**Reconciling Evolution & Religion**

**A Church of Jesus Christ of Latter-day Saints (CJC) Perspective**

Instructor Guide

**BACKGROUND INFORMATION**

**Learning Outcomes**

*Part 1– The Nature of Scientific Theories and Definition of Evolution*

1. Discriminate what scientists mean by the terms *evidence*, *hypothesis*, and *theory* in contrast to other colloquial uses.

2. Define evolution.

*Part 2 – Reconciling Evolution with Religion*

1. Contrast science as a way of knowing to other ways of knowing.

2. Define the position of the Church of Jesus Christ of Latter-day Saints (CJC) on evolution.

3. Discuss ways in which science and religion are compatible in regard to evolution.

**Type of Course**: Biology, lower division, majors and non-majors

**Suggested Location in the Curriculum**: Students should have already been introduced to the basics of hypothesis testing and a beginning-level understanding of the nature of science and the definition of biology. This lesson should directly precede any instruction on evolution. Part 1 of this lesson is a culmination of the nature of science and an introduction to evolution. Part 2 of this lesson is designed to help students reconcile their faith with the scientific evidence.

**Estimated Time**: Part 1 takes one 50-minute class period. Part 2 takes an additional 50-minute class period. Part 1 is optional if the nature of science has already been covered thoroughly. Estimated time for homework: the pre-assignment should take about 30 minutes, as should the post-assignment.

**Advanced Preparation for Instructor**: It is recommended that instructors read the following documents that outline all official statements made by Church leadership on the subject of evolution:

· BYU Evolution Packet (containing the 1909 First Presidency Statement, the 1910 First Presidency Message on Science, the 1925 First Presidency Statement, and the Encyclopedia of Mormonism entry on Evolution): <http://biology.byu.edu/Portals/10/docs/Evolution%20Packet.pdf>

· The recent *New Era*“To the Point” statement: <https://www.lds.org/study/new-era/2016/10/to-the-point/what-does-the-church-believe-about-evolution?lang=eng>

· *Evolution and the Church of Jesus Christ of Latter-day Saints*, Ben Spackman (insert URL)

**Supplies Needed**: Part 1. LEGO contraptions in opaque bags; LEGO pieces for building. Part 2. None. (Optional: consider providing each student with a copy of the official statements of the Church.)

**Cultural Barriers to be Considered**: The Church of Jesus Christ of Latter-day Saints has a neutral position on the theory of evolution, including human evolution. However, the Church has an embroiled past wrought with conflict between Church authorities who embraced evolutionary principles and Church authorities who rebelled against them. Culturally, the Church is one of the least accepting faith traditions in the United States[1]. The major conflicts with evolutionary theory that students likely perceive are as follows[2]:

1) Animals can adapt and change over time (e.g., natural selection occurs) but there are no ‘change in kinds’ (i.e., speciation events do not occur). This comes primarily from the Genesis account (Genesis 1) that refers extensively to the fact that each life form “brought forth abundantly, after their kind…” “Kind” has been interpreted by many to mean ‘species’, although this is never clarified anywhere in scripture or modern revelation. These ideas have been perpetuated by many prominent Church figures including Elder Joseph Fielding Smith in *Man, His Origin and Destiny* and more recently by Elder Russell M. Nelson in a 2007 interview by the Pew Forum [3].

2) Animals may evolve, but humans do not. We have been created in the image of God out of the dust of the earth and placed in the Garden of Eden. This belief comes from the Biblical account of the creation in the Book of Genesis as well as the account of the creation given in the Pearl of Great Price, specifically in the Books of Moses and Abraham. The Pearl of Great Price is an additional book of scripture used by the Church of Jesus Christ of Latter-day Saints. It is further perpetuated in some of the temple liturgy. However, these accounts can differ widely between a more literalist interpretation (2 Nephi 2:22-25) to a more developmental creation (Abraham 4).

3) There was no death before the fall of Adam, therefore, evolution could not have occurred since nothing died before the first humans. This statement is primarily a result of a literalist interpretation of verses found in the Book of Mormon: 2 Nephi 2:22-25. Much debate has surrounded these verses among many apostles, including Elder James E. Talmage. The Church has since published statements about dinosaurs living and dying long before man, but no reconciliation has been offered. This statement appears in the Bible Dictionary, a non-canonized helper to the Bible used by members of the Church; however, this book (per its preface) is not meant to convey the doctrine of the Church.

**Establishing Respect in the Classroom**: In order to establish a respectful environment for this discussion, begin the class by explaining the purpose of this lesson: to help students feel more comfortable learning about evolutionary principles and to feel like there are ways that they can reconcile their religious beliefs with science. Encourage students to ask questions and interject comments whenever they feel like they need to. This should be an open and friendly discussion. Ask all students to be respectful of others’ points of view, regardless of whether they agree or not. It could be helpful, in a culturally diverse classroom environment, to be clear that it is expected that some students may be coming into the classroom with a dramatically educational background regarding evolution, the creation, etc., and that class members should be sensitive to these differences. This diversity in backgrounds should be viewed as an institutional benefit that can enrich the discussion on evolution and faith.

**OUTLINE OF RECONCILIATION ACTIVITIES**:

**Pre-Class Assignment(s)**: In an effort to prime students for this discussion, students will be asked to respond to the following prompt using their online LMS before coming to class:

Your assignment is to write an approximately 500-word statement that expresses your personal sentiments about evolution. Do not study the text or read other sources on the subject; this is not a research paper. We're interested in reading your current, individual opinion. What is your concept of evolution? What are the words, images, or feelings that come to you when you hear that word? After reading your statement we should be able to know clearly what evolution means to you: how you define it, what you know or don't know about it, whether it evokes positive or negative feelings, and anything else that is relevant to your point of view. After you've described what that view is, explain how you've come to that position, including how previous courses (in science, religion, etc.) may have influenced this position. What are your sources of information? Who has influenced you?

**Part 1. The Nature of Scientific Theories and Definition of Evolution**

· Students are presented with a mystery structure made out of LEGO®construction blocks in an opaque cloth bag. They are also presented with a random assortment of LEGO pieces (including, but not limited to, the pieces needed to reconstruct the mystery structure; make sure additional pieces include different colors and combinations of LEGO blocks that could potentially be used to build the structure). They are instructed to recreate the structure in the bag WITHOUT looking in the bag. They may feel inside the bag all they want. (NOTE: I have six set-ups of this; so in a small class, I might allow everyone to participate; in a larger class, I give it to six volunteers and have them work on it while we have a class discussion about the second part of the activity. Alternatively, you can show students this short video of the activity: <https://youtu.be/tMrbzCz-xm8>)

· Once students have built their models, have them come up and show the class and compare their models. Ask students, “Are there any differences between these contraptions?” List them on the board. The first thing students will notice is that there are differences in the color. They might also notice, however, that there may be differences in actual LEGO pieces. For example, a student may have used a LEGO head whereas someone else used a cylinder, or perhaps one student used two 2x1 pieces instead of a single 4x1 piece.

· Then ask, “Can any of these differences be resolved? How might we resolve them?” The answer: gather additional evidence and collaborate with one another. Allow the volunteers about 5 minutes to confer with each other, feel in the bag again, and make any changes they’d like to make. Usually after this 5 minutes, all six volunteers have identical structures, at least in regard to the *type* of LEGO piece used.

· Then ask students, “Can color ever be resolved with collaboration or additional touch evidence?” Obviously, color cannot be resolved unless you look in the bag, and we *can’t* look in the bag. Ask students, “What if our equipment is just never advanced enough to ‘look in the bag’? Given that’s the case, is anyone’s model better than another’s? How would we ever know who is right? Could we ever know?” Discuss with students the idea that perhaps we could invent some equipment in the future that could detect color by feel (e.g., an IR device that would bounce back information from the pigments in the LEGO pieces, etc.). So, perhaps in the future, we could get this even more exact. But for now, this is the best model we can create.

· Now make the connection between this activity and the way that science is done. Ask students, “What do these ‘models’ that they built represent? And on what are these models based?” Explain that these models represent **theories** and they are built using the BEST evidence we can gather, as scientists. *Theories are explanatory models for a set of phenomena.*

· Ask students, “What is the difference between a *theory* and a *hypothesis*?” (Hopefully students have already covered hypothesis testing at this point.) Explain that a **hypothesis** is narrower than a theory. It attempts to explain *one* phenomenon. To extend our analogy, students proposed and tested many hypotheses as they built their model. For example, they hypothesized that the top piece was a LEGO head. To test their hypothesis, they felt in the bag and gathered evidence. They compared the feel of the object in the bag with a LEGO head and with a cylinder piece and decided which hypothesis was better supported. Each hypothesis, being tested and supported, leads to a larger explanatory model.

· Ask students, “How does the common use of the term *theory* differ from the scientific use of the term *theory*?” Explain that we often use the term *theory* in common vernacular to refer to a guess or a hunch, e.g., “I have a theory about why my stomach hurts.” This is an incompatible use of the word theory with the scientific use of the word. A scientific theory is the *best* explanation of a set of phenomena given all of the available evidence. How sure are scientists of the accuracy of a theory? Pretty darn sure! At this point, it might be useful to have students discuss what other scientific theories exist as a point of comparison (e.g., germ theory, gravity, relativity). But, are there aspects of theories of which we might still be unsure (e.g., the color of the LEGO block)? Yes. But, as we gather more evidence, we can become more and more sure of the accuracy of our model. To build this model, scientists collaborate with each other to refine the theories and make sure that they are the most in line with what evidence we have. How sure do you think those students are that they have built the right model? Pretty sure. Except for color, there is probably little doubt in their minds that they have built the right model.

· Now make the connection with evolution. Ask students to think about the theory of evolution. Before we define it, ask, “How sure are we of evolutionary theory?” Well, being called a theory, by definition, it is built using the best evidence we can gather and through great collaborative efforts. But, can we ever go back in time and witness the creation of all of this diversity (i.e., can we ever look in the bag)? Unfortunately, we cannot. So, we gather as much evidence as is currently available and we build a theory. Remember, a theory, though, is not the same as the common use of the word in our everyday vernacular. A theory is more than a guess. A theory is a model based upon large amounts of evidence (the best evidence we can gather) and through countless collaborations. How sure are scientists that evolution is the most likely explanation for the diversity of life? Pretty darn sure.

· So, let’s define evolution. Ask students to work with a partner and come up with a definition of evolution. After they have had a few minutes to discuss it, ask students to share out, writing all answers on the board. Together as a class, refine the definition to something to which the class can agree. Ultimately, evolution can be defined by two principles: ‘common descent’ and ‘with modification’. ‘Common descent’ refers to the idea that all organisms share a common ancestry. ‘With modification’ refers to the idea that organisms have changed over time into their present form. In simple terms, evolution is the change in allele (genetic characteristics) frequencies over time (what some refer to as ‘microevolution’). These changes can lead to speciation events (i.e., ‘macroevolution’). At this point, it might be helpful to point out that this implies that humans, along with all other forms of life, share a common ancestor, from which we have descended with modification. Oftentimes, students assign the word ‘evolution’ to only macroevolution (or even only to human evolution). And generally, macroevolution is what gives students the most trouble from a religious standpoint. It is important, though, to clarify what you mean by evolution before you move on to Part 2 of this activity. Explain to students that we will cover all of the evidence of evolution throughout the unit, but be sure that students are clear on this basic definition of evolution in preparation for the reconciliation activity.

**Part 2. Reconciling Evolution with Religion**

*Acknowledging the existence of conflict*

· Begin with establishing that there may be perceived conflict between religion and evolution for your students. Oftentimes, we choose to ignore the proverbial ‘elephant in the room’ and this only serves to make students more uncomfortable. By acknowledging that there may be discomfort and that you are aware of that, it puts students into a more open mindset. At this point, it is helpful to show them the data from the Pew Surveys on religion and evolution as well as the Miller et al. (2006) study, some data from Jensen et al., (2019), and Gallup polls to show them that they are not alone in this perceived conflict and that it is indeed an issue, especially here in the United States, and more so in some religions than others (see S1 slides 2-5).

· Ask students why they think this conflict might exist and elicit a discussion about potential conflicts they might feel.

· Establish why you care that they have an understanding of evolution. In other words, why are you bothering to try to help them work through the conflict? Why is it important that they learn evolution? I share the quote from Dobzhansky (S1 slide 6) and explain that everything they will learn in biology has a basis in evolution, so it is important to understand this principle. I also share a few examples of using evolutionary principles to make every day decisions. For example, a flu vaccine is recommended every year because we understand that the flu virus evolves each year into something new to which our bodies are not immune. We choose to be judicious in our use of antibiotics because we realize that each time we use antibiotics we help to select for resistant strains of bacteria. We often take advantage of medical treatments that have been first developed and refined in mice, rats, or primates with the assumption that we share a common ancestor and therefore will react similarly. We make many decisions on conservation efforts based on preserving the most phylogenetically diverse organisms. There are many examples you can share.

*Addressing the difference between science and religion*

· To begin to help students reconcile faith and science, begin by pointing out that science and religion are answering different questions about the creation, about life, and about diversity (S1 slides 7-10). Science is attempting to explain *how* it happened and *when*—how modern diversity came to be, when species split from others, when humans evolved, etc. Religion attempts to answer *who* was involved and *why* it occurred—establishing God as the father of creation and explaining why there are all these organisms, why the earth was created, and why we are here. If we understand the differences between these two ways of knowing, and more importantly the limitations of each, it is easier to bring them together in harmony. Share the quote by Elder Russell M. Nelson about the compatibility of science and religion and about how when conflicts arise, it is only because we have an incomplete knowledge either from a science or religious point of view. Talk about the great power and wisdom of God and how there will always be gaps in our understanding as long as we are mortal, sharing a scripture from the Book of Mormon – Jacob 4:8-9 (S1 slide 11). At this point, one could also discuss the quotes from Stephen Jay Gould on the idea of non-overlapping magisteria: “Science tries to document the factual character of the natural world, and to develop theories that coordinate and explain these facts.

Religion, on the other hand, operates in the equally important, but utterly different, realm of human purposes, meanings, and values — subjects that the factual domain of science might illuminate, but can never resolve.”

*Addressing creation from a religious standpoint*

· To help students consider their own religion’s perspective on the Creation, this part of the lesson will discuss both scriptural and other religious sources. It is my experience that most CJC students are very ignorant to their own religion’s doctrine, so it is important to make them aware of their own doctrine.

· First, have students consider what we actually ‘know’ from the creation account in Genesis. Have them read Genesis 1:20-21 referring to animals and 1:26-27 referring to humans (S1 slides 12-13). The take-aways from these scriptures are that we know that God created animals and humans and we know that he was pleased by what he created. We know that we are in the image of God. But, it says nothing of *how* God did all of this. Here, it is appropriate to emphasize that it is open for interpretation and certainly does not oppose anything we have found in science.

· Consider the different interpretations people have made about creation and whether or not they agree with CJC theology. Show students the “Creationist Creed” (Henry Morris, Creation Research Institute; S1 slide 15). Think/Pair/Share – is this statement compatible with our doctrine? Two issues students should notice: 1) We do not believe that creation has stopped, or that the processes God used are no longer happening, and 2) We do not believe we are limited exclusively to revelation to gain understanding; we are firmly accepting of scientific evidence – this may be a good time to refer students to the 1910 Christmas Message in the Evolution Packet that states, “Our religion is not hostile to real science. That which is demonstrated, we accept with joy…”

· Briefly put this creationist viewpoint in context of American history. Show students several key events in the national history of this conflict (S1 slide 16). Discuss the idea of *ex nihilo* creation. This is a core principle of creation in many Christian religions [4]. However, it is *not* a core principle of the CJC faith. We believe that matter was ‘organized’ rather than created out of nothing. The idea behind most of the attacks on evolution by creationist societies is the premise that evolution is simply wrong and that any evidence that can be used to punch holes in the theory in turn bolsters their theory; in other words, they are not required to provide any evidence for their own theory, just that evolution is incorrect. These efforts have hurt, rather than helped to bridge the gap between science and religion. In the notes of the slide are some details about the court cases listed in this slide. Show these events to put in perspective the reasons for such controversy in the United States over this topic. It has had a litigious history.

· Spend a brief moment discussing the definition of Intelligent Design (S1 slide 17). Allow students a moment to read the definition and decide whether or not they agree. Intelligent design is often a very tempting stance for members of the CJC. Often it is because students don’t actually know the definition and are confusing intelligent design with theistic evolution. I try to point out the differences in a non-threatening and non-condescending way just so that students understand the difference between intelligent design (life shows evidence of an intelligent designer such that many things are too complex to have evolved) and theistic evolution (God used evolution to design all of the creatures alive today), so that they can make an informed decision about what they believe.

· Now cover the official statements of the Church of Jesus Christ of Latter-day Saints on evolution and explain the historical context. The first statement (S1 slide 19) came in 1909 under the direction of President Joseph F. Smith and signed by apostles Orson Whitney and James Talmage. If students have not read it already, encourage them to do so (although I don’t usually use class time to do this). Before delving into details, ask students why the Church might have felt the need to issue a statement at this time in history. Allow for discussion. As it turns out, 1909 was the 50thanniversary of the publication of Darwin’s *Origin of Species* and the 100thanniversary of his birth. Darwin’s ideas were becoming more popular and mainstream in the scientific community and members of the Church were understandably curious about where the Church stood on these matters (see S1 slide 21). The 1909 statement asserts that Adam was the first man and that he took upon himself “an appropriate body”. It does not specify how this body came to be or whether or not the Church supports evolution. However, I find an anti-evolution tone to be fairly clear in the statement. Interestingly, so did members of the Church who then took it further to imply that the Church was anti-science. In 1910, the First Presidency issued a statement to make it clear that our Church is *not* anti-science (S1 slide 22). I like to share a couple of quotes from President Joseph Smith (the first prophet of this dispensation) and President Gordon B. Hinckley on science to emphasize that we have always been seekers of truth (Article of Faith 13) whether that truth comes from science or through revelation (see S1 slide 23).

· Show students that, interestingly, a second official statement on the *same* topic came out in 1925 under the direction of President Heber J. Grant. Ask students why they think the Church felt the need to issue a statement on the same topic again. Ask them what was happening in the United States at the time that might have prompted this release (S1 slide 25-26). Hopefully students have learned about the Scopes Monkey Trial that occurred in July of 1925. Tell students a bit about this trial (S1 slide 26) and explain that it sparked a lot of controversy once again not only within Church membership, but also across the nation. The 1925 statement (also included in the BYU Evolution Packet) is a shortened, copied-and-pasted version of the 1909 statement, but with all of the anti-evolution tone removed. Again, it asserts that Adam was the first man, that he was in the image of God, and that he took upon himself an appropriate body. But, it says nothing about the theory of evolution.

· In 2016, the Church issued another statement about evolution in its publication, *The New Era* under the question heading, “What does the Church believe about evolution?” Give students a moment to read this statement (S1 slide 27). Also read the statement from *The New Era* in February of 2016 entitled “What does the Church believe about dinosaurs?”. Both statements clearly state that the Church is neutral when it comes to evolution and that the mystery of how Adam’s and Eve’s bodies were created has not been revealed. Give students a moment to discuss all the possible ways that this can be compatible with evolution. Ask them if they have questions.

*Explaining the cultural history*

· After seeing the Church’s neutral stance, students are often baffled as to why they grew up hearing that the Church was against evolution and as to where all of this cultural animosity toward the theory has come from. At this point, you may choose to take time to briefly cover some of the history of the conflict within the Church to give them some cultural background for the controversy. Below is a brief overview of that history. More details can be found in *Mormonism and Evolution: The Authoritative LDS Statements*, by Evenson and Jeffery (see Resources section). Between the years of 1928 and 1931, there was a very heated and very public dispute between two apostles: Elder B. H. Roberts (who was supportive of evolution) and Elder Joseph Fielding Smith (who was not). It is interesting to note that public conversations such as this are not common in the Church anymore, but were quite common at the time. In 1931, Elder James Talmage was sanctioned by the First Presidency to issue a response to this debate. In the response, Elder Talmage strongly emphasized that countless organisms had lived and died prior to the fall of Adam and that fossils were very much a reality (see S1 slides 30-31). However, the controversy continued and was heightened by the publication of Joseph Fielding Smith’s, *Man His Origin and Destiny*, which outright denied the legitimacy of evolution. It is important to recognize that, while Joseph Fielding Smith did eventually become the President of the Church, was not the President of the Church at the time of this publication. Interestingly, it was at this time that President J. Rueben Clark gave his famous talk “When are church leaders’ words [considered] scripture” (see S1 slides 32-33). Another helpful statement to direct students to is <https://newsroom.churchofjesuschrist.org/article/approaching-mormon-doctrine>, which outlines how Church doctrine is established and that statements by one Church authority over the pulpit one time (unless it is the First Presidency) do not constitute doctrine.

· However, the controversy did not end there. In 1958, Elder Bruce R. McConkie, Joseph Fielding Smith’s son-in-law, published *Mormon Doctrine*, another book actively speaking out against evolution. David O. McKay was prophet at the time and was asked about the statements in *Mormon Doctrine*, and if they were truly doctrine, to which he replied that both books (*Man, His Origin and Destiny* and *Mormon Doctrine*) were not official publications of the Church and did not represent Church doctrine (see S1 slides 35). Another interesting quote to share is by Elder John A. Widtsoe about the potential for pre-Adam human-like creatures (see S1 slide 36).

· Another source of confusion for students comes from the Church’s Bible Dictionary (S1 slide 37). In the Bible Dictionary it states that before the fall of Adam, there was “no death”. Students have often seen this phrase used to say that evolution could not have occurred and that fossils are not accurate representations of things that lived and died before Adam and Eve. Point out to students that 1) the Bible Dictionary is *not* canonized scripture and it “not intended as an official statement of Church doctrine.” It is also “subject to re-evaluation as new research or revelation comes to light.” (Both quotes are taken from the introduction to the Bible Dictionary.) Also point out the history of the Bible Dictionary and that it was largely borrowed from a Cambridge University version. Many students are unaware that the Bible Dictionary is not canonized scripture.

· Another source of confusion for students is the story of the creation of Eve from the rib of Adam. There is a great quote by President Spencer W. Kimball: “We don’t know [how Adam and Eve got their bodies, but] the story of the rib, of course, is figurative” (Ensign 3. 1976: 70-72). It is important to point out to students that CJC doctrine is not a doctrine of strict literal interpretation of scripture. Many of the teachings in scripture are meant to be figurative and symbolic.

· The last historical event to point out is the establishment of the BYU Evolution Packet that was approved by the First Presidency to be distributed to students at BYU. It contains all of the official statements of the Church on evolution (excepting the *New Era* statement that has been published since the publication of the Packet).

*Offering ways to reconcile*

· Start by showing students the ‘range of beliefs’ that we see concerning Creation and evolution (S1 slide 42). A couple of things to point out: Intelligent Design, although it falls in the “Old Earth” category, is not compatible with the scientific evidence entirely in that it claims many things are too complex to have evolved. Gap Creationism (the creation took place in six 24-hour periods with large gaps in between to accommodate an old earth), Day-Age Creationism (that the six 24-hour periods spoken of in the Bible are actually six periods of time of unknown length), and Progressive Creationism (that God has instigated many repeated creation events to bring new species into being over time) are all compatible with an old earth but vary in their degrees of acceptance of macroevolutionary events. Theistic Evolution holds that God used evolution as a tool to create all organisms, including humans, in a directed and purposeful process. It is completely compatible with all of the evidence science has produced about the history of our planet. Agnostic evolution is also completely compatible and simply states that science cannot prove or disprove that God was involved; but God is not a necessary part of the process. Since science cannot make any statement regarding the existence or non-existence of God, the most scientifically accurate definition of evolution would be an agnostic one. For people of Faith, the theistic definition is just as accurate, scientifically. Interesting to note, many scientists go too far, claiming that evolution provides evidence that God does *not* exist; this is an atheistic definition of evolution and is scientifically inaccurate—as scientifically inaccurate as special creation. From a CJC perspective, it is important to understand that doctrinally, the Church is neutral so any range of these beliefs that are compatible with what science has shown, and we ‘accept with Joy’, are compatible with the Faith.

· End the discussion with two things. First, quote Moses 6:63 (S1 slide 43) and assure students that all of creation bears witness of God; so everything we discover in science should further bear witness of God. And second, consider sharing a little analogy that I share of how I view the process. I show students a short clip from *America’s Got Talent* highlighting “Smoothini, the Ghetto Houdini” (see clip here: <https://www.youtube.com/watch?v=ZTy3qG_qInU>show from 0:16 – 2:55). After watching the clip, I explain to students that the first time I saw this clip, my brain could just not wrap itself around it. How was he doing that?! The only explanation I could come up with was that it was true magic, Smoothini had magical powers! But then I realized that he does *not* have magical powers, that there is a logical explanation for how he is doing that, and (the coolest part) that I could find out how he did it. I like to think of the Creation in the same way. Is it possible that God used magic to bring everything into existence spontaneously and *ex nihilo*? Yes. And that is amazing. But, what is even more amazing is that He probably didn’t use magic, that there is a way that he created the world and all of its amazing creatures, and (the coolest part) I can find out! This makes Biology the study of Magic!

· Finish the class, if time, with any questions or discussions the students would like to have concerning this. If appropriate, consider bearing your testimony of your faith in God.

**Post-Class Assignment**: I give this assignment to students after we have covered our evolution unit. Students will revisit their essay that they wrote prior to the reconciliation module and respond to the following prompt:

Now that we have finished our evolution unit, I would like you to return to the first essay you wrote on evolution prior to the unit. In a 300 – 500-word statement (about 4 paragraphs), please evaluate your personal views about the subject; how do you feel now in comparison to the way you felt at the beginning of the semester? Carefully defend your present point of view, including what lines of evidence affected your view and how, what questions remain unresolved, etc. If there has been a change, describe it, and then attempt to explain the reasons for your new perspective. If there has not been a change (e.g., you accepted before and you still accept evolution; you didn’t accept before and you still don’t), please explain why.

**AVAILABLE RESOURCES FOR STUDENTS AND INSTRUCTORS**

Following is a list of resources that both students and instructors can consult to learn more about the intersection of evolution and the CJC faith, or faith in general.

***National Organizations Aimed at Bringing Science and Religion into Harmony***

Smithsonian’s Broader Social Impacts Committee– a committee of individuals from diverse religious affiliations formed to assist in the dialogue surrounding the Smithsonian’s exhibit on human evolution. <http://humanorigins.si.edu/about/broader-social-impacts-committee>

Statements on reconciliation from various religious perspectives - <http://humanorigins.si.edu/about/broader-social-impacts-committee/members-member-resources>

Videos of thoughts on reconciliation from various religious perspectives - <http://humanorigins.si.edu/about/broader-social-impacts-committee/thoughts-science-religion-and-human-origins>

Public event on the 30-year longitudinal study of BYU students - <http://humanorigins.si.edu/about/broader-social-impacts-committee/public-event-religious-audiences-and-topic-evolution-lessons-classroom>

BioLogos– an organization founded by scientist to help bridge the gap between science and religion; they have articles, profiles, video, and curricula available - <https://biologos.org/>

American Scientific Affiliation (ASA)– was founded as an international network of Christians in the sciences - <https://network.asa3.org/>

The Center for Theology and the Natural Sciences (CTNS)– organized by the Graduate Theological Union in Berkeley, CA, this organization works at the intersection of science and theology - <http://www.ctns.org/index.html>

***Resources for K12 instructors in Utah***

Utah State Board of Education Evolution Position Statement - <https://www.schools.utah.gov/file/731b1adf-38a8-417e-a5bb-8b82987c9bf5>

Resource links provided by the State Board of Education - <https://www.schools.utah.gov/curr/science?mid=1128&tid=6>

***Official Statements from The Church of Jesus Christ of Latter-day Saints***

BYU Evolution Packet - <http://biology.byu.edu/Portals/10/docs/Evolution%20Packet.pdf>(Includes the 1909 Statement, the 1925 Statement, and the Encyclopedia of Mormonism entry)

New Era Statement - <https://www.lds.org/study/new-era/2016/10/to-the-point/what-does-the-church-believe-about-evolution?lang=eng>

*Mormonism and Evolution: The Authoritative LDS Statements*, by Evenson and Jeffery - [https://www.amazon.com/gp/product/B005H7UMJA/ref=dbs\_a\_def\_rwt\_bibl\_vppi\_i0](https://www.amazon.com/gp/product/B005H7UMJA/ref%3Ddbs_a_def_rwt_bibl_vppi_i0)

***Recently Published Papers on Evolution and Religion***

Applying reconciliation in the classroom: <https://evolution-outreach.biomedcentral.com/track/pdf/10.1186/s12052-015-0051-6>

Scientific Reasoning and Evolution: <https://link.springer.com/article/10.1186/s12052-018-0076-8>

30-year longitudinal study of the Church of Jesus Christ of Latter-day Saints: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0205798>

Role Models and Evolution: <https://pdfs.semanticscholar.org/ea46/361f2fd9d537cb33cb4e6432622689e428ad.pdf?_ga=2.202357400.801698370.1551550971-1817671274.1551550971>

Proactive teaching strategies: <https://evolution-outreach.biomedcentral.com/articles/10.1186/s12052-019-0095-0>

A call for cultural competence: <https://www.lifescied.org/doi/full/10.1187/cbe.17-04-0062>

Evolution education review: Dunk, R. et al. (2019). Evolution education is a complex landscape. *Nature Ecology & Evolution*, 3: 327-329.

Evolution instructors at Christian Universities: <https://onlinelibrary.wiley.com/doi/full/10.1002/sce.21317>

**Resources from Ben Spackman**

Gospel Tangents. <https://gospeltangents.com/2019/01/evolution-bible-irreconcilable-differences/>, <https://www.youtube.com/results?search_query=gospel+tangents+evolution>

[1]<https://www.pewforum.org/religious-landscape-study/views-about-human-evolution/>

[2]Based on extensive data from student essays over a number of recent semesters (see Bradshaw, WS, Phillips, AJ, Bybee, SM, Gill, RA, Peck, SL, & **Jensen, JL**. (2018). A longitudinal study of attitudes toward evolution among undergraduates who are members of the Church of Jesus Christ of Latter-day Saints. *PLoSONE,*13(11):e0205798.

[3]<https://www.pewforum.org/2007/05/16/in-focus-mormonism-in-modern-america/>

[4]See Haarsma, D., Greuel, B., & Lewis, R. (2019). The sciences and Christian formation: Helping today’s students find deeper faith in a science-dominated world. *Christian Higher Education*, 18:111-124.