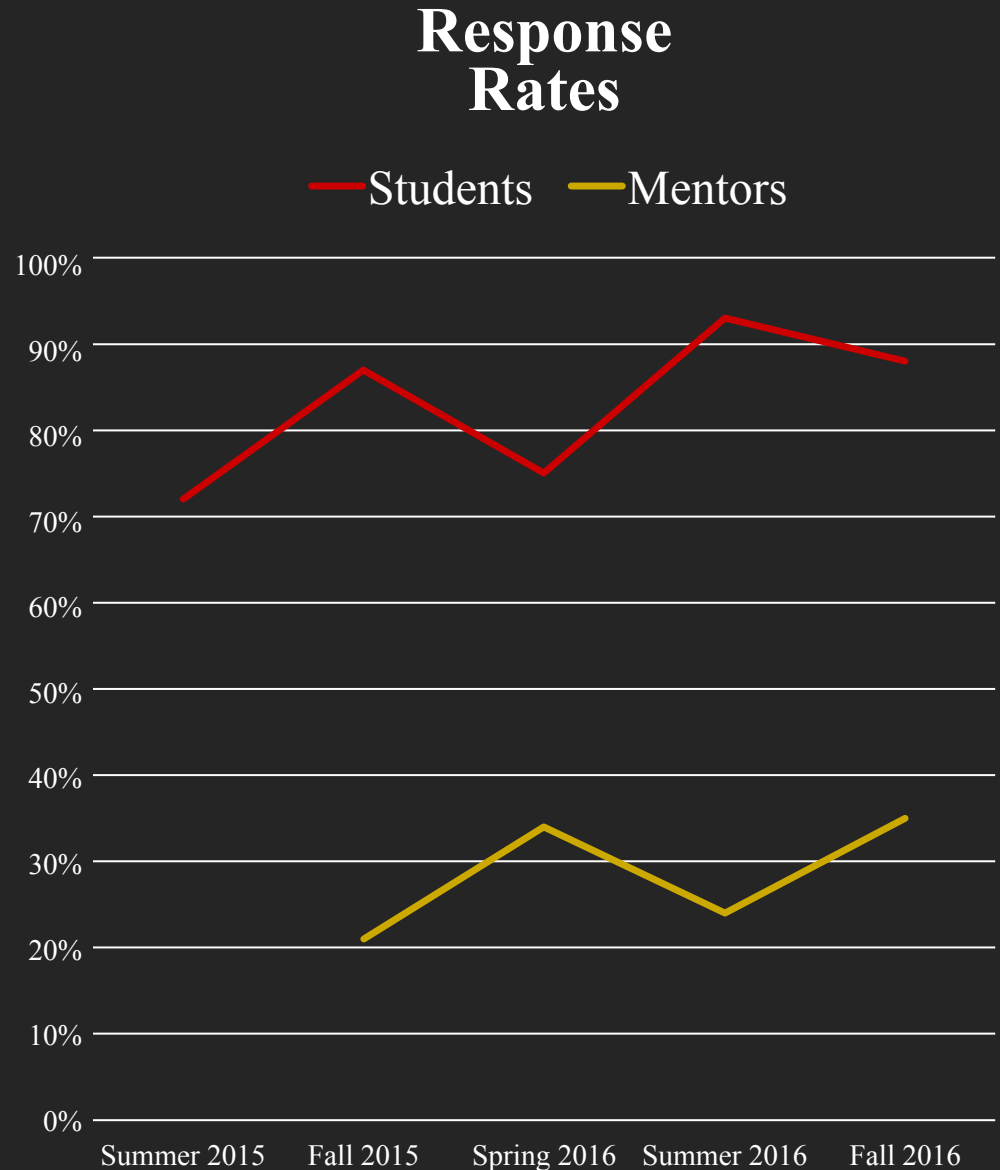
- **Seven Undergraduate Research Learning Outcomes**
 - Adapted from materials posted by various institutions, including Loyola University Chicago (luc.edu/lurop)
- **Address the traditions of research and mentoring in the wide range of disciplines on our campus across 18 colleges and schools**

Learning Outcomes

- Identify and utilize relevant previous work that supports their research
- Articulate a timely and important research question or creative objective
- Identify and utilize appropriate methodologies to address the research question or creative objective
- Meet the relevant field's standards for the responsible conduct of research, and effectively navigate challenges that arise in the research process
- Work collaboratively with other researchers, demonstrating effective communication and problem-solving skills
- Present the research effectively in a conference setting and a written publication
- Reflect constructively on their research experience, identifying what was learned, personal strengths and opportunities for growth, and how the experience informs their future educational and career goals

Previous Assessment Efforts

- **Funding program final reports**
 - Self-assessment by students and assessment of students by faculty mentors
 - Likert scales “strongly agree — agree — disagree — strongly disagree”
- **High student response rates!**



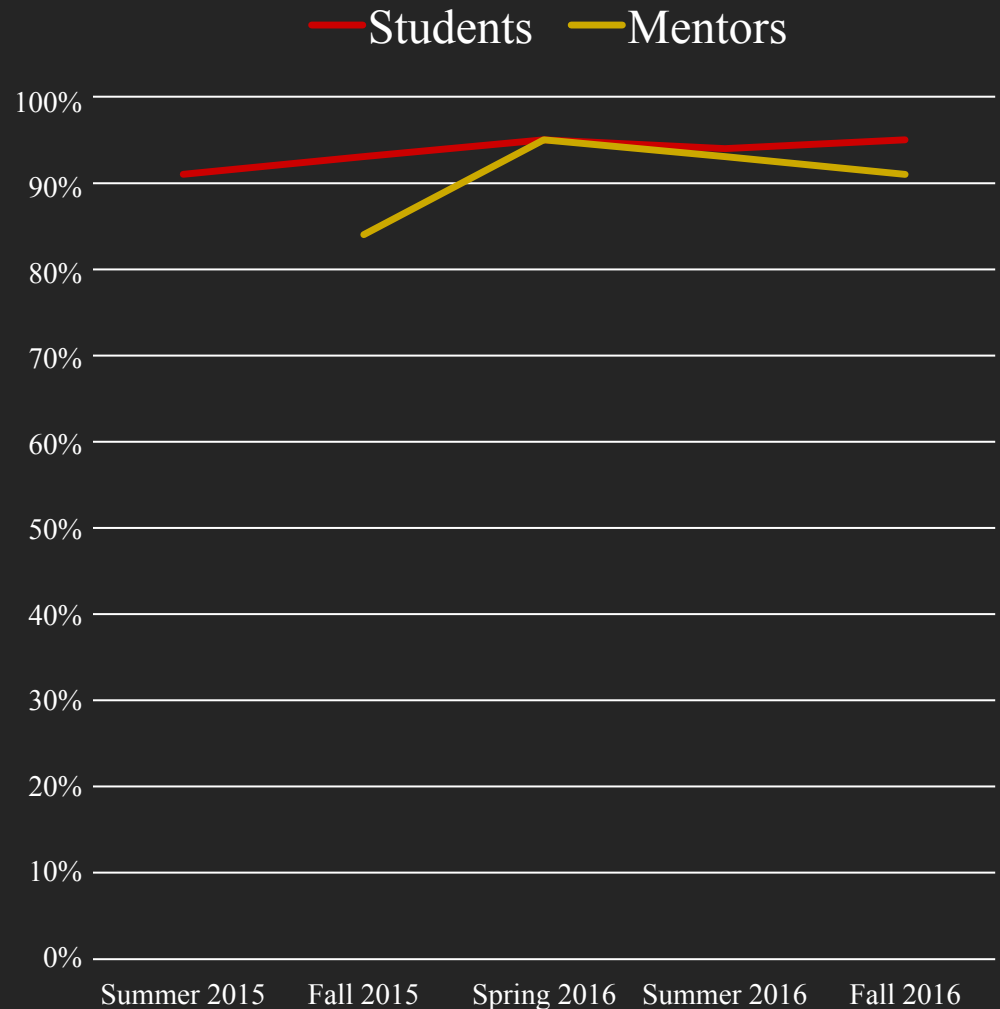
Previous Assessment Efforts

- **However...**

- Student "agree" or "strongly agree" responses > 90%
- Faculty "agree" or "strongly agree" responses > 80%

- **Challenges of self-assessment are well-known** (see, e.g., Brown, Andrade & Chen, 2015)

"Agree" and "Strongly Agree" Responses



New Assessment Effort

- **Institution-wide assessment project**
 - Direct assessment of artifacts (poster presentations)
 - Unbiased expert raters
 - Rubric
- **Annual Undergraduate Research Symposium**
 - **Open to all undergraduate students on our campus:**
 - Students funded by our office
 - Required for the Honors degree
 - Final presentations for capstone courses

Campus partners

- **Office of Learning Outcomes Assessment**
 - Mark St. Andre, educational assessment and measurement
- **Physics & Astronomy REU**
 - Piloted the poster evaluation rubric in Summer 2017
 - 45 evaluations of 14 posters by 8 raters
- **Office of Undergraduate Studies**
 - Participated as raters in December 2017 pilot
 - 27 evaluations of 6 posters by 7 raters
- **Graduate School**
 - Distributed rater invitations to graduate students and post-docs

Rubric

- **Purpose**

- Focus on evaluation of the opportunities provided by the institution, *not the achievement of individual students*
- Not a poster presentation competition

- **Development**

- Aligned with our undergraduate research learning outcomes
- Indicators for each outcome
- Piloted Summer 2017 and December 2017

Please score in terms of the student's development as researcher.
The poster presentation indicates that the student...

0-10 pts	...is in the earliest stages of development with respect to this learning outcome
10-20 pts	...is in the process of achieving this learning outcome
20-25 pts	...has mastered this learning outcome

Poster Session

- ☐ 9:00-10:30
- ☐ 10:45-12:15
- ☐ 1:00-2:30

Assigned Poster # _____

Judge ID# _____

Poster Presenter Last Name _____

If needed: Alternate Poster # _____

Poster Presenter Last Name: _____

Reason for alternate:

- ☐ Conflict of interest
- ☐ Assigned poster presenter absent
- ☐ Other _____

Learning Outcome	Indicators	Score	Comments
Identify and utilize relevant previous work that supports the research	<ul style="list-style-type: none"> Clearly situates current work in an appropriate scholarly context Acknowledges the conceptual and methodological foundation provided by previous work Identifies the novel contribution of the present work to the field/society 	(0-25 pts)	
Articulate a timely and important research question or creative objective	<ul style="list-style-type: none"> Explicitly states the research question or creative objective Explains why the research question is important and timely The research question or creative objective follows logically from the previous work cited 	(0-25 pts)	
Identify and utilize appropriate methodologies to address the research question or creative objective	<ul style="list-style-type: none"> Clearly explains methods; explicitly links methods to the research question or creative objective Acknowledges limitations of the methods used Clearly presents results; explicitly interprets results with respect to the research question or creative objective 	(0-25 pts)	
Present the research effectively in a conference setting	<ul style="list-style-type: none"> Poster display is well-organized and professional; tables and figures present content effectively Presents the work concisely and precisely; presentation is well-practiced Responds to questions thoroughly and thoughtfully. Please ask questions! 	(0-25 pts)	
If observed, please describe evidence of the student's achievement of the following learning objectives:			
Meet the relevant field's standards for the responsible conduct of research, and effectively navigate challenges that arise in the research process			
Work collaboratively with other researchers, demonstrating effective communication and problem-solving skills			
Reflect constructively on the research experience, identifying what was learned, personal strengths and opportunities for growth, and how the experience informs their future educational and career goals			

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Raters and Recruitment

- Invited graduate students, post-docs, and faculty to serve as ad hoc raters
- Two-winner drawing for choice of an Apple Watch or Amazon Echo Show (\$688 total)



Support Undergraduate Research at the U!

FACULTY, GRADUATE STUDENTS, AND POST-DOCS!

Help us evaluate 300+ undergraduate research posters at the 2018 Undergraduate Research Symposium on Wednesday, April 11.

Posters will be located in the Student Union Ballroom during three sessions: 9:00 – 10:30am, 10:45 – 12:15pm, and 1:00 – 2:30pm. You are welcome to come to any or all sessions.

Register online at our.utah.edu/posterevaluators

For every five posters you evaluate, you will earn one entry for a drawing to win one of two prizes – your choice of an **Apple Watch** or **Amazon Echo Show**!

Questions? Contact the Office of Undergraduate Research at our@utah.edu or (801) 581-8070.

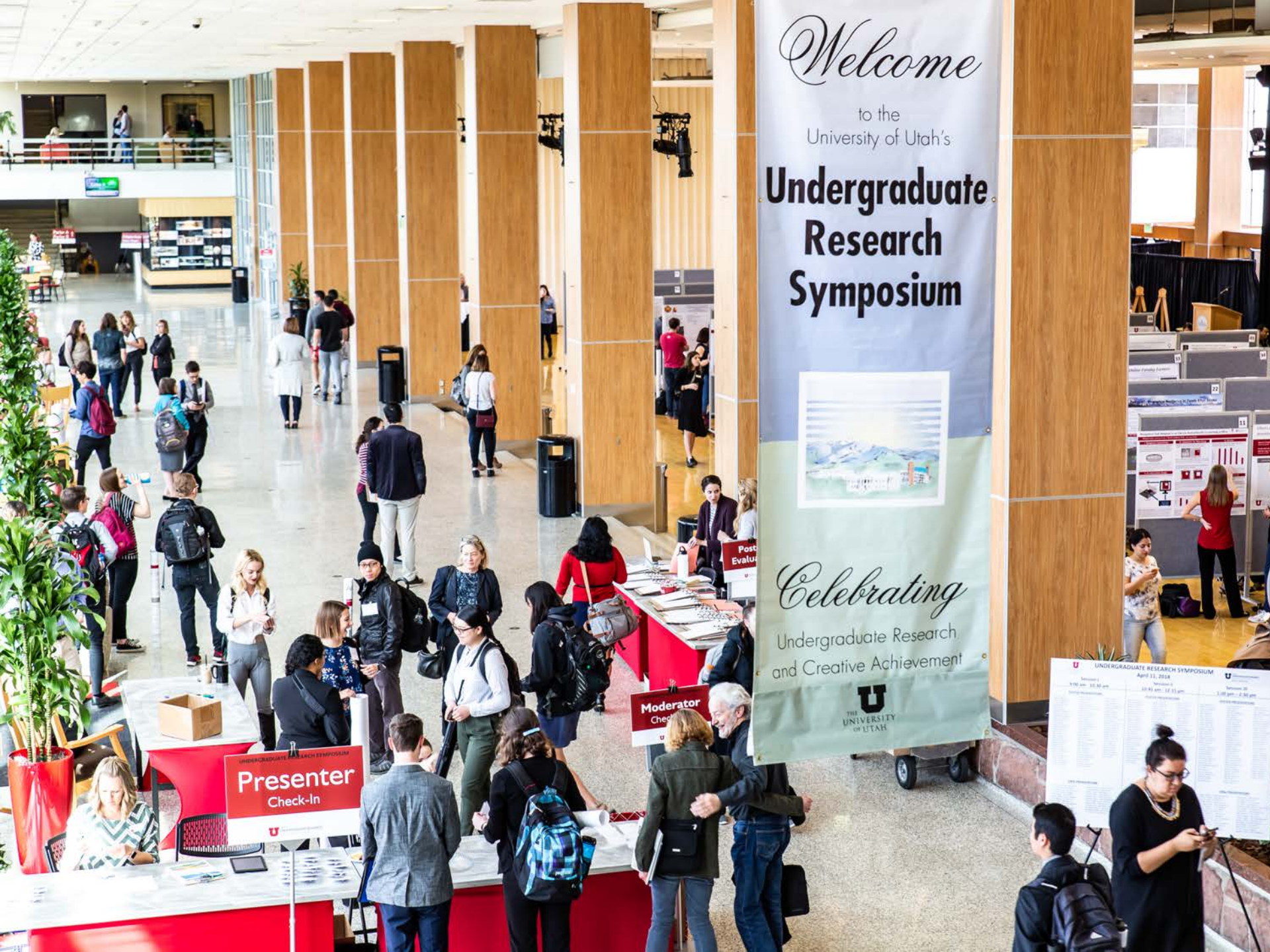
- **Email invitations**

- Faculty/staff listserv
- Directors of Graduate Studies
- Office of Postdoctoral Affairs and Professional Programs
- Mentors of student presenters

- **Online sign-up to receive information and reminders**

Data Quality

- **To maximize our ability to normalize the data**
 - Rubrics were distributed to raters in packets of five
 - One drawing entry for each completed packet
- **To minimize conflicts of interest**
 - Pre-assigned random poster numbers
 - Explicit criteria for rater conflict of interest



Welcome

to the
University of Utah's

Undergraduate Research Symposium



Celebrating

Undergraduate Research
and Creative Achievement



THE
UNIVERSITY
OF UTAH

UNDERGRADUATE RESEARCH SYMPOSIUM
**Presenter
Check-In**

**Moderator
Check-In**

**Post
Evaluation**

UNDERGRADUATE RESEARCH SYMPOSIUM April 13, 2018			
Session 1 9:00 am - 10:30 am Faculty Reception	Session 2 10:30 am - 12:30 pm Faculty Reception	Session 3 1:00 pm - 2:30 pm Faculty Reception	Session 4 2:30 pm - 4:00 pm Faculty Reception
Faculty Reception			



29

30

L2 orthographic input and the three-way Korean consonant contrast



Lauren Brocious, Rachel Hayes-Harb
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 University of Utah



Thank you to the Office of Undergraduate Research for their support.

Introduction

- Can adult second language (L2) learners use written forms in learning to distinguish new phonological contrasts in a L2?
- Can they use written information even when the writing system is unfamiliar to them?
- Literate adult learners can often use written information to make inferences about the pronunciation of L2 words
- However, this ability varies according to a number of factors, including the familiarity and congruence of the L2 writing system
- Familiarity refers to grapheme similarity between the L1 and L2
- Congruence refers to phoneme-grapheme correspondence and whether or not it is the same between the L1 and L2

Familiar: Congruent	Familiar: Incongruent	Unfamiliar
<p>I can not when the ending and sound when I'm not what are in?</p>	<p>Yes! You'll be able to read this! You can read this! You can read this! You can read this!</p>	<p>It's not like I can read this! It's not like I can read this! It's not like I can read this! It's not like I can read this!</p>

Hayes-Harb et al. (2018)
 Learners misinterpreted the phonological form of the words according to their (incongruent) spelling.

Escudero et al. (2015)
 The presence of novel orthographic features can support native English speakers' ability to associate novel phonological features with newly learned words.

Showalter et al. (2015)
 No evidence that an unfamiliar script can support learning of words containing difficult L2 sounds (English-Arabic).
 What about another case of an unfamiliar writing system—Korean for native English speakers?

Does the systematic representation of Korean consonants' place and manner of articulation in the writing system help native English speakers learn Korean words' pronunciations?

Materials and Methods

- 30 native English speakers
- 12 Korean monwords

- Three word learning conditions:
- Korean Spelling: unfamiliar graphemes, systematic representation of three-way contrast
 - Mixed L1/L2 Korean Spelling: unfamiliar graphemes, no systematic representation of three-way contrast
 - No Orthography

Word learning phase

- 6 minutes – learn the words and meanings as well as possible
- Hear sound and see picture (in spelled form)



<90%

- Confirm participant's general memory for words



Are they matched? X NO

Are they matched? ✓ YES

>90%

Final test

- Confirm participant's ability to distinguish consonant contrasts

Critical comparisons	Ex	Sp	Pl	Pl
Aspirated (kapa) Plain	Ex	Sp	Pl	Pl
Aspirated (kapa) Tense	Ex	Sp	Pl	Pl
Plain/Tense	Ex	Sp	Pl	Pl

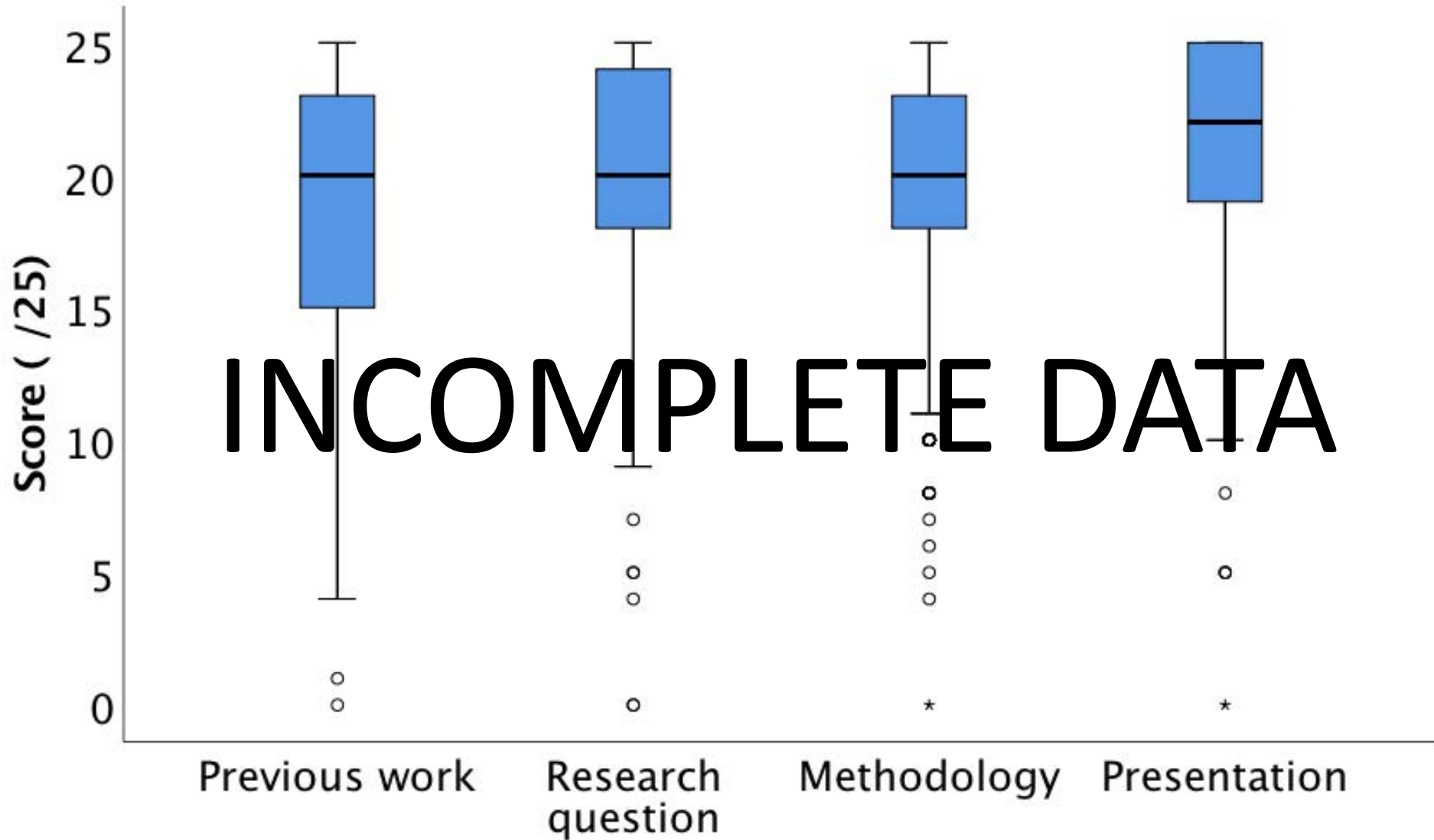
The Data

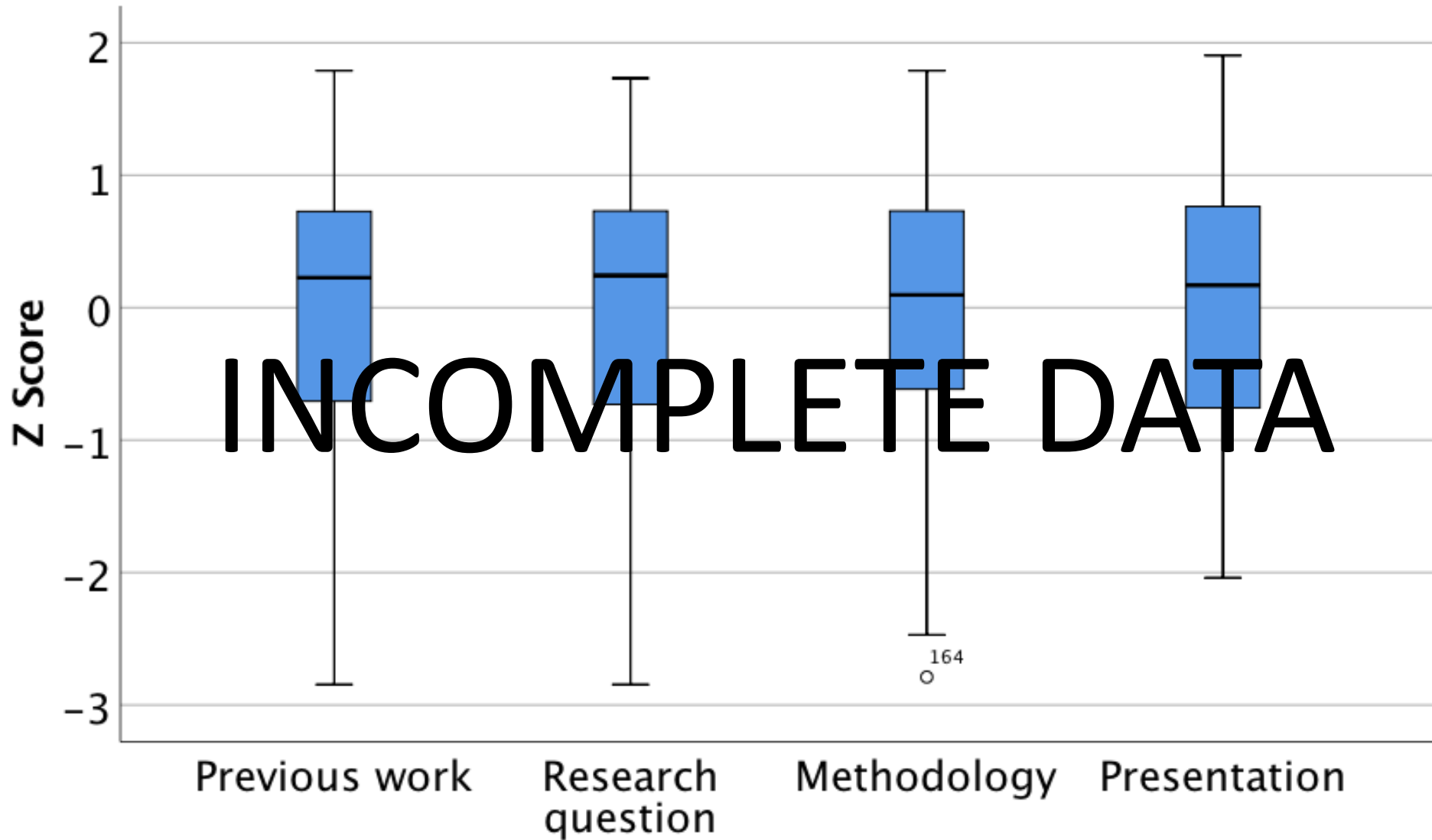
- **Data collected**
 - Three 1.5-hour poster sessions
 - 243 posters
 - **1028 rubrics completed by 154 raters!!!**
- **Data entry**
 - Office of Undergraduate Studies interns

So far...

- 263 rubrics entered (~26%)
- Raters used the full range of scores (0-25 points)

INCOMPLETE DATA





Next Steps

- **Data analysis**

- Normalization: convert to z-scores
- Breakdown by:
 - College/school, major
 - Mentor?
 - *Participation in specific undergraduate research programs*
- Qualitative analysis of rater comments

- **Dissemination**

- Assessment report

- **Positive institutional change**

- Efficacy of our programs
- Funding needs and priorities

Thank you!

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