Using Reconciliation as a Gospel Methodology for Teaching Science: Evolution as a Case Study

Jamie Jensen & Seth Bybee

Department of Biology

Inspired Teaching Series: Gospel Methodology in the Classroom

Gospel Topics Essay, 2023

- The essay, "…reiterated that 'the Church has no official position on the theory of evolution' and characterized it as a 'matter for scientific study.'"

The Second Century of Brigham Young University – Pres. Spencer W. Kimball

"Your double heritage and dual concerns with the secular and the spiritual require you to be '**bilingual**.' As scholars you must speak with authority and excellence to your professional colleagues in the language of scholarship, and you must also be literate in the language of spiritual things."

The Second Century of Brigham Young University – Pres. Spencer W. Kimball

"Your double heritage and dual concerns with the secular and the spiritual require you to be '**bilingual**.' As scholars you must speak with authority and excellence to your professional colleagues in the language of scholarship, and you must also be literate in the language of spiritual things."

What does it mean to be "bilingual" in your field?

How do we help students become **bilingual**?

"Dear Professor…your class helped me to spark a love for science and gain a greater understanding of the complementary nature of science and faith…and it was something I needed to hear today."

Vs.

"Dear Professor,…I have been going through a process of serious deconstruction of my Mormon faith. This process began when my very literal and dogmatic Mormon worldview was shattered as I became aware of the overwhelming evidence in support of evolution. This realization that everything I had been taught on this topic was likely wrong led me to question everything…to the point that I seriously doubt the very existence of God."

What makes the difference?

How do we practice "bilingual-ness"?

Nature of science

Understanding that science is **agnostic**.

What does it mean to be "agnostic"?

Nature of God

The scriptures are laid before thee, yea, and all things denote there is a God; yea, even the earth, and all things that are upon the face of it, yea, and its motion, yea, and also all the planets which move in their regular form do witness that there is a Supreme Creator.

--Alma 30:44

What are the major bilingual needs among your students?

What are the major bilingual needs among your students?

How do we address them?

The Problems

Scriptural Conflict

- *Sola Scriptura* (the scriptures are the only truth)
- Biblical Literalism/Biblical Interpretation
- Lack of single authorized interpretation

Doctrinal Conflict

- Discrepancy in religious leaders' interpretations
- A lack of awareness of doctrine
- Misunderstanding of how doctrine is established

Philosophical Conflict

- Acceptance as a "slippery slope"
- Topic as the antithesis of God
- Hazardous downstream consequences

Cultural Conflict

- Identity-Protective Cognition
- False impression of community consensus
- Hazardous Cultural Border Crossing

What does this look like for your topic?

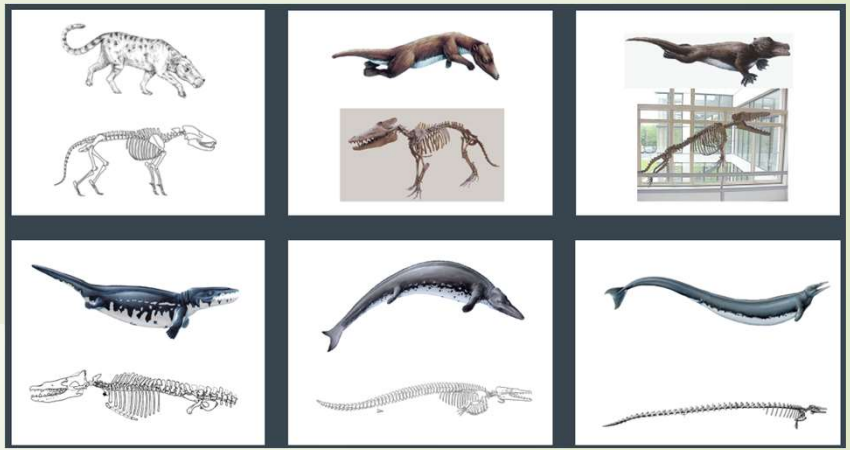
The Problems

1. **Scriptural Conflict**

- *Sola Scriptura* (the scriptures are the only truth)
- Biblical Literalism/Biblical Interpretation
- Lack of single authorized interpretation

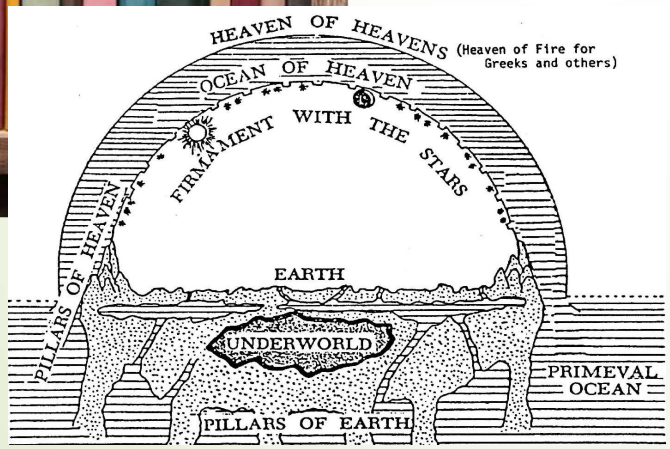
How would you help students overcome <u>scriptural</u> conflict?

Genesis 1:21
And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind: and God saw that *it was* good.



	The Problems	The Solutions
Scriptural Conflict	• *Sola Scriptura* (the scriptures are the only truth) • Biblical Literalism/Biblical Interpretation • Lack of single authorized interpretation	• Explain alternative scriptural interpretations

What is Genesis?



"There is no conflict between science and religion. Conflict only arises from an incomplete knowledge of either science or religion, or both…"

Elder Russell M. Nelson of the Quorum of the Twelve Apostles said during the dedication of the new Life Sciences Building at Brigham Young University on April 9, 2015.

	The Problems	The Solutions
Scriptural Conflict	• *Sola Scriptura* • Biblical Literalism/Biblical Interpretation • Lack of single governing body	• Explain alternative scriptural interpretations • **Council against a "God of the Gaps"**

What is a "God of the Gaps"

Can you think of examples today?

The Problems

1. Scriptural Conflict

- *Sola Scriptura* (the scriptures are the only truth)
- Biblical Literalism/Biblical Interpretation
- Lack of single authorized interpretation

Now it's your turn: How would you help students overcome conflict?

The Problems

2. Doctrinal Conflict

- Discrepancy in religious leaders' interpretations
- A lack of awareness of doctrine
- Misunderstanding of how doctrine is established

Joseph Fielding Smith
Man, His Origin & Destiny

B.H.Roberts
The Truth, The Way, The Life

James Talmage
The Earth and Man

Bruce R. McConkie,
Mormon Doctrine

How would you help students overcome <u>doctrinal</u> conflict?

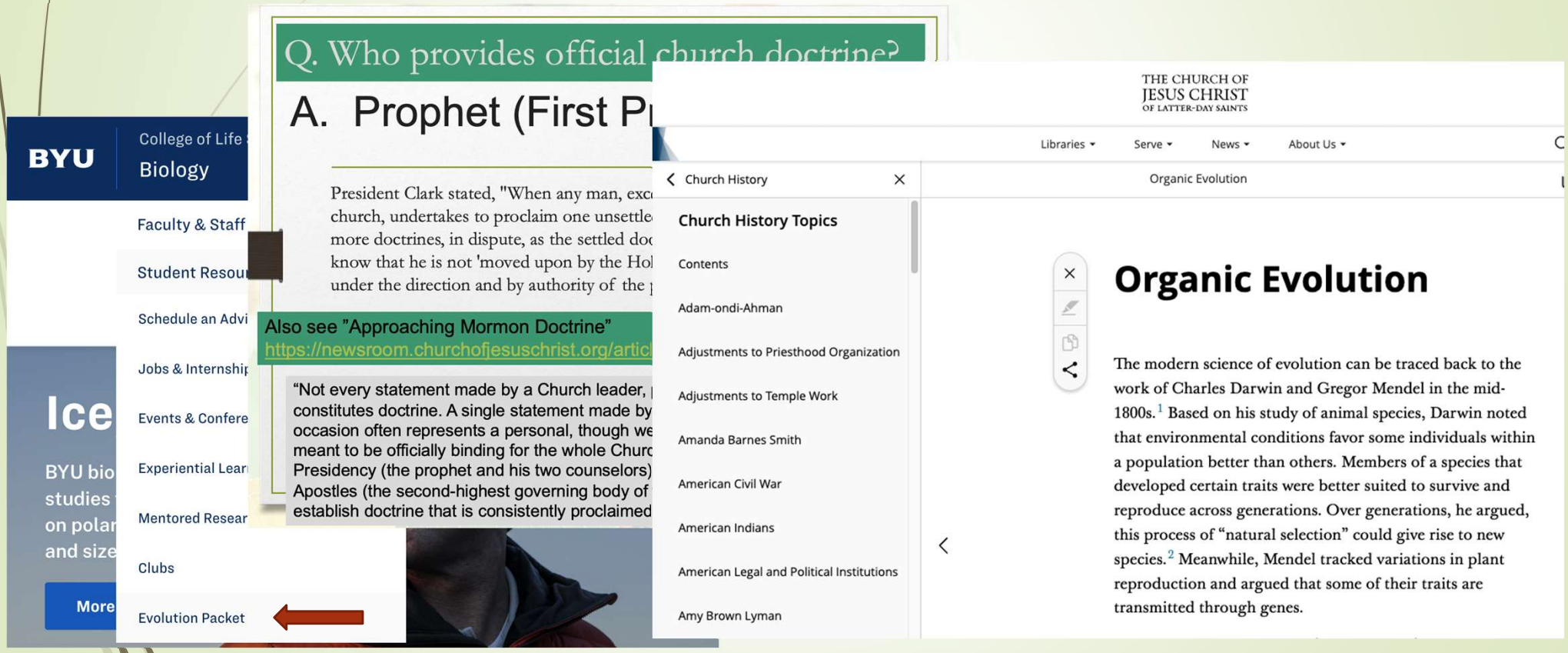
The Problems

The Solutions

Doctrinal Conflict

- Discrepancy in religious leaders' interpretations
- A lack of awareness of doctrine
- Misunderstanding of how doctrine is established

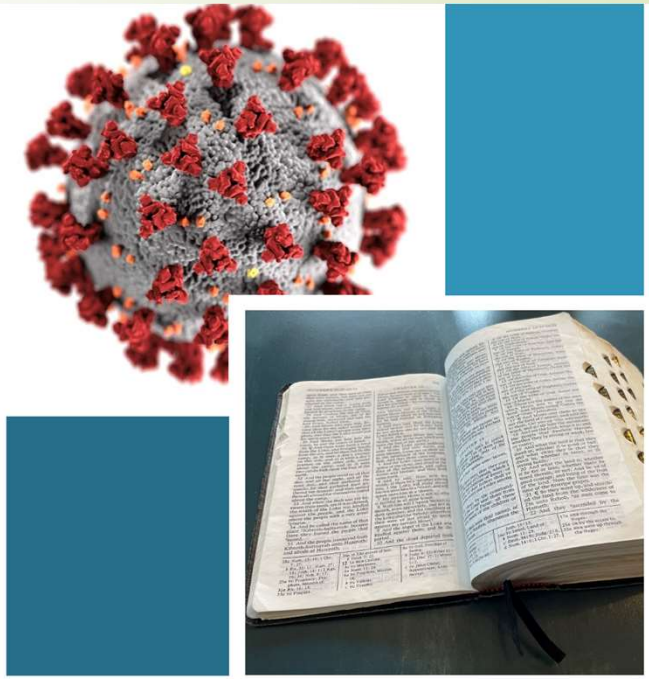
- Providing information about doctrine and how doctrine is established



	The Problems	The Solutions
Doctrinal Conflict	• Discrepancy in religious leaders' interpretations • A lack of awareness of doctrine • Misunderstanding of how doctrine is established	• Providing information about doctrine and how doctrine is established • **Encouraging comfort with uncertainty**

Science
vs.
science

Ongoing
Journey of
Faith



The Problems

2. **Doctrinal Conflict**

- Discrepancy in religious leaders' interpretations
- A lack of awareness of doctrine
- Misunderstanding of how doctrine is established

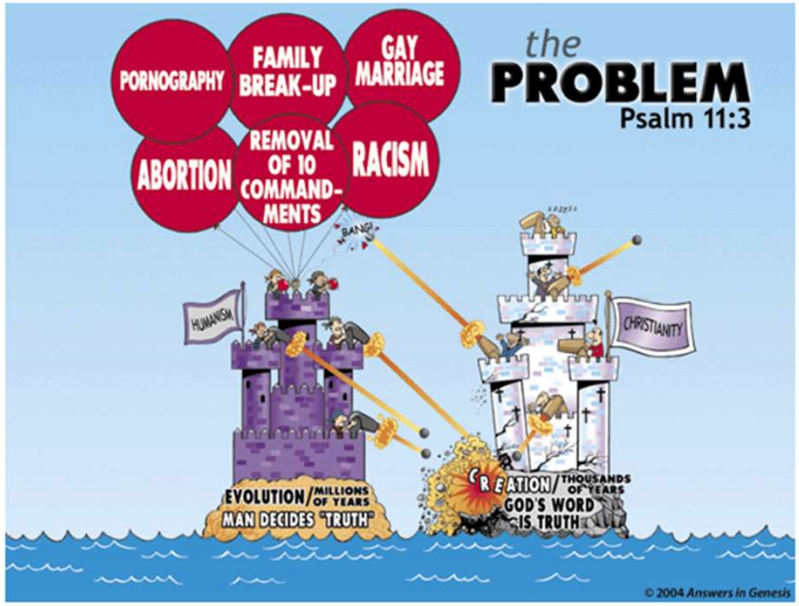
Now it's your turn: How would you help students overcome conflict?

Philosophical Conflict

The Problems

- Acceptance as a "slippery slope"
- Topic as the antithesis of God
- Hazardous downstream consequences

How would you help students overcome <u>philosophical</u> conflict?



Ken Ham's "Dueling Castles"

What do people do in situations that cause hazardous downstream consequences?

- **Cognitive dissonance avoidance**: I will avoid information that disrupts my mental schema unless it is sufficiently convincing such that I feel the need to accommodate (Festinger, 1957)
- **Identity-protective cognition**: I see a threat to group membership as a threat to self; therefore, I tend to adopt beliefs consistent with my group and to ignore contrary factual information, particularly if it originates from an "out-group" source (see Kahan, Braman, Gastil, Slovic, & Mertz, 2007)
- **Scientific impotence discounting**: since the data I am seeing is contrary to my well-formed worldviews, it must mean that science itself is unable to answer these questions (Munro, 2010)

	The Problems	The Solutions
Philosophical Conflict	• Acceptance as a "slippery slope" • Evolution as the antithesis of God • Hazardous downstream consequences	• Help them understand the nature of science as an <u>agnostic</u> pursuit

Universal Model – the belief that the center of the earth is water and that the earth is less than 10K yrs old

Young Earth Creationism– the belief that the earth was created <10K yrs ago by God as literally interpreted from Genesis

Intelligent Design– the belief that life is too complex to have arisen through gradual evolution and therefore must have an intelligence involved

Not Scientifically Compatible

Day-Age Creationism – the belief that the creation took place in six time periods of unknown length, but as described in Genesis

Progressive Creationism – the belief that there were multiple God-guided creation events that happened over hundreds of millions of years

Potentially Scientifically Compatible?

Theistic Evolution – the belief that modern diversity arose through evolution with God guiding it

Agnostic Evolution – the belief that modern diversity arose through evolution with no statement on whether God was involved or not

Atheistic Evolution – the belief that modern diversity arose through evolution and God was <u>definitely not</u> involved

Rely on faith in something for which we have no <u>scientific</u> evidence

Science is **<u>Agnostic</u>**

	The Problems	The Solutions
Philosophical Conflict	• Acceptance as a "slippery slope" • Evolution as the antithesis of God • Hazardous downstream consequences	• Help them understand the nature of science as an agnostic pursuit • Use language that facilitates cognitive consistency

Facilitating Cognitive Consistency…

1st ask yourself:

- Are there group memberships at play in my audience that may make this information cognitively dissonant? How can I address these?
- Are there *hazardous* consequences of accepting this information? How can I avoid th

2nd reassure: "I recognize that evolution may conflict with what you currently think and that is okay. I'm not out to change what you think. I just want to offer you some new information to consid

3rd be aware:

- Frequently check in and allow your audience t share their points of cognitive conflict.
- Never belittle, never question their intelligence morality

4th offer an alternative that explains *why* the faulty information was initially thought to be *correct*. (e.g., Rapp & Kendeou, 2007)

Example: "Many people reject evolution based on a literal reading of Genesis, and that would make sense. But let's talk about what Genesis was to its authors, as a literary work…(i.e., it was not meant to be literal)"*

5th offer an alternative that explains *why* the faulty information was even *offered* (the motivation). (e.g., Lewandowsky, Stritzke, Oberauer, & Morales, 2009)

Evolution: "Many religious people worry about the dangers of accepting alternative interpretations of scripture (i.e., sola scriptura), so they are understandably hesitant to consider a non-literal reading of Genesis…"

Philosophical Conflict

The Problems

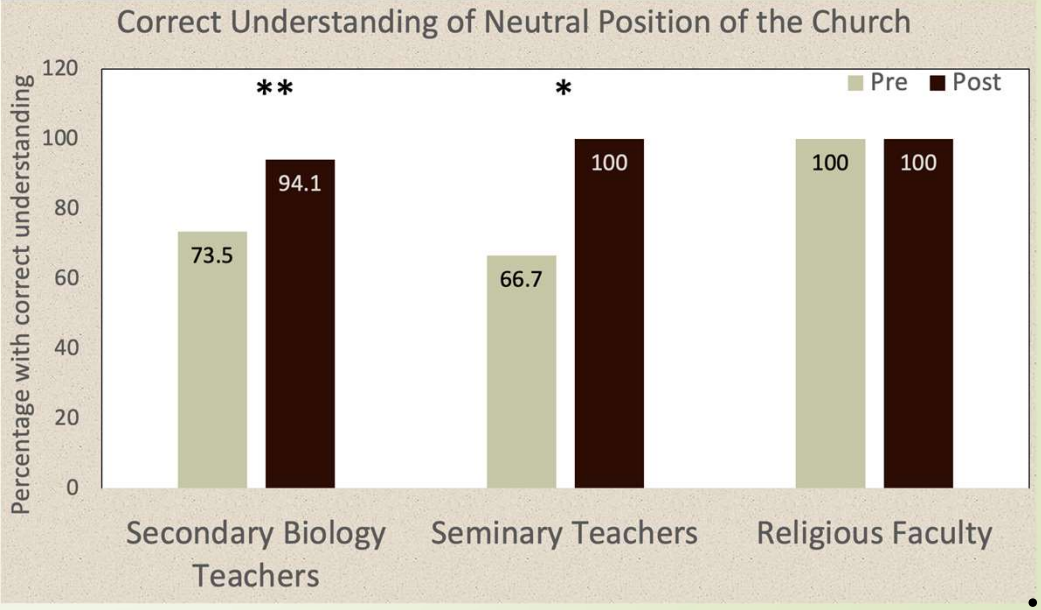
- Acceptance as a "slippery slope"
- Topic as the antithesis of God
- Hazardous downstream consequences

Now it's your turn: How would you help students overcome conflict?

The Problems

Cultural Conflict

- Identity-Protective Cognition
- False impression of community consensus
- Hazardous Cultural Border Crossing



Let me share a little experiment we did…

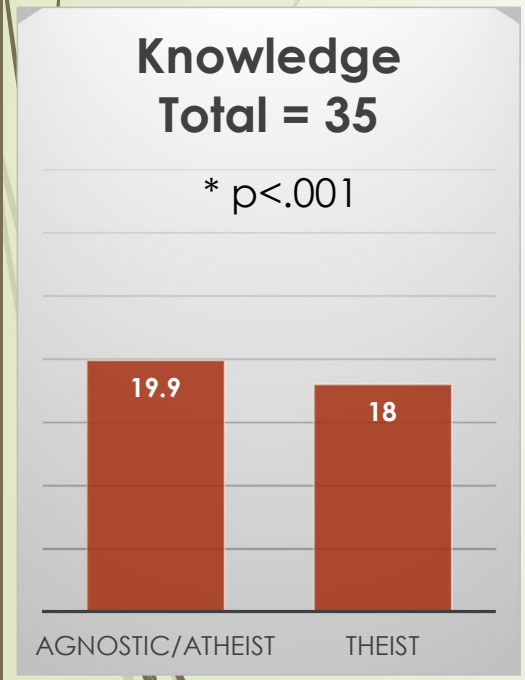
Nationwide sample via Qualtrics: 408 individuals who affiliate with a Judeo-Christian Religion and 421 individuals who identified as Agnostic or Atheist
(New unpublished data)

But

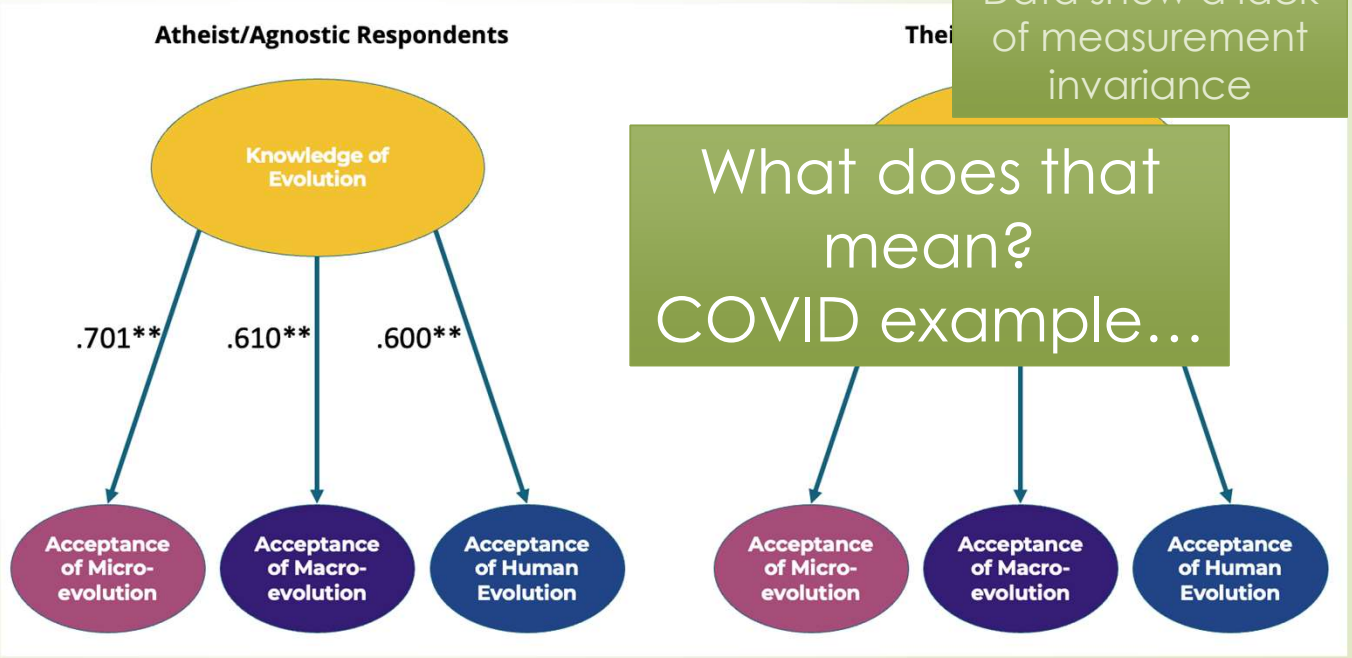
Table 2: Evidence of lack of measurement invariance

Population	RMSEA	CFI	TLI	SRMR	AIC
Ath/Ag	0.049	0.901	0.891	0.054	35381.57
Theist	0.054	0.920	0.912	0.063	45917.93
Configural	0.051	0.911	0.902	0.058	81299.50
Metric	0.054	0.899	[illegible]	0.074	81585.49
Scalar	0.058	0.883	0.877	0.078	81949.60

Data show a lack of measurement invariance



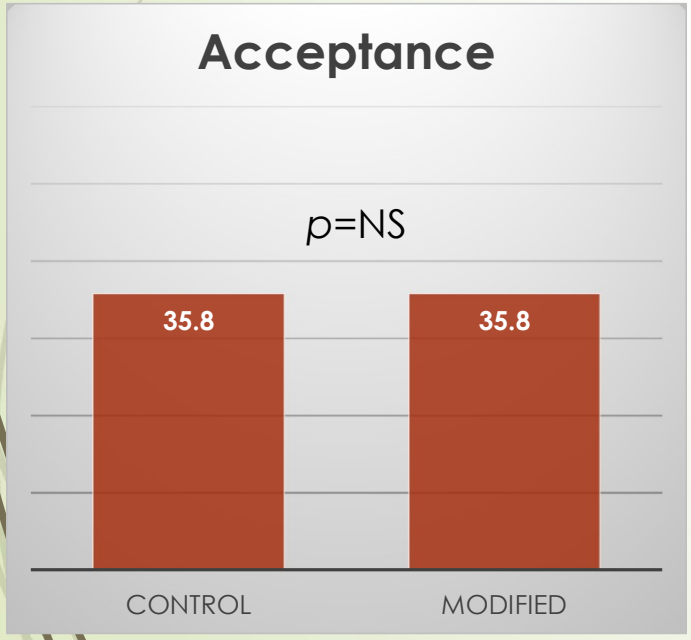
And…

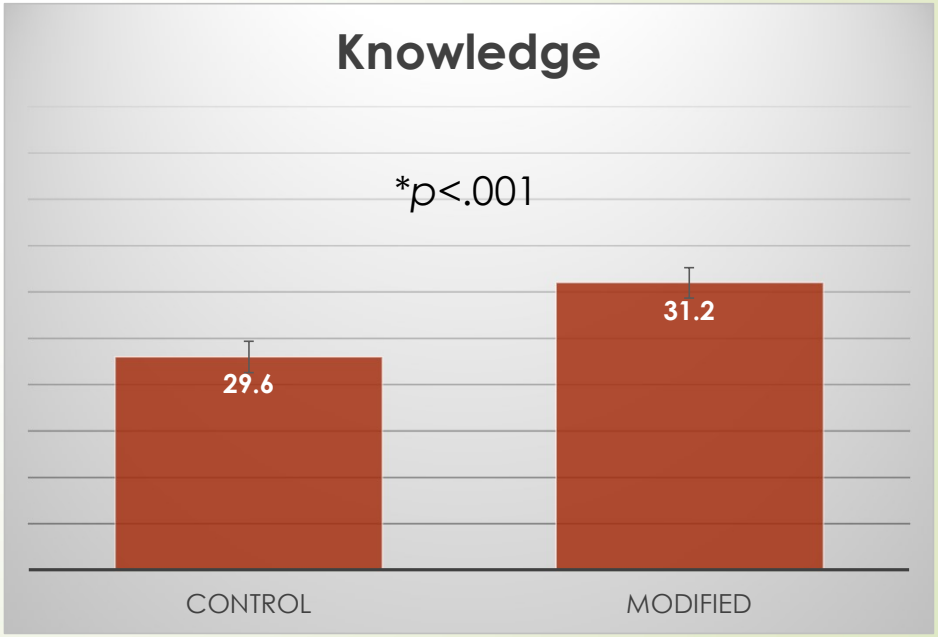


What does that mean?
COVID example…

Are Theists less knowledgeable *or* are they answering wrong "on purpose"?

294 Bio 100 students at BYU;
Control (N=153): took standard knowledge assessment (EALS; total of 49)
Modified (N=141): added "**According to science**,"
(*New unpublished data*)

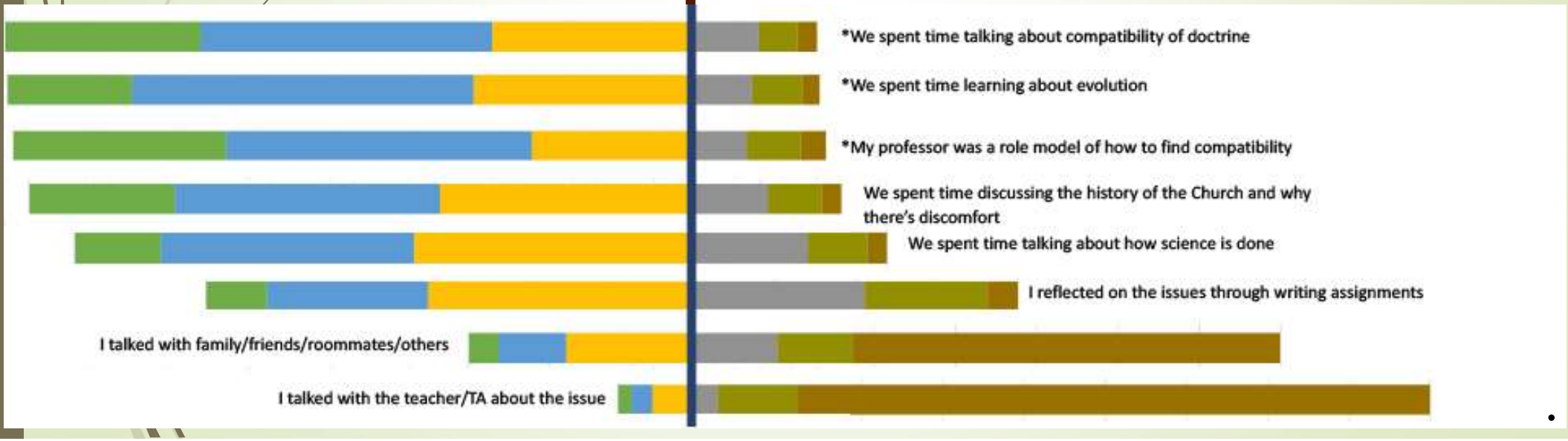




	The Problems	The Solutions
Cultural Conflict	• Identity-Protective Cognition • False impression of community consensus • Hazardous Cultural Border Crossing	• Provide "In-Group" Role Models • Use Cultural Competence with Reconciliation

Very Strongly Influenced
Strongly Influenced
Somewhat Influenced
Very Little Influence
No Influence
N/A

Ferguson, DG, & Jensen, JL. (In Press) Role models, compatibility, and knowledge lead to increased evolution acceptance. *Evolution: Education & Outreach*



Cultural Competence

- Being aware of, and sensitive to, the different cultures in your audience.

What are the cultures present in your classroom that could present conflict with your subject matter?

The Problems

Cultural Conflict

- Identity-Protective Cognition
- False impression of community consensus
- Hazardous Cultural Border Crossing

Now it's your turn: How would you help students overcome conflict?

Summary

Religious Barriers

- Scriptural Conflict
- Doctrinal Conflict
- Philosophical Conflict
- Cultural Conflict

- Practice Cultural Competence
  - Give students a seat at the "solutions" table
  - Use "ingroup" role models
  - Listen to their concerns

Solutions

Explain alternative scriptural interpretations
Council against a "God of the Gaps"

- Provide information about doctrine and how doctrine is established
- Encourage comfort with uncertainty

- Help them understand the nature of science as an agnostic pursuit
- Use language that facilitates cognitive consistency

- Provide "In-Group" Role Models
- Offer "faith friendly" Resources to facilitate smooth border crossing, i.e., Reconciliation