

# Are Surveys Serving Your **ATE** Project? Find Out!

Sondra LoRe, PhD  
STEM Program, Evaluation, Assessment, & Research (SPEAR)



STEM · Program Evaluation · Assessment · Research

# Sondra's journey to Program Evaluation

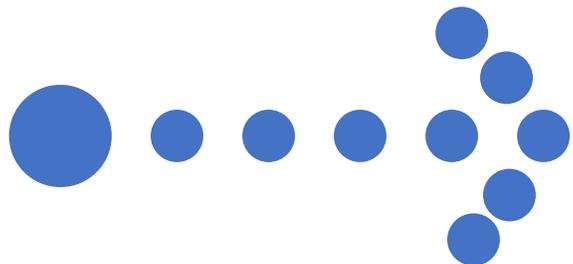
K-12 Teacher & School Principal



Higher Education  
Educator & Center  
Director



Educational  
Researcher



STEM · Program Evaluation · Assessment · Research

Adjunct Teaching



Quantitative Literacy



Science teaching  
methods

# SPEAR Partners (NSF & NIH)

NSF CENTER (1)



NRT (5)



University of Nevada, Reno

RCN (2)



IntBIO(1)



ATE (2) + S-STEM (1)



IUSE (3)



DRK-12 (1)

NIH SEPA (1)



HSI Pilot (1)



REU (1)



NOYCE (1)



ITYC (1)



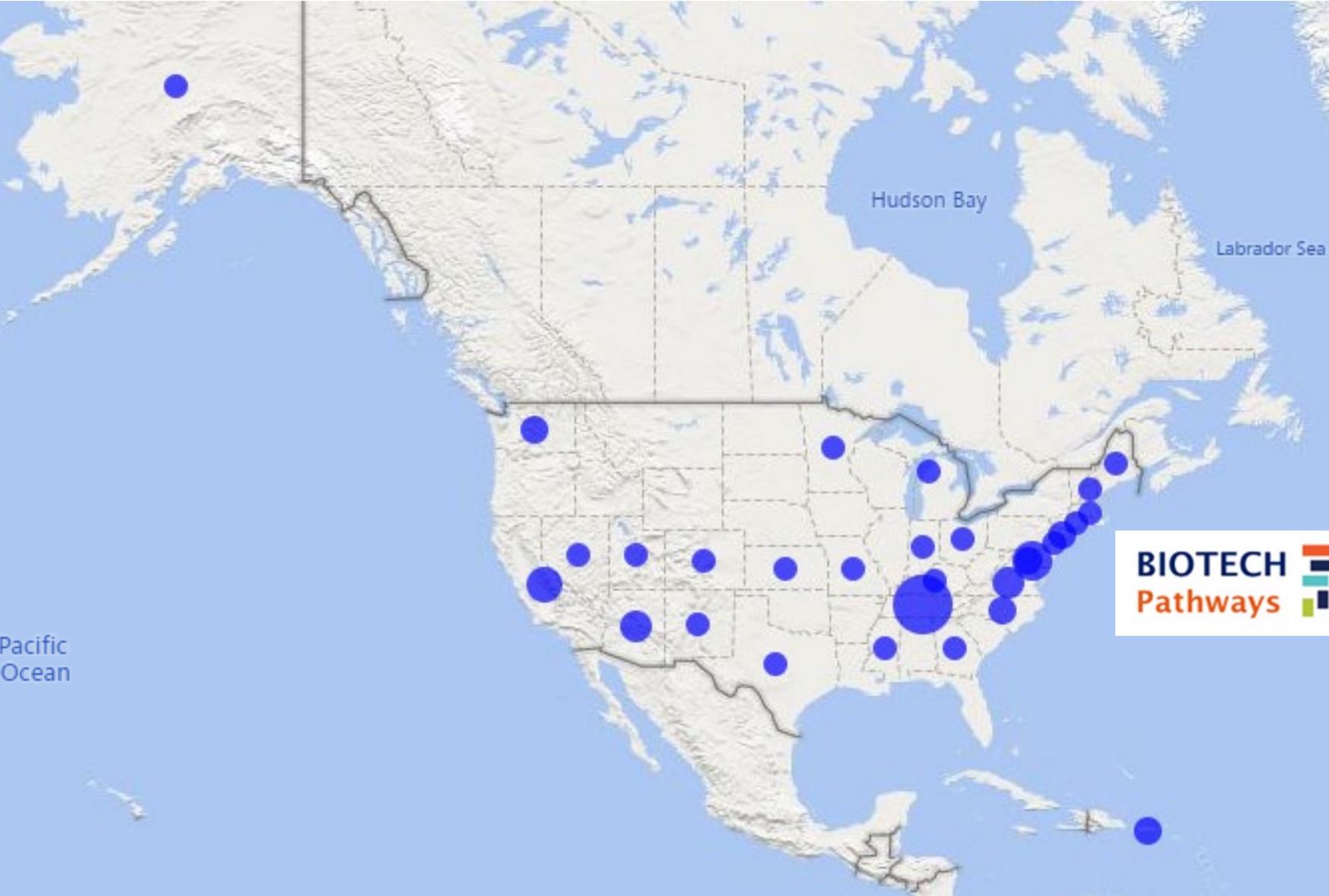
DRK-12 (1)



# SPEAR Partners (Foundation, State, and additional NSF funding)



# Where our evaluation projects are located

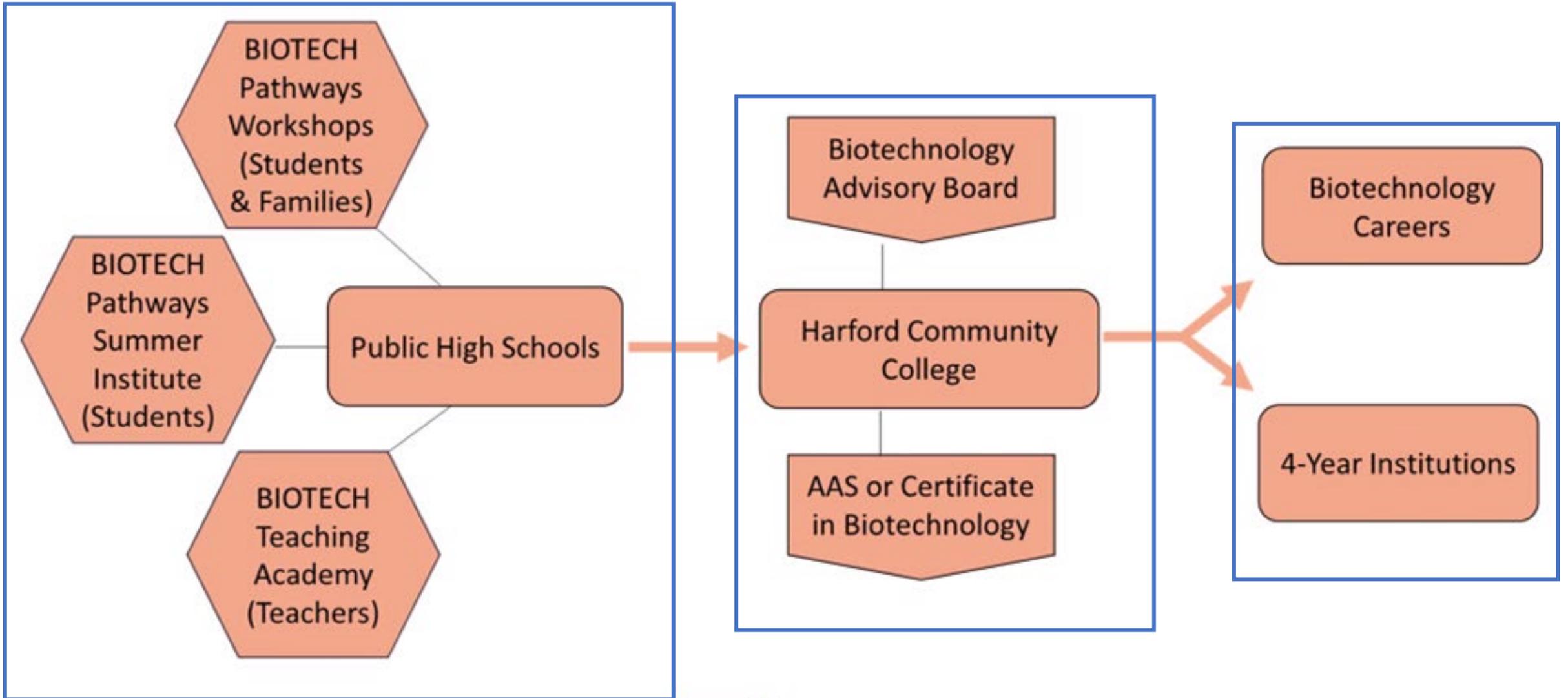


**BIOTECH**  
Pathways



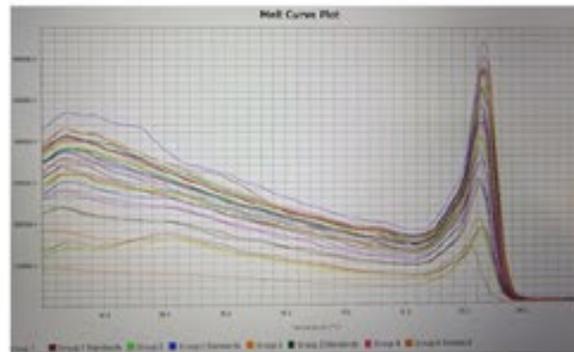
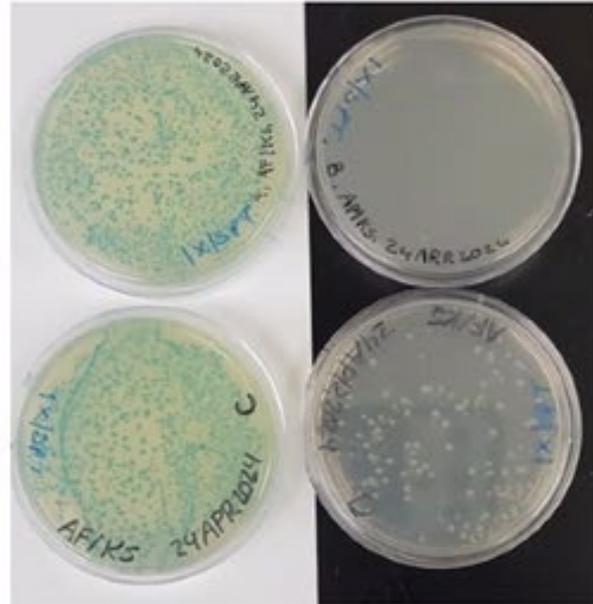
**HARFORD**  
COMMUNITY COLLEGE

# NSF ATE BIOTECH Pathways

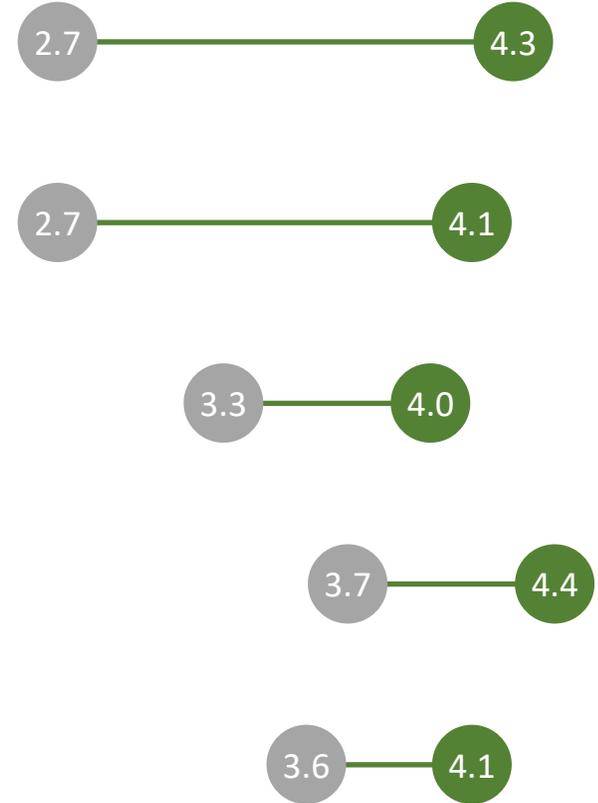


# NSF ATE BIOTECH Pathways

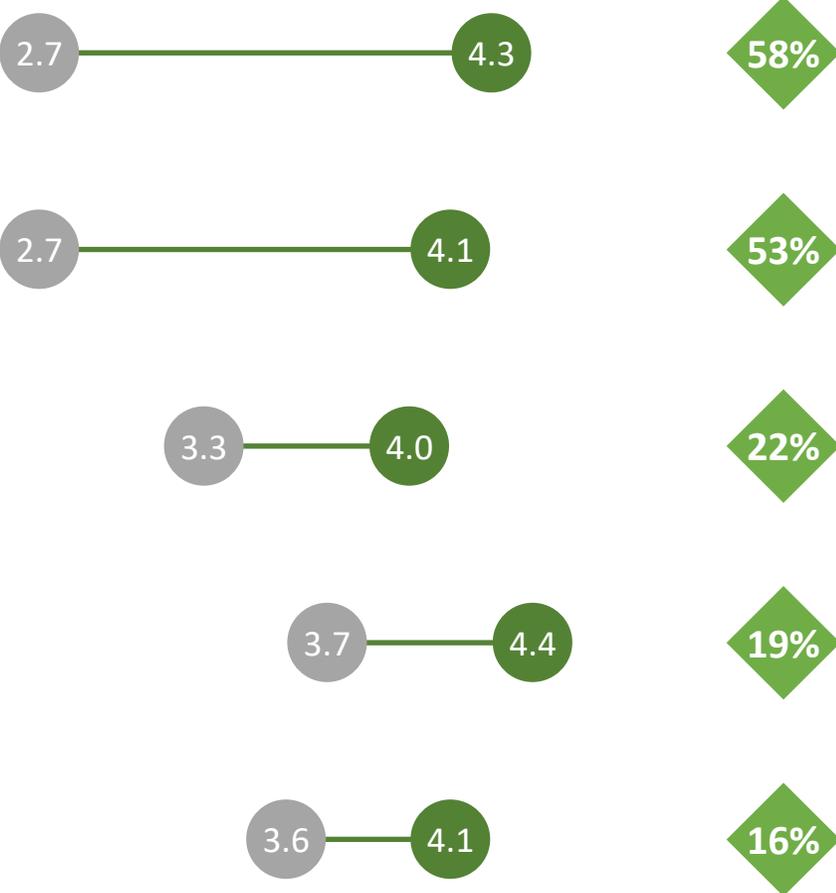
## Course Survey- Biology 214 Molecular Techniques



# Survey Reporting

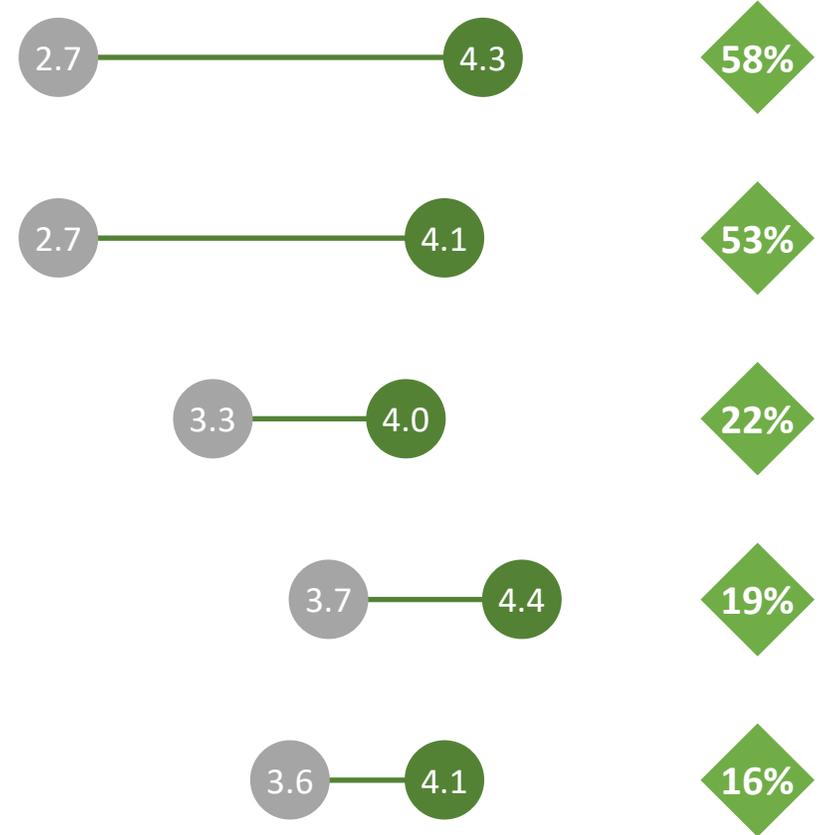


# Survey Reporting



# Survey Reporting

● Before ● After ◆ %Growth



Scale:

Not knowledgeable...

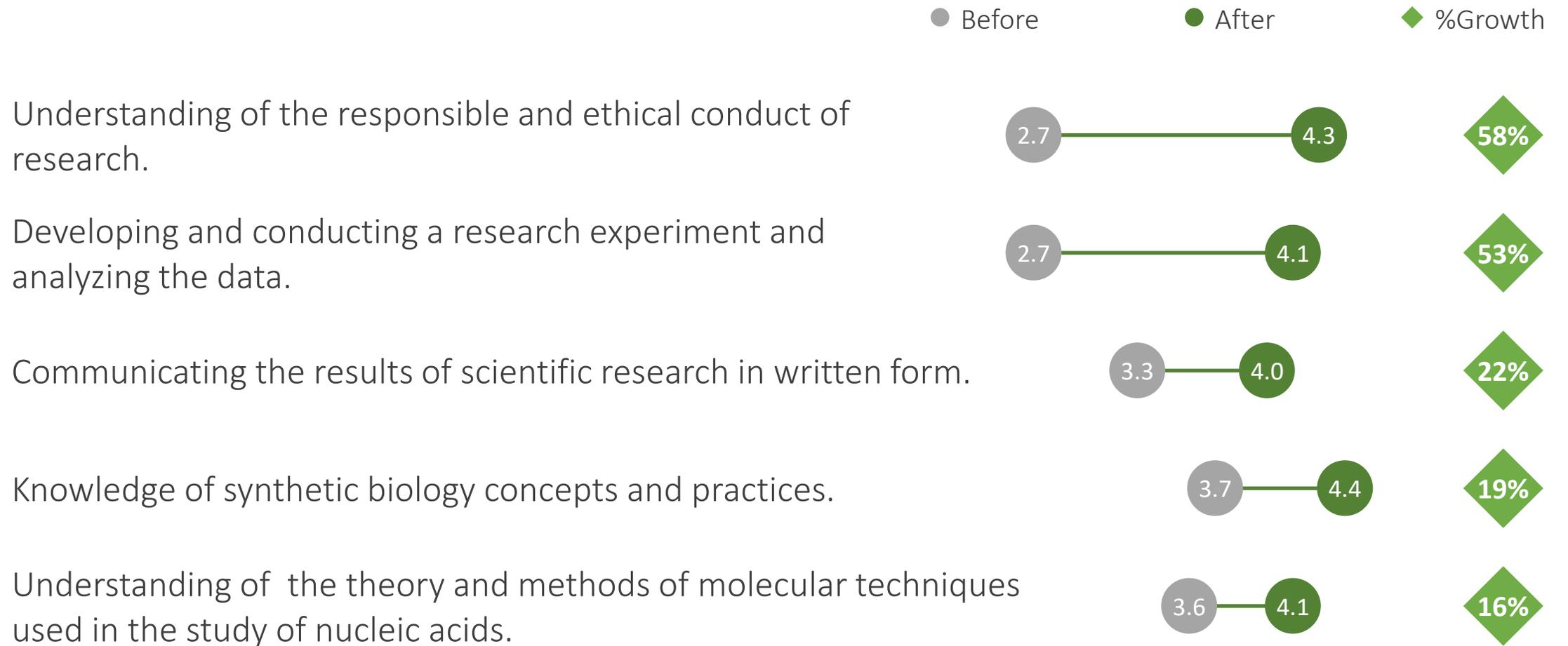
Slightly knowledgeable (2)

Moderately knowledgeable (3)

Very knowledgeable (4)

Extremely knowledgeable (5)

# Survey Reporting



**Scale:** Not knowledgeable at all (1)      Slightly knowledgeable (2)      Moderately knowledgeable (3)      Very knowledgeable (4)      Extremely knowledgeable (5)

# Pre & Post Surveys (2)

Before Intervention &  
After Intervention

Experimental or Clinical  
Methodology

- Social Constructs
- Sense of Belonging
- Experience & Understanding



**Retrospective  
Overinflate**

**Pre & Post  
Underinflate**

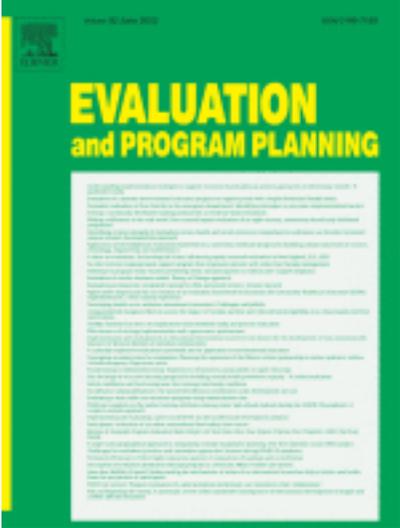
- Shift Response  
“Boomerang Effect”

# Retrospective Survey (1)

Reflective- After Intervention

Retrospective Pretest (RPT)  
Methodology

# What retrospective survey design is best?



Melanie Hwalek

**Article:**

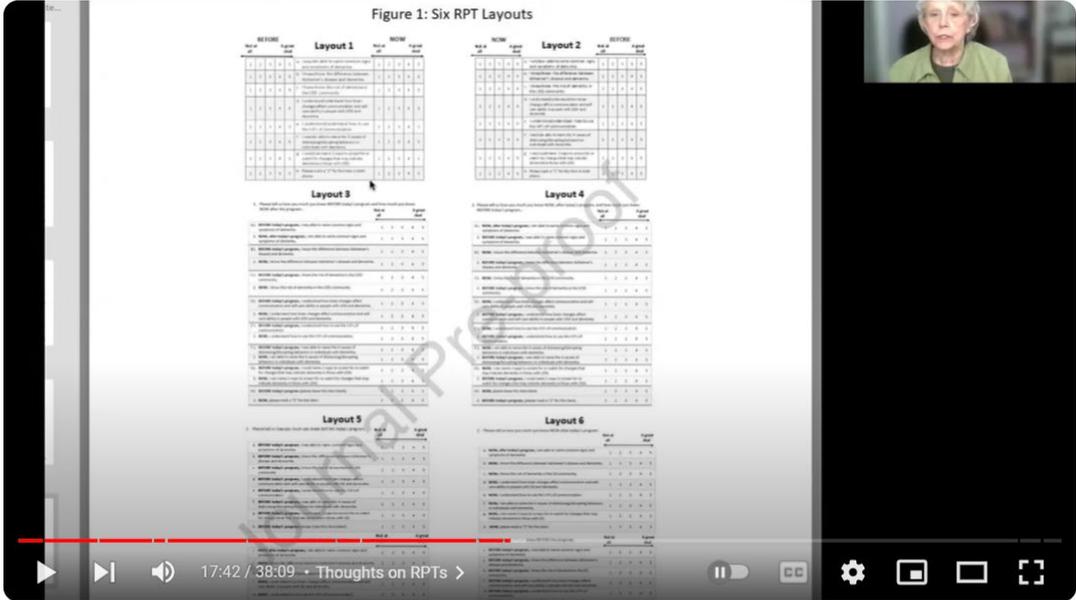
Designing a questionnaire with retrospective pre-post items:  
Format matters  
Melanie Hwalek, Kate Piece, Victoria Straub



**James Pann**

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Research and program evaluation videos pert:  
[evalnetwork.com](http://evalnetwork.com)

Subscribed



The Power of Retrospective Pretests to Address Common Survey Research Challenges

James Pann  
234 subscribers  
Subscribed

# What retrospective survey design is best?

A

BEFORE						NOW				
Not at All				A great deal		Not at All				A great deal
1	2	3	4	5		1	2	3	4	5
					I can reduce complex jargon into simpler topics appropriate for high school students.					
					I can talk to high school students in an engaging way about science.					

B

Please tell us how much you knew BEFORE attending these workshops and how much you know NOW after finishing the workshops.	Not at All				A great deal
	1	2	3	4	5
1a.) BEFORE these workshops I could reduce complex jargon into simpler topics appropriate for high school students.					
1 b.) NOW after completing these workshop, I can reduce complex jargon into simpler topics appropriate for high school students.					
2a.) BEFORE these workshops I could talk to high school students in an engaging way about science.					
2a.) NOW after completing these workshop I can talk to high school students in an engaging way about science.					

C

Please tell us how much you knew BEFORE attending these workshops and how much you know NOW after finishing the workshops.	Not at All				A great deal
	1	2	3	4	5
1a.) BEFORE these workshops I could reduce complex jargon into simpler topics appropriate for high school students.					
2a.) BEFORE these workshops I could talk to high school students in an engaging way about science.					
1 b.) NOW after completeing these workshop, I can reduce complex jargon into simpler topics appropriate for high school students.					
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# What retrospective survey design is best?

**A**

BEFORE						NOW				
Not at All						A great deal				
1	2	3	4	5	I can reduce complex jargon into simpler topics appropriate for high school students.	1	2	3	4	5
1	2	3	4	5		I can talk to high school students in an engaging way about science.	1	2	3	4

# What retrospective survey design is best?

**B**

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1a.) BEFORE these workshops I could reduce complex jargon into simpler topics appropriate for high school students.	1	2	3	4	5
1 b.) NOW after completing these workshop, I can reduce complex jargon into simpler topics appropriate for high school students.	1	2	3	4	5
2a.) BEFORE these workshops I could talk to high school students in an engaging way about science.	1	2	3	4	5
2a.) NOW after completeing these workshop I can talk to high school students in an engaging way about science.	1	2	3	4	5

# What retrospective survey design is best?

C

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2a.) NOW after completing these workshop I can talk to high school students in an engaging way about science.	1	2	3	4	5

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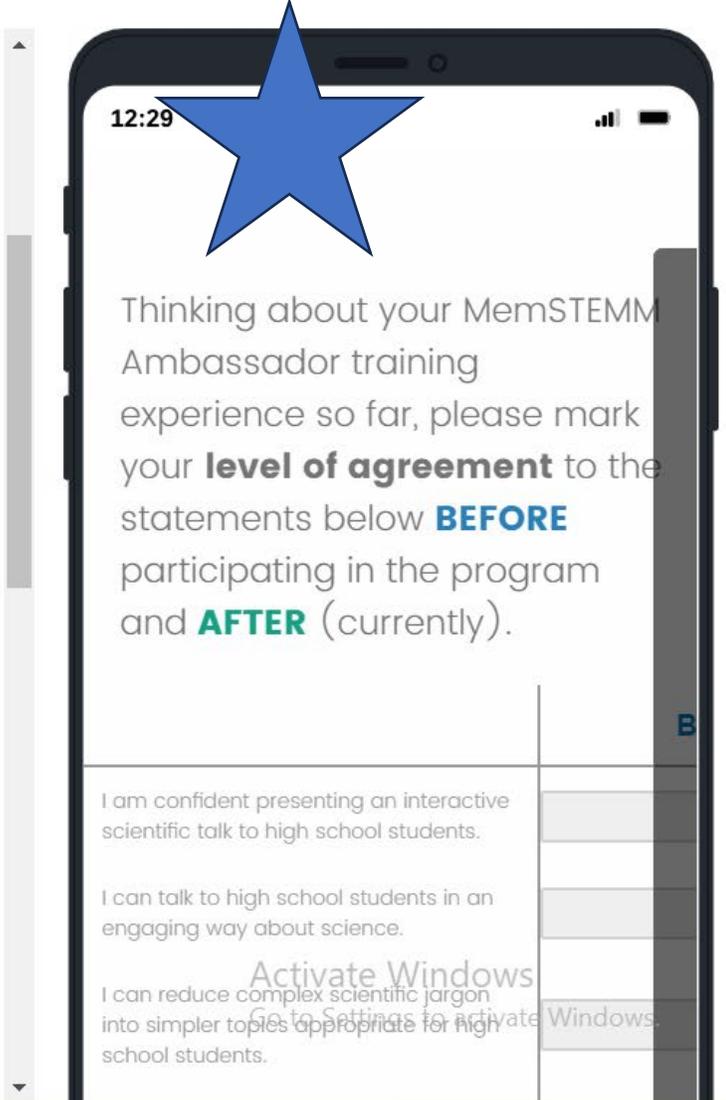
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# Retrospective Survey (Sondra's favorite format)

Thinking about your MemSTEMM Ambassador training experience so far, please mark your **level of agreement** to the statements below **BEFORE** participating in the program and **AFTER** (currently).

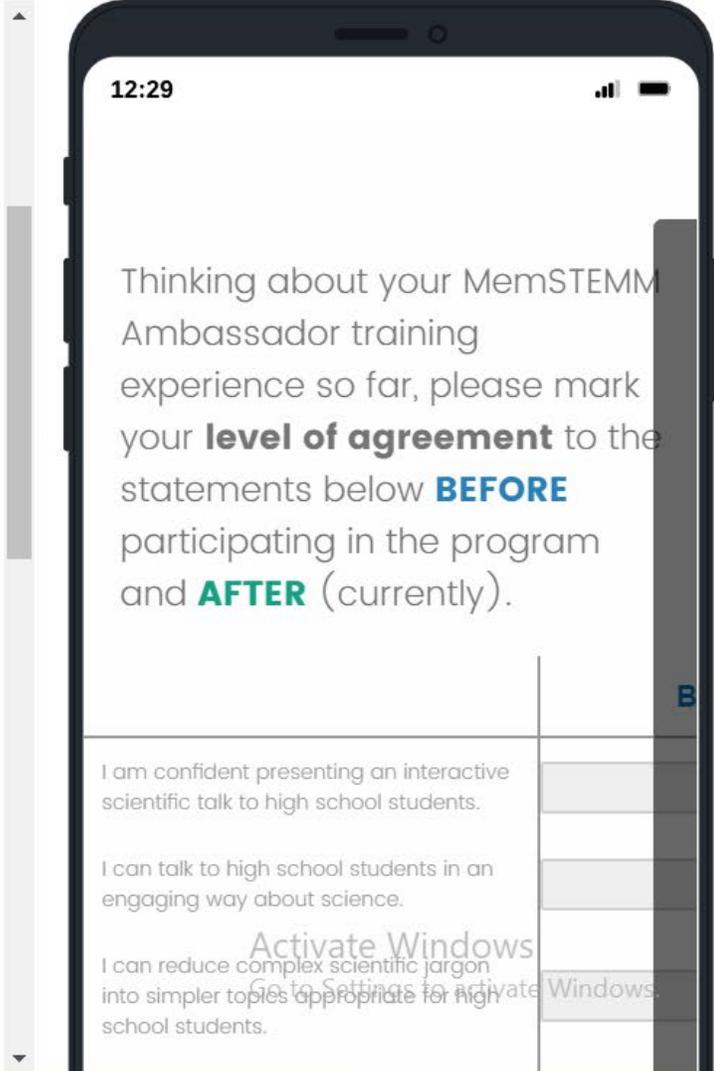
	BEFORE	AFTER (currently)
I am confident presenting an interactive scientific talk to high school students.	Strongly agree	
I can talk to high school students in an engaging way about science.	Strongly agree	
I can reduce complex scientific jargon into simpler topics appropriate for high school students.	Somewhat agree	
	Neither agree nor disagree	
	Somewhat disagree	
	Strongly disagree	
I can tell my story through images using appropriate colors, tones, and layouts.		



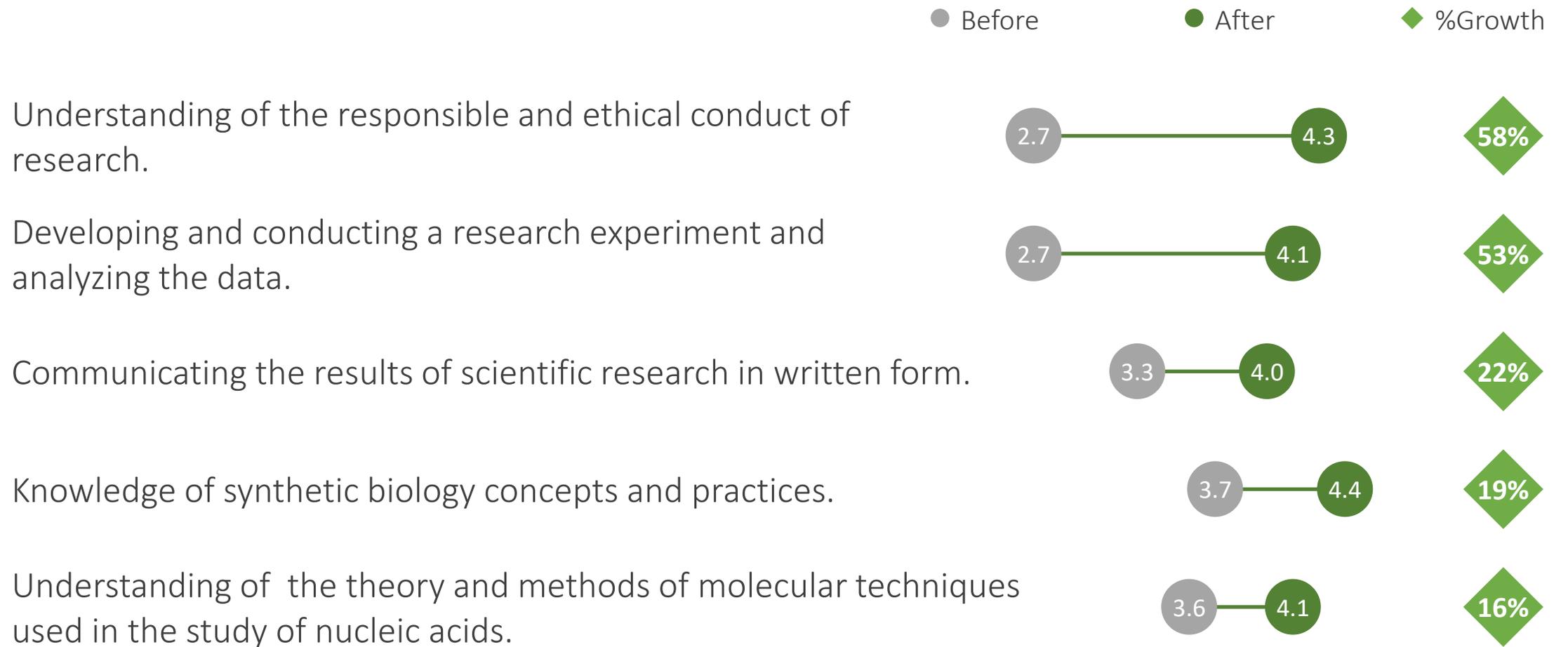
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	BEFORE	AFTER (currently)
I am confident presenting an interactive scientific talk to high school students.	Strongly agree	
I can talk to high school students in an engaging way about science.	Strongly agree	
I can reduce complex scientific jargon into simpler topics appropriate for high school students.	Somewhat agree	
	Neither agree nor disagree	
	Somewhat disagree	
	Strongly disagree	
I can tell my story through images using appropriate colors, tones, and layouts.		



# Survey Reporting



**Scale:** Not knowledgeable at all (1)      Slightly knowledgeable (2)      Moderately knowledgeable (3)      Very knowledgeable (4)      Extremely knowledgeable (5)



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<https://bit.ly/SPEAR-ATE>