

# The Impact of Teacher Preferences in Learning by Evaluating

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**BYU Technology &  
Engineering Studies**  
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# Introductions

**BYU Technology & Engineering Studies**  
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Service  
Missionary



BS & MS  
Technology & Engineering



Middle School Teacher



Utah State University  
PhD, Curriculum & Instruction



Asst. Professor  
Engineering/Technology Education



Asst. Professor  
Technology & Engineering Studies



Visiting Professor  
UP-Diliman, College of Education  
April 2023– August 2023



# Adaptive Comparative Judgment



An alternative to traditional (i.e., rubric, grading scale) assessment techniques

Based on comparisons rather than subjective number/value assigning

High levels of reliability

Strong correlation (validity) with traditional approaches to grading

When done by students, can significantly (and positively) impact their learning

# ACJ student experience

Which POV statement is better?


< 1 of 1 > A

Bedridden hospital patients need a way to keep moving and exercising safely because many different problems arise from extended time without exercise.

< 1 of 1 > B

Motorists need to reduce damage to their vehicles caused by potholes because the cost of maintaining a vehicle is high and will continue to rise if no action is taken.

Which POV statement is better?


< 1 of 1 >  A

Bedridden hospital patients need a way to keep moving and exercising safely because many different problems arise from extended time without exercise.

< 1 of 1 > B


Motorists need to reduce damage to their vehicles caused by potholes because the cost of maintaining a vehicle is high and will continue to rise if no action is taken.

**Make Judgement**

You have selected. **A** 

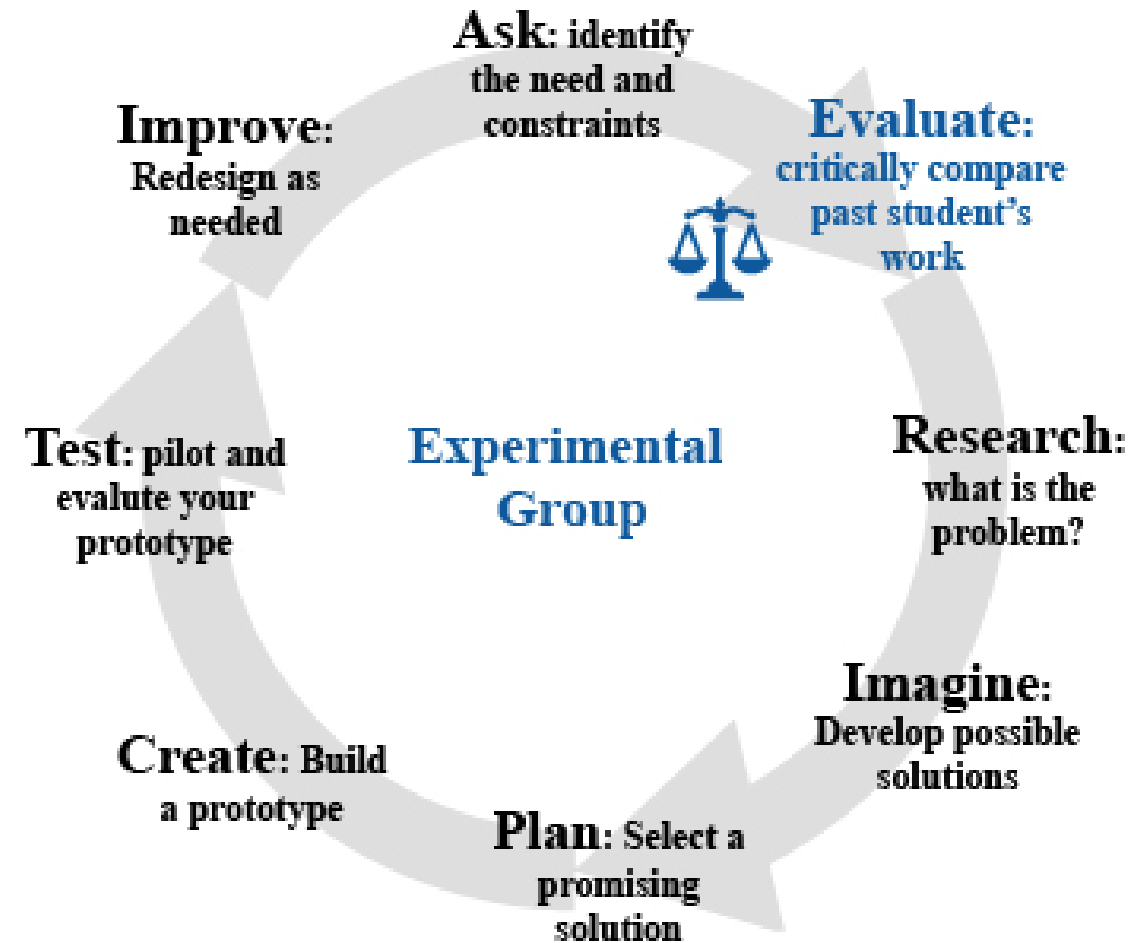
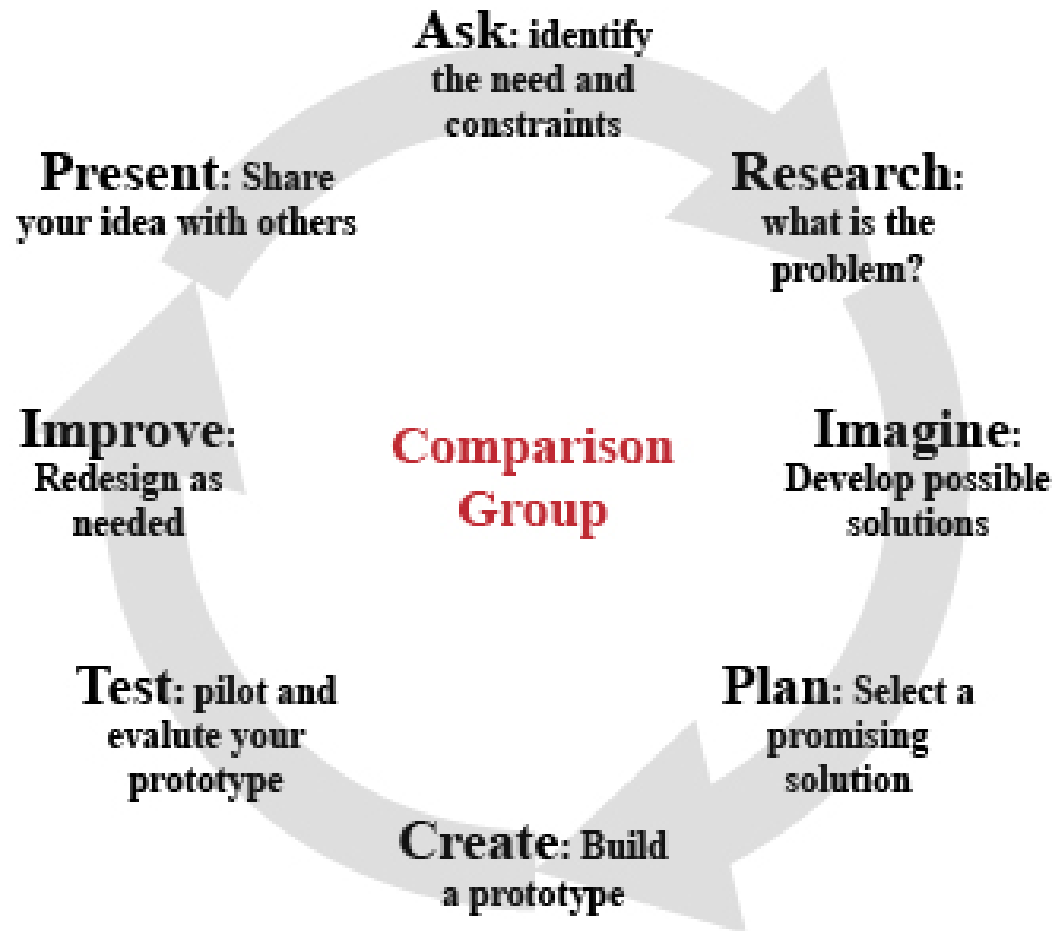
Why have you chosen A?

Please leave a comment about your judgement decision (optional)

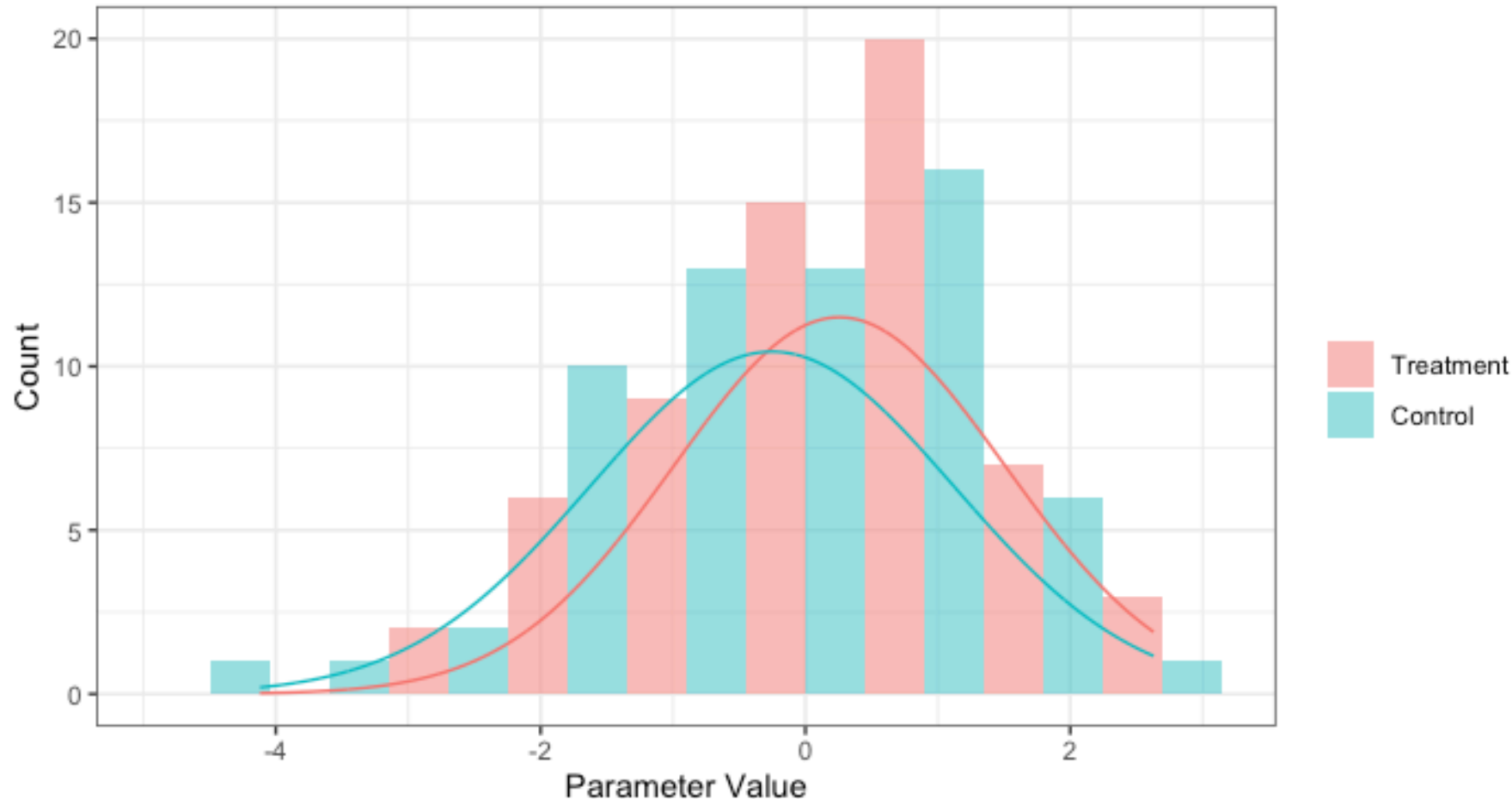


Cancel Submit

# LbE – Foundational work



# LbE – Findings



There was a significant difference between LbE students and peers,  $t(123) = 2.17$ ,  $p = .032$ .

Seven of the top 10 students were from the LbE group.

*Though a teacher may lean on a lesson to deliver instruction, **the teacher is always the most critical factor** in determining what a child can achieve in the classroom.*

-Fountas & Pinnell (2023)

# Methodology



5 teachers  
-same course  
-same district  
-different schools



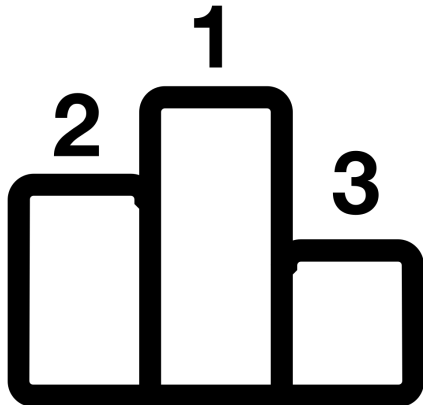
~100 Students enrolled in 5  
*Foundations of Technology &  
Engineering classes*



50 images of  
backpacks, bags,  
and carrying  
devices



Students all  
engaged in ACJ  
(LbE: 5-10  
comparisons) of  
the images



Comparison of rank  
orders produced by  
each class of  
students



Analysis of student  
comments made  
(while completing  
comparisons)



# Findings (Quantitative)

Spearman (rank)	T2	T3	T4	T5
T1	.38**	.29*	.18	.29*
T2		.32*	.47**	.39**
T3			.34*	.29*
T4				.16

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

Pearson (PVs)	T2	T3	T4	T5
T1	.37**	.27	.16	.28*
T2		.31*	.47**	.42**
T3			.29*	.27*
T4				.12

# Findings (Quantitative)

Spearman (rank)	T2	T3	T4	T5
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T2		.31*	.47**	.42**
T3			.29*	.27*
T4				.12

# Findings (Qualitative)

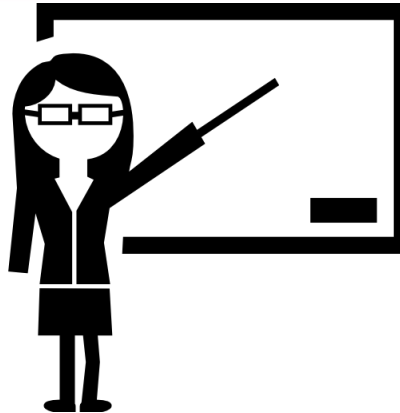


Teacher 1 (Male)

*Imagine you are designing a backpack; which image is a more creative approach to research in the design process?*

## THEMES:

- Functionality (90/239)
- Creativity (60/239)
- Comfort (16/239)

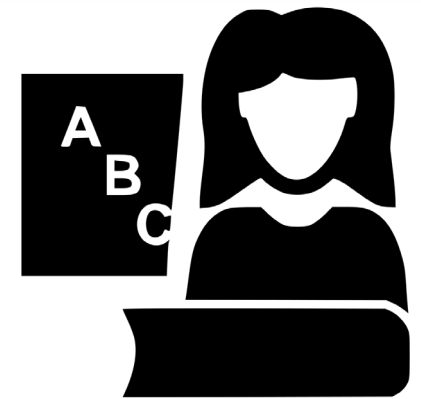


Teacher 4 (Female)

*Which carrying approach is most usable and why?*

## THEMES:

- Practicality (74/301)
- Flaws in design of item not chosen...



Teacher 5 (Female)

*Imagine you are redesigning a backpack. Which image is a more creative approach to research in the design process?*

## THEMES:

- Creativity (45/207)
- Appearance (20/207)
- Uniqueness (19/207)

# Findings (Qualitative)



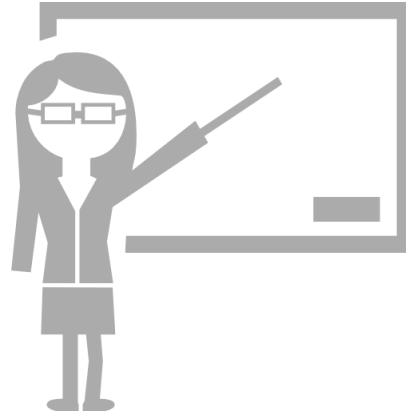
Teacher 1 (Male)

Imagine you are designing a backpack; which image is a more creative approach to research in the design process?

## THEMES:

- Functionality (90/239)
- Creativity (67/239)
- Comfort (16/239)

Function



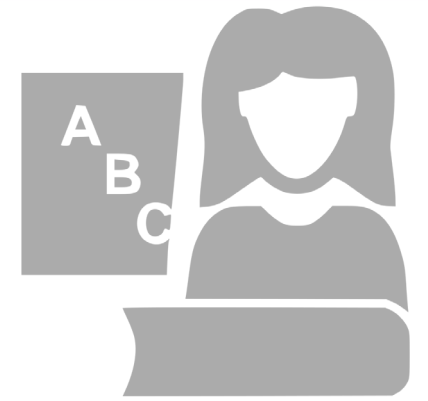
Teacher 4 (Female)

Which carrying approach is most usable and why?

## THEMES:

- Practicality (74/301)
- Flaws in design of item not chosen...

Function



Teacher 5 (Female)

Imagine you are redesigning a backpack. Which image is a more creative approach to research in the design process?

## THEMES:

- Creativity (45/207)
- Appearance (21/207)
- Uniqueness (19/207)

Form

# Thank you!



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# Questions?

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