LIBERTY UNIVERSITY

JOHN W. RAWLINGS SCHOOL OF DIVINITY

# APOLOGETICS AND SCIENCE INSTRUCTION FOR EDUCATORS IN SECONDARY CHRISTIAN SCHOOLS

Submitted to Dr. Robert Talley

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Research Methods

by

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**Abstract:** Without the incorporation of apologetic instruction into the science classroom students will be ill-equipped to defend the Christian faith. The academic world has seen a decrease of importance that is placed on the Christian mind and therefore the academic world and the majority of scholarly debates have been left to secular thinkers. Secondary Christian schools are in the optimal position to answer the need to raise up a generation of students that may apologetically and academically defend the Christian faith. Through including topics such as Intelligent Design, irreducible complexity, anatomy, and fine-tuning to various fields of science, secondary educators will be able to take one further step in helping the students understand how their Christian faith may be incorporated into their academic learning.

## Contents

## Introduction

The modern educational systems have strayed away from the biblical teachings that they were once founded upon. Apologetics can not only bring the educational systems back to these biblical foundations, but they can more adequately train up Christian intellectuals that are able to defend their faith. The academic world has seen a drastic decline in Christian scholars and secular thinkers are taking dominance in many scholastic fields. If secondary educators are properly trained and practice apologetics in their science classrooms, they can enhance the academic process as well as instilling an academic Christian viewpoint. The incorporation of apologetic teaching by secondary educators in the field of science will produce Christian intellectuals and students who may be better equipped to defend the Christian faith.

## Apologetics and Education

### *Importance of Apologetics*

Apologetics should be integrated into the curriculum of more than just Bible classes in the Christian secondary schools. If apologetics is only covered (or not covered at all) in Bible classes Christian educators will not effectively teach the important practice of apologetics. Apologetics is the defense of one's faith and it involves the use of many different tools. Hermeneutics should be taught in literature classes in seeking to understand the background, timeframe, literary context and style, information about the author and the work's intended audience. Teleological defenses should be taught in science, as well as irreducible complexity in anatomy classes. Social studies should cover archaeology and other evidences that substantiate biblical claims. Incorporating these apologetic defenses into instruction will prepare students to defend and explain the Christian faith clearly and effectively to others, however for the purposes of this thesis apologetics in science will be the only one under thorough explanation.

## Education's Impact in the Student's Life

The education a student receives impacts a large portion of their life. Medway had much to say on the impact that education could have on a student's life, "knowledge and reason would be prominent, but also a proper respect for values to do human relations..."[1] Pikes writes in an article "education seeks to influence both intellect and the emotions of the young person."[2] Thus, Christian educators are in a unique position to influence the future of academic, scholars, and intellectual circles. Through the teaching students receive in school they may go out and then influence the future culture. Education can be used as a means of changing 'hearts and minds', therefore creating values, morals, and truths.[3] While schooling is meant to teach academics and skills it is placed in an optimal position where it may develop the student's faith and morals simultaneously.

## The Objectives

The main objective of this thesis is to display the importance of the instruction of apologetics in science classrooms of secondary Christian schools. In dual instruction of science and apologetics students will be encouraged to bring their personal faith into their academic learning. In this thesis notions will be given for educators to incorporate apologetics into their Christian secondary science classrooms. This objective is central as the teaching of apologetics in science will produce students who will become intellectual Christians and scholars who are then able to defend their faith in the scientific field. In short, the simplest objective is to help

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[1] Mark Pike, "The Trees of Knowledge and Life Growing Together in the Educational Vision of C.S. Lewis: Why Medway and Stevens are Almost Right Enlightenment and Romantic Values in English," (*Changing English.* 19, no2:249-259. 2012), 251.

[2] Ibid., 253.

[3] Ibid., 251.

educators to raise up a generation of Christian intellectuals who may stand strong in scholarly debates about faith and the existence of God.

## The Problem

Without the practice of apologetics in social studies, science, and literature classes students will be ill equipped to go out and share or defend their faith to those around them. As educators are prepared and practiced in the application of apologetics in their curriculum, they will take part in creating intellectual Christian thinkers. If apologetics does not find its way into education, the next generation may not have the tools that they need to effectively reach others. Apologetics affects the student's discipleship skills. If secondary Christian educators do not properly train their students in the importance of apologetics, the world will continue to see secular scholars dominate the academic world.

Schools are a wonderful vehicle in which to engage in training of apologetics for students. If educators in Christian schools use apologetics in their secondary classes, in addition to Bible classes, they will partake in an important act for the continuing of the spread of Christian faith. Michael Behe wrote to the academic community in regards to new evolution claims and the need for an explanation to its theories, "Publish or perish!" He made this claim in reference to the lack of support for the adaption of complex biomolecular structure, which will be discussed later.[4] However, this proverb can and should be applied to Christian scholars as well. If intellectual Christians are not raised up in the schools, then the Christian intellect will perish and the secular scholars of the world will continue to be the only ones that publish findings. There will not be any significant culture change if Christians are not present and active

[4] Michael Behe, "Evidence for Intelligent Design from Biochemistry" in *Christian Apologetics: An Anthology of Primary Sources* eds. Khaldoun A. Sweis and Chad V. Meister] (Grand Rapids, MI: HarperCollins Christian Publishing, 2012), 103.

in the academic settings.[5]

## Method

### *Research Approach*

The majority of the research building the foundation of this thesis will be textual research. This thesis will be bringing together literature that describes the purpose of apologetics and education in which to articulate why the two disciplines should and can be brought together. The majority of the research will be done through existing data, chapters four and five in particular will draw from a personal previous work and add upon the initial research. There is ample research in the current literature to juncture the topics together and to show the importance of apologetics and how it may be useful in educational settings. The works gathered will include articles on the topics of Christian educational instruction, apologetic importance in today's academic and intellectual world, and the application of apologetic works in education.

### *Limitations/Delimitations*

This thesis will be limited to the teaching of apologetics in Christian schools. Science will be the only subject that is of interest in this thesis. This delimitation is set in order to focus solely on the subjects with which apologetics can be incorporated into the instruction without drastic efforts from the educator or vast changes in curriculum and these areas may have grander apologetic impact on the students. Secondary school, which includes sixth through twelfth grade, will be a delimitation.

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[5] Trevor Cairney, "Regaining Our Voice in the Secular University," (*St Mark's Review* 218: 3-23. 2011), 15.

*Justifying Support*

Christian apologetics is the act of sharing something that has been passed down from others through faith in a way or purpose to compel the new generation so "that they might know them and arise and tell them to their children, so that they should set their hope in God."[6] In a pluralistic society apologetics becomes a ministry when it is practiced with persuasiveness and expressed intelligently, however this comes from setting apologetics as a goal to achieve through learning and effort, this does not come naturally without intent.[7] Likewise, education is a vehicle that societies use to encourage children in what they ought to like and dislike.[8] Through the education of students civilizations are able to impart and help form the attitudes, values, morals, and mindsets that serve their own civilization best.[9]

The early settlers of American prided themselves on leading a rich academic and intellectual life, instilling the importance of education, knowledge, and reason in their own children.[10] These scholarly Christians were those who founded colleges. They themselves were intellectuals, and advocated for their children to study the arts, science, and philosophy.[11] The foundations of America were laid by these early settlers that appreciated and understood the importance of loving God in faith and love, but through seeking out knowledge and reasoning.

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[6] Christopher R. Seitz, "Pluralism and the Lost Art of Christian Apology" (*First Things* 44: 15-18. 1994), 18.

[7] Ibid., 16.

[8] David G. Clark, *C.S. Lewis: A Guide to His Theology* (Malden, MA: Blackwell Publishing, 2007), 36.

[9] Ibid.

[10] J.P Moreland, *Love Your God with All Your Mind: The Role of Reason in the Life of the Soul* (Colorado Springs, CO: Navpress, 2012), 16.

[11] Ibid.

The Christian leaders of the churches were scholarly. They not only led others spiritually but they led intellectually and were authorities in their communities.[12]

In 2002, the state of Ohio found itself in controversy over including intelligent design into science curriculum. The Board of Education was split seven in favor of adding intelligent design and seven for keeping evolution as the only science-based explanation, while five refused to give an opinion.[13] Tim Hagan made the comment that the state of Ohio "would be unable to attract members of the science community to high-tech jobs if the Board adopted intelligent design into the science curriculum."[14] Statements such as this from Hagan represent the uphill battle which Christian scholars must be prepared to fight with apologetics. However, it is not representative of all views, specifically in this case of Ohio a poll was done and fifty-nine percent of the respondents were for the instruction of evolution and intelligent design.[15]

In modern times however education is pursued in hopes of economic gains and the achievements that education can produce has become the main focus of education.[16] Faith and the church in education were never meant to be segmented into different parts of life, but through education meant for the student to gain or create a comprehensive worldview.[17] In 1890, Hodge

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[12] Ibid.

[13] Vicki D. Johnson, "A Contemporary Controversy in American Education: Including Intelligent Design in the Science Curriculum" (*The Educational Forum.* 70 no3:22-236. 2006), 230.

[14] Ibid.

[15] Ibid., 232.

[16] Israel Wayne, "The Case for Christian Education: Scripture and Church Fathers Clearly State Education Should God-centered, But God is Banned from Public School" (*The New American.* 35, no 3:34 2019), 34.

[17] Ibid.

of Princeton Theological Seminary made quite a prophetically accurate statement in regards to future education and faith or religion.[18]

> I am as sure as I am of Christ's reign that a comprehensive and centralized system of national education, separated from religion, as is now commonly proposed will prove to most appalling enginery for the propagation of anti-Christian and atheistic unbelief, and of anti-social nihilistic ethic, individual social and political, which this sin-rent world has ever seen.

The statement made by Hodge gives light to the dire importance of inculcating students into the process of incorporating religious beliefs and values into the academic world.

In a lecture, Yount discusses the "Role of Scripture in Christian Education", this lecture provides a foundation for the importance of associating scientific instruction with apologetics.

- He quotes Strong as saying "that there are two books [of revelation]: Scripture and Nature--one written and the other unwritten."[19] He explains Strong's statement, that through nature God reveals Himself through observation, history, and/or science.[20]
- The revelation of Scripture is the primary source which theology is founded on and supplements natural theology. Through natural theology patterns and principles can reveal God's character.[21]

[18] Ibid., 36.

[19] William R. Yount and Miriam L Charter, "The Role of Scripture in Christian Education, Session II: Christian Education as Scriptural Life/Response to Rick Yount's the Role of Scripture in Christian Education, Thinking Biblically is Not Enough" (*Christian Education Journal.* No 9: 53-78. 2012), 56.

[20] Strong, 1907 quoted in Yount, 57.

[21] Ibid.

- Scripture is believer's final standard, however "science and Scripture throw light on each other. The same Spirit who gave both revelations is still present, enabling the believer to interpret one by the other."[22]
- The cojoining of apologetics and science is "supernatural theology of Scripture is not separate from the natural theology derived from scientific study of God's creation."[23]

*Defining Terms*

Christian schools - A school which has a Bible class, holds Christian values, and is a private (non-public funded) educational facility. Any school that is registered with places such as American Association of Christian Schools (AACS), Christian Schools International, or Association of Christian Schools International (ACSI) is for the purpose of this thesis to be considered a Christian school.

Secondary schools - Grades sixth through twelfth grade, or what is considered middle school and high school.

Apologetics - Apologetics originates from the Greek word *apologia,* which means "defense".[24] The authors of *Stand Firm: Apologetics and the Brilliance of the Gospel* have provided a superior definition as to what apologetics is and what purpose it holds. Gould, Dickinson, and Loftin state apologetics is "an attempt to remove obstacles or doubts to, as well as offer positive reasons for, believing that Christianity is true and satisfying."[25] Yet the

[22] Ibid.

[23] Ibid.

[24] Paul M Gould, Travis, R. Dickinson, and Keith Loftin, *Stand Firm: Apologetics and the Brilliance of the Gospel* (Nashville: Broadman & Holland Academics, 2018), 2.

[25] Ibid.

Christian definition of apologetic is a bit broader than the previous definition given. The Christian definition places more value on the belief that apologetics holds the focus of providing a rational defense of Christianity and representing fundamental truths from it.[26]

Science - Understood as knowledge of the natural world based on facts that are gathered through observations and experiences, known as the scientific method, in manners that are testable and repeatable.[27]

Intelligent Design – Understanding that the complexities of life and the origins of the universe are far too complex to be explained by natural causes or adaptations and may only be attributed to the action of a supernatural intelligence.

## Literature Review

The literature that will be covered in this thesis is a combination of information on the topics of apologetics, science instruction, and faith-based pedagogy. Backgrounds of the literature include education, theology/seminary, and apologetics in order to show the relationship and importance of the two topics. In the search for literature on the topic of integrating apologetics into scientific instruction there was revealed to be a large gap in studies solely focused on the two subjects. In a study conducted on STEM-career interest at a Christian middle school, author Alsup notes the significance of his study in the sector of Christian instruction as "relatively little empirical research has taken place and yet one in which more is desired."[28]

[26] Ibid., 3.

[27] Schroeder, 12.

[28] Philip Alsup, "The Effect of Video Interviews with STEM Professionals on STEM-Subject Attitude and STEM-Career Interest of Middle School Students in Conservative Protestant Christian Schools" (*Liberty University,* 2015), 20.

Chapter one pulls primarily from Brian Morley's *Mapping Apologetics*, Moreland, and an article *Mission and Christian Witness: The Role of Theological Education* by P.T. George. Morley defines the different methods of apologetics which was helpful to determine in which methods would be of focus in this thesis. The methods of evidentialism and classical apologetics are applied in this paper. These two methods were chosen as a focus due to classical apologetics proving theism using theist proofs such as cosmological and teleological arguments, as will be examined later in science instruction and evidentialism leaning on facts that support interpretation to a theistic view as seen with irreducible complexity.[29] Classical apologists such as J.P. Moreland and C.S. Lewis are noted for the importance of the practice of apologetics in everyday life. P.T. George highlights the importance of the instruction of apologetics to the younger generations.[30] Likewise, Moreland explains that historically educational systems were built upon Christian foundations and morals in order for students to become Christian scholars proficient in the sharing of their faith on an intellectual level.

Science instruction and the importance of education is covered in chapter two. Much of the literature in this chapter comes from works regarding science instruction and philosophies taught. Tenenbaum and Hogh studied schools in which both evolution and creationism were incorporated into the curriculum. They found that a majority of students gave explanations that led to naturalistic reasoning yet immature logic that needed to be developed.[31] Science

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[29] Brian K. Morley, *Mapping Apologetics: Comparing Contemporary Approaches* (Downers Grove, IL: InterVarsity Press, 2015) 15.

[30] P. T. George, "Mission and Christian Witness: The Role of Theological Education" (*Bangalore Theological Forum* 40, no. 2: 159-169. 2008), 163.

[31] Harriet R. Tenenbaum and Henriette Hogh, "Secondary School Students' Reasoning About Evolution" (*Journal of Research in Science Teaching*. 54, no2:247-273. 2017), 262.

philosophies such as multiple universes, the Big Bang theory, and evolution are briefly explained in this chapter so the reader may understand the difference of instruction that this thesis is wishing to make in later chapters. While there is ample literature to be found on the instruction of secular ideologies in science and a plethora of articles on the importance of apologetic instruction in theological subjects there is a lack of literature findings on apologetics being incorporated into science instruction in schools.

The studies related to Christian secondary schools that were found in literature research did not highlight the importance of apologetic instruction in science classes. In a study by Billingsley and colleagues, student respondents stated that science and religion do not correlate.[32] Another study by Matthew Breazeale conducted a survey on alumni of Christian secondary schools. While they all mentioned the benefits they found in the thorough biblical instruction in the arts, literature, or humanities classes, none mentioned the benefits they gained from apologetics being incorporated with their science instruction.[33] The importance of education can be found in Moreland's writings, as well as *Education and Responsibility* by Romein in which both scholars highlight the beginning of education and what it was intended to do for the students. These literatures were selected to highlight the original purposes of education and draw light as to the need for apologetic instruction in the field of science.

Chapter three relies heavily on scriptures that appeal to the importance of education, intellectual growth, and the instruction of apologetics. An article by Trevor Cairney speaks to the

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[32] Berry Billingsley, Fran Riga, Keith S. Taber, and Helen Newdick, "Secondary School Teachers' Perspective on Teaching about Topics that Bridge Science and Religion" (*Curriculum Journal.* 25, no3:372-395. 2014), 375.

[33] Matthew Breazeale, "Understanding the Influence of Secondary Classical Christian Education on Faith Adherence Experience of High School Alumni: A Mixed Methods Study" (*Drexel University,* 2020), 166.

anti-intellectualism that has occurred in the Christian mind. Trevor writes of how one's biblical foundation and theologies have become disconnected from one's intellectual endeavors and one's moral values.[34] He claims that there should not be a line between one's faith and intellectual life, for when the line is removed then Christians are "prepared to engage in discussion and debate..."[35] The benefit educators will find in the inclusion of apologetics into their science classrooms is they will see Christian scholars break the trend of fewer Christian intellectuals that "...has shriveled nearly to the vanishing point."[36] The foremost point Cairney makes throughout his article is that Christians must make themselves a voice and an effective presence in scholarly circles and academic debates.

Biology and anatomy instruction and the apologetic defenses that can be applied in the classroom are discussed in chapter four. The literature used for these defenses comes mainly from the work of Michael Behe. Behe's work on irreducible complexity is a strong argument against evolution and theories of how the world came to exist. Irreducible complexity states that something is so intricate that all of it pieces must be present at the very beginning of its existence or it would cease to exist and could not have adapted to the complex form.[37] In a study completed by Patricia Ferrin on Christian middle school science classes the method of Inquiry-Based Instruction is engaged. In particular the instruction of these apologetic defenses, irreducible complexity and evolution Inquiry-Based Instruction, can be applied to allow the

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[34] Cairney, 9.

[35] Ibid., 12.

[36] Ibid., 13.

[37] Sweis snd Meister, 101.

students to explore these ideas for themselves in a way similar to experimenting with the working parts of a mousetrap.

Intelligent Design theory and fine-tuning are the headliners of chapter five. This chapter covers the apologetic instruction in the subjects of astronomy and physics. Robin Collins' work on the fine-tuning that must occur in order for the universe to be sustainable to life carries a large portion of the chapter. Evidences such as calculations of the nuclear force of protons and neutrons having a margin of error as little as five percent and the $10^{40.000}$ percent probability of over two thousand enzymes being in the exact needed order by happenstance are defenses that may be applied to physics instruction.[38] Intelligent Design arguments come from William Paley in his teleological defenses. Paley's famous case of the watchmaker is used to illustrate one who finds a watch on the ground knows that there is a maker to the watch, as one that looks at the complicated working of the universe can also know that there is a creator behind it.[39] The dissertation by Brock Schroeder on *Science Instruction in the Context of Christian Faith* can be beneficial to the application of apologetics in these topics of scientific instruction. In the findings from his dissertation, he concludes that scientific literacy and new concepts can be taught through "appropriate amount of time, with meaningful talk, and through building a sense of trust."[40]

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[38] Ibid., 107.

[39] William Paley, *Natural Theology or Evidences of the Existence and Attributes of the Deity* (Philadelphia, PA: Cross Reach Publications, 2018), 19.

[40] Brock Schroeder, "Science Instruction in the Context of Christian Faith" (Walden University, 2006), 117.

## Chapter 1

## Apologetics and Purpose

### Apologetic Method

Just as any broad topic can be broken down into smaller sub-sections, so too can apologetics. There are different approaches one may take in defense of apologetics. This thesis will be dealing strictly with evidentialism. Evidentialist apologetics uses tactics in which evidence found points to Christianity, where theistic arguments do not have to occur but may be useful, and builds upon universally accepted facts.[41] When discussing the field of science it is best suited to focus on evidential apologetics. It is best suited for science as it uses evidences that can factually stand on their own accord. They do not have to be accepted only with theism being held as true.[42]

While the methods of apologetics have shifted slightly and the audience has changed over the centuries the main goal has remained the same, to give answer to the Christian faith.[43] In the beginning apologists had the focus of creating civil toleration for Christians, later a shift to a less defensive strategy to win over converts from other groups, and now to those that find themselves indifferent to religious beliefs, atheists, and agnostics.[44] Modern apologetics has found itself in discussion over Intelligent Design, facts that are universally agreed upon surrounding the resurrection, and evidences from scientific discoveries. Apologetics needs to be considered not

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[41]Ibid., 15.

[42] Ibid.

[43] Sweis and Meister, 15.

[44] Ibid.

just in universities and in the practice of churches, but in the street and daily lives of Christians to ward off the attacks of the postmodern world.[45]

According to philosopher Ganssle as stated in Gould, Dickson, and Loftin there are three types or issues of apologetics. First, he speaks of *doing* apologetics which entails theological issues such as effects of sin, the nature of man, etc. which helps to inform understanding of the Christian faith.[46] The second apologetic issue would be that of the academic and intellectual area, in which Ganssle pronounces that God's existence, the historicity of the Bible, hell and evil, and more are to be defended from an intellectual level not an emotional view.[47] Lastly in Ganssle's view is missional issues of apologetics, when gaps are sought to be filled and bridges made between particular audiences.[48] When making an apologetic defense a well-practiced apologist need make no reference or Christian assumptions, one is able to defend the Christian faith with intellect and reason. When incorporating apologetic instruction into science one can fulfill all three issues Ganssle brings up. As a body of believers, the church's main task is to build itself in knowledge and the love of God.[49] Apologetics takes place when believers and students have a comprehensive understanding of Christian traditions such as historical, biblical, theological, and creedal foundations, instead of relying on emotions and personal persuasions.[50]

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[45] Selim Kesmez, "Wholistic Model of Apologetics for Equipping the Youth" (*Andrews University Seventh-day Adventist Theological Seminary. 2016*), 36.

[46] Ganssle quoted in Gould, Dickinson, and Loftin, 4.

[47] Ibid.

[48] Ibid., 5.

[49] Seitz., 16.

[50] Ibid., 18.

As Christians seek to practice apologetics and share their faith with others around them, the secular world has seemingly gained a stronger influence on education. An impactful practice of apologetics will not take place if students are not brought up and shown the importance of defending the Christian faith intellectually. The influence that the implementation and the practice of apologetics can have in education and the effects on Christian schools and its students can be found beneficial for the student's preparedness and ability to defend the Christian faith.

## Current Impact on Christian Students

In school students are taught academics, trained to be scholars, yet rarely are they taught how to lead others in spiritually intellectual paths.[51] The everyday practice of apologetics and training encourages character formation and the intellect of the students as well as preparing them for their Monday through Saturday lives.[52] The "Monday through Saturday lives" phrase speaks of learning how to use apologetics in their everyday lives, outside of a church setting. Apologetics when used in everyday life should nurture and create a holistic academic culture which encourages students to carry out the mission of the church and give Christ's witness to those in the world.[53] In everyday use, apologetics is meant to be used in helping unbelievers to overcome intellectual barriers to accepting the truths of the Bible, as well as helping removing any doubts that believers may hold that can encumber their spiritual growth.[54]

The three spiritual awakenings that took place in America during the 1800s sparked revival, however they also placed an overemphasis on the personal immediate conversion to

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[51] George, 163.

[52] Ibid., 164.

[53] Ibid., 165.

[54] Moreland, 148.

Christianity compared to studied reflection and conviction.[55] The new prominence of personal conversion over personal conviction led to new believers without an understanding or comprehension of Christian teachings and ideologies, basically a group of new unapologetically prepared Christians. The awakenings and movements created many new believers that were unprepared to keep their faith nor could they defend the faith they knew so little about. If apologetics is not practiced in the believer's everyday life, they too will not become mature Christians able to defend their faith and give answer to their joy. Without the practice of apologetics believers were not able to give rebuttal to philosophy, historical reliability, and Darwinian evolution, therefore causing Christians to shrink away from holding influences outside of their churches.[56]

The culture has found itself in an ever-growing anti-intellectualism of the church climate.[57] The climate may only be changed when Christians rise up in academic fields and scholarly debates. The practice of apologetics in everyday life is the method by which this demand will be met for Christian intellectuals. The mandate for them to hold a presence over the secular culture that this world has seen increase over many years. The call of intellectual development is a main role of evangelical Christianity, however without a prominence of apologetics in academic classes this call will fall short of being fulfilled.[58]

Christians must place themselves on the same level as those with whom they intend to share their faith and learn to defend the Christian faith on an intellectual level, not just a

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[55] Ibid.

[56] Ibid., 17.

[57] Ibid., 15.

[58] Ibid.

personal-emotional level. Christian ministry will grow and flourish when believers share the faith they hold in robust and intelligent accounts.[59]

Finally, the most critical call for the practice of apologetics in everyday life. The call to show leaders, parents, pastors, and educators the importance to teach the students is given by Nancy Pearcy.

> We constantly see young people pulled down by the undertow of powerful cultural trends. If all we give them is a "heart" religion, it will not be strong enough to counter the lure of attractive but dangerous ideas. Young believers also need a "brain" religion- training in world view and apologetics-to equip them to analyze and critique the competing world views they will encounter when they will leave home...Training young people to develop a Christian mind is no longer an option; it is part of their necessary survival equipment.[60]

The world in which students are being brought up in is quite different from that in which the apostle Paul told other believers to readily defend their reason for joy. People nowadays need not only to hear a defense of Christianity, but to have defined and explained what it means to be a follower of Christ.[61]

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[59] Seitz, 16.

[60] Kesmez, 14.

[61] Ibid., 32.

## Chapter 2

## Christian School Instruction in Science

### Methods of Science Pedagogy

Often in the instruction and various methods of teaching a previous method may be changed without cause, simply because of a new development or method that has come into the field.[62] In a study that was conducted of schools that taught both evolution and naturalism it was concluded that students responded in ways that pointed to naturalistic reasoning, however they did not form a mature or valid logic response.[63] In the instruction of both scientific philosophies students generally adopt one of two thoughts or explanations. The first being *novice naturalistic reasoning* in which they refer to evolutionary concepts with the creators as cause of intentional changes that they go through for survival and teleological ideas.[64] The second is *denial of evolutionary reasoning.* This is when the students reject evolution and reference a creator or divine being as manufacturer of the universe.[65] The denial of evolutionary reasoning can be broken down into further categories, students may cast-off this evolution due to *rejection* of information provided they find to be untrue or due to *religious* beliefs believing God to be the Creator.[66]

There are different theories which the world holds on how the earth came into existence. The term Big Bang came to be through Fred Hoyle coining the phrase to describe the Friedman-

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[62] Henry T. Edmondson III, *John Dewey & the Decline of American Education: How the Patron Saint of Schools Has Corrupted Teaching and Learning* (Wilmington, DE: Intercollegiate Studies Institute, 2014), 70.

[63] Tenenbaum and Hogh, 262.

[64] Ibid., 256.

[65] Ibid.

[66] Ibid.

Lemaître model of the beginning of the universe.[67] The Big Bang Theory postulates that the universe was caused by an inflation on energy, creating all that the universe holds. This theory states that there is an absolute start of the universe, meaning there is no earlier point in space or time, nor is there a higher being that previously existed.[68] The Big Bang theorists hold the belief that this process in which the universe was created was a singular event.[69] This mighty burst of energy known as the Big Bang is postulated to have produced life through spontaneous generation.[70]

Another concept that the world holds of the universe's beginning is that there have been multiple universes. The word universe is defined as "the domain of space-time that encompasses everything that astronomers can observe".[71] This definition of the universe begs the question how can there possibly be many universes, as the definition would have already included these other universes. Another theory of how the universe came into existence is that of multiple universes. This theory concludes that there have been multiple universes, that so to speak regenerate again and again. It is hypothesized that the universe simply imploded and expanded over and over again until it was adequate for human life.[72]

The *National Science Education Standards* advocated for scientific learning of diverse approaches in their philosophy of *Science of ALL Students* saying "[to] ensure that science

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[67] Sweis and Meister, eds., 88.

[68] Ibid., 88.

[69] Ibid., 323.

[70] Ibid.

[71] Neil A. Manson, *God and Design: The Teleological Argument and Modern Science* (London and New York: Taylor & Francis Group, 2003), 210.

[72] Ibid., 211.

opportunities are afforded to all students, the inclusion of diverse instructional approaches is necessary to provide these students with abundant opportunities to learn based on the multitude of existing student learning styles."[73] While this was written with the main focus being the different learning styles of each student, it also calls upon diverse instructional approaches which can and should include the instruction of Intelligent Design along with evolution in the public schools. Methods of instruction applied through Inquiry-Based instruction in science state "the beliefs of those involved in the change process can be targeted and addressed so the reform has a better chance for lasting."[74] While science instruction is advancing in secondary schools, Christian schools need to be aware of changes or advances that may improve their instruction that is already occurring in the science classrooms.

## Current Instruction of Science in Secondary Christian Schools

Apologetics instruction in science classrooms of the secondary Christian schools is imperative as the rest of the world has "slowly, stealthily, systematically, the truth claims of Christianity have been edged out of the academic arena and the public space into private, airtight compartment".[75] Christian schools have more liberty to decide what they wish to teach and how, more so than the public school. In the instruction of science in secondary Christian schools teachers hold similar ways of instruction in science. They still observe methods, principles, laws, and experiments. One difference that arises is teaching that there are some things outside of science's answer through experiments, observations, and explanations.[76] The openness of a

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[73] Patricia Ann Ferrin, "A Qualitative Phenomenology of Christian Middle School Implementation of Inquiry-Based Science Instruction" (Liberty University. 2018), 48.

[74] Ibid.

[75] Kesmez, 40.

[76] Billingsley, Riga, Taber, and Newdick, 375.

teacher and their personal pedagogical ideas will play a part in the exploring questions and challenges presented by the student.[77] When incorporating religious beliefs into science one can expect to receive questions. A teacher that has a transmission model of instruction will practice a transference of knowledge to the students in their classroom, while an educator that practices a constructivist model of teaching will explore the question about science and religion in an open manner that allows the students to gain their answers and opinions through exploration of the questions.[78]

In a study that observed secondary schools as well as a few Christian secondary schools, students were interviewed as to the incorporation of science and religion, as well as religion and other classes. One response can represent the majority of the other students, "we've never done like science in religion...we don't do science and religion, we don't bond them together, we have two different lessons."[79] Students who were interviewed stated that they would not even feel comfortable asking questions that relate to religion in their science classes. Some even believe the teachers may try and avoid the mixing of the two subjects.[80] Even though this study held secondary Christian schools in its group these were the responses that were received, that religion never found its rightful place in the science classroom. When the teachers were interviewed, they stated that they generally tried to avoid any discussion between religion and science due to the sensitively of the topic, but in part because they themselves felt inadequate to

[77] Ibid., 376.

[78] Ibid.

[79] Ibid., 377.

[80] Ibid.

answer the students' questions.[81] Another response as to the teaching of science and religion is that the students have an *either-or* mindset and belief that either science is right and faith is wrong or faith is right and science is wrong but both cannot be relevant.[82]

When discussing with educators what should be done, religion teachers held collaboration between the two departments would create a positive change in instruction for the students.[83] If collaboration were to take place, then if the science teachers felt inadequate to answer any question that related religion to science, then the religion teacher could either help the science teacher or simply give the student an answer themselves.[84] In order to incorporate science and religious teaching in one lesson or simply explore science through biblical eyes then educators must work together so that where one lacks knowledge on a biblical support for science, the other educator can help teach the concept to the class or explain it to the other teacher.

A method called Project Based Learning is often employed in science pedagogy in Christian schools. This type of learning involves placing emphasis on areas of science that students deal with on an everyday basis in which teachers guide students through exploration and solution to problems in work with their peers.[85] Educators help students make connections between their classroom learning and the real world by means of newspaper articles, brochures,

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[81] Ibid., 377.

[82] Ibid., 384.

[83] Ibid., 386.

[84] Ibid.

[85] Ferrin, 35.

creating exhibits, and other similar ideas.[86] Inquiry-based instruction is permissible to take place in such an encouraging environment that allows the students to learn through curiosity, questioning, and testing.[87] Through this type of pedagogy students can explore how their faith and religious beliefs fits into their prior science knowledge. In this instruction, the student is able to take an active role in their own learning and cooperation, whilst encouraging the student to consider how others would seek to gain comprehension of the topic being studied.[88] Apologetic ways of thinking toward sciences may be formed through this type of instruction and future Christian scholars may be birthed.

In a study completed by Matthew Breazeale, alumni from different Christian high schools were surveyed on what effect they believed their experiences had on their faith later in life. He noted how students would participate in youth experience at church yet still failed to grasp a solid foundation of the Christian faith.[89] Students should be taught to practice their faith and not only learn about their faith in Christian education. The alumni recollected that they were encouraged to work on skills, virtues, and habits that lead to stronger faith.[90] In the study one of the subthemes identified was "faith integration". Alumni recalled the way in which they were taught to love their classmates and nurture their love for learning."[91] When asked about the most helpful preparation for the "real world" another alumni commented on the preparation in

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[86] Ibid., 36.

[87] Ibid., 39.

[88] Ibid., 40.

[89] Breazeale, 42.

[90] Ibid., 46.

[91] Ibid., 132.

humanities that helped prepare them for debate and discussing.[92] Over and over through this study the subjects of humanities, language arts, history, and philosophy were brought up but never once was the academic rigor of the integration apologetics mentioned together with the subject of science. In his conclusion of his findings Breazeale recommends changes that need to take place one being the following.[93]

> Maintaining faith integration throughout all content areas must be authentic and seen as essential for classical Christian schools and is encouraged for all faith-based education. Faith should be connected to all areas and not reserved to specific religious studies course or religious experience. This will also help equip believers to integrate their faith into their lives...including their college experience and career even if they pursue secular colleges or jobs.

The literature of the field (including studies) reveal a conflict between science and religion, exhibiting findings that those of faith are reluctant to trust secular scientist.[94] Instruction in Christian science holds to the foundational belief that discoveries made by man are not final and should be ultimately interpreted through the Bible.[95] This can cause conflict in the students' understanding of how to integrate their faith and academic instruction in science, causing them to have an inefficient understanding of the workings of world. The practice of apologetic defenses may be used in order to bridge the gap in science instruction and the believer's wariness, as well as help prepare them to defend their faith, in which education is the ideal method in training students up to meet this necessity.

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[92] Ibid., 137.

[93] Ibid., 166.

[94] Alsup, 15.
[95] Ibid., 48.

## Importance of Education

Learning and education can and may happen spontaneously through a child's curiosity and natural abilities, just as a blueberry bush may grow through soil and weeds without help from a gardener. However, when a gardener is present to till soil, water the plant, and prune the garden the blueberry bush will flourish producing sweet fruit, so will a student's knowledge flourish with a teacher to water God's creations.[96] Just as God told Adam to tend to the garden after the fall of man, so that the plants would produce fruits, teachers are called to tend to the training and discipline of students so that they may produce fruits and become intellectual Christians that may go out and plant more seeds.

The focus of education needs to be on the total outcome of the students training, not just what goes into it the education and is measured by way of results in the means of test scores, but creating an outcome-based approach on the student as a whole.[97] As the total outcome of the student becomes the focus of education, the student will be more prepared to adequately share their faith and become intellectual thinkers. Education was created on a virtue-based philosophy, focusing on civility, self-respect, chaste, and the student as a whole, not only academics.[98] Education once had a focus on what was considered cardinal virtues such as prudence, temperance, fortitude, and justice followed by theological virtues of hope, faith, and charity.[99]

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[96] John Shortt, David Smith, and Trevor Cooling, "Metaphor, Scripture, and Education" (*Journal of Christian Education.* 43, no 1:21-28. 2000), 23.

[97] Edmondson III, 71.

[98] Ibid.

[99] Wayne, 35.

These cardinal and theological virtues were instilled in children as they learned academics in hopes of creating students who understand the faith found in Christianity.

Education of a child provides opportunities for the student to develop their own personalities, talents, and thought.[100] As education expands so do the principles that guide the ideologies that are imparted upon the students.[101] In his writings Edmondson speaks of how John Dewey was against the teaching of religion and academics in schools and through his great efforts many in America agreed with him.[102] Educators and parents alike began to question the cojoining of the two attentions. Unfortunately, this separation of church and education has seen Christians fail to nourish their intellectual lives and their minds.

"Ignorance is the Mother not of Devotion but of HERESY"; this statement from Puritan Cotton Mather still holds true to this day.[103] The lack of knowledge, negligence of reasoning, and dwindling of importance on education in the today's society is not a show of devotion, but of heresy. The relationship between the Christian faith and academics has been in serious conflict in modern days.[104] It is clear in its history that Christianity played a huge part of the education system in America, though many in the nation are now overlooking the Christian faith in academics and are captivated by the scientific method, progress, and evolution.[105] If believers do not begin to again to see the importance of using their God-given faculty of the mind, the world

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[100] Steven R. Loomis and Jacob P. Rodriguez, *C.S. Lewis: A Philosophy of Education* (New York, NY: Palgrave Macmillian, 2009), 152.

[101] Ibid., 151.

[102] Dewey quoted in Edmondson III, 21.

[103] Tunis Romein, *Education and Responsibility* (Lexington, KY: University of Kentucky Press, 2014), 113.

[104] Ibid.

[105] Ibid., 115.

of academia will continue to belong to the secular scholars. Education is vital and important as it not only gives the future generation knowledge and wisdom, it shapes their morals and is supposed to develop them into responsible citizens.[106] If there are not Christian intellectuals in various fields such as science, math, language, etc. to educate, guide, and help the next generation explore the beautiful universe God made, who will?

[106] Ibid., 187.

## Chapter 3

## Apologetics for Secondary Educators in Christian Schools

### Apologetics and Education Importance

Cairney writes of Mark A. Noll a Professor of History at Notre Dame, who once wrote in regards to the evangelical mind, that the mind seems to be lacking, they (being the evangelicals) have tended to and grown "...millions of believers in the simple verities of the gospel but have largely abandoned the universities, the arts..."[107] This statement is speaking of the lack of focus that has been placed on nourishing the Christian minds of the students and only teach of the principles of the Bible. The education of a child greatly influences their mindsets and values, as well as helping to mold their future. There should not be a separation of the student's personal faith and the journey of their academic knowledge. The value of the use of both faith and reasoning among Christians must find a priority again. Christians are not called to have two separate lives, depending on where they are or who they are around. They are called to be the salt of the earth and a light in the darkness.[108] To be the salt of the earth and a light in the darkness that includes not just living in faith but imploring reason, wisdom, and knowledge.

Christian students need to be taught that their academic learning can take place while enhancing their faith and comprehension of God's creations. When this type of instruction takes place in the students' life apologetic training will follow. Apologetic training in the educational setting can positively affect the student's walk in faith. As apologetic pedagogy is incorporated into secondary science classrooms students will commence to be mouthpieces for God's works.

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[107] Noll quoted in Cairney, 9.

[108] Unless otherwise noted, all biblical passages referenced employ the *New International Version* (Grand Rapids, MI: Zondervan, 2018), Matthew 5:13-16.

As the student's minds are nourished academically there will be a prominence of Christian scholars and leaders that lead not just in faith but similarly with intellect. The Christian students' worldview should indeed be affected by their faith and in turn this worldview fueled by faith should be taught and shared, breaking apart the corral of scholarship and religion.[109]

In an article written on the lack of Christian presence in universities Cairney points out 1 Peter 2:12, that believers must live righteous lives so their works would stand out among the pagans. It goes on to say that in the modern world that can seem "...so ugly and dominated by self-serving individuals, the Christian has the opportunity in doing his or her work as a scholar not only to witness with words but also with a life."[110] This speaks to the importance of the combining of education and apologetics in an act of allowing the academic knowledge students gain through schooling to be used as an act of discipleship to others around them. There does not need to be a separation of education and faith, the two can be used together as works for the Lord.

C.S. Lewis has always been a prominent advocate for education. He believes that it is helpful for students to discover the ways in which their own personal traditions, backgrounds, and culture effectively help answer different questions in regards to learning.[111] In following Lewis's example of allowing students to encompass their own personal beliefs and values into the learning process, so too should apologetics be integrated into scientific learning for secondary students. This encompassing of a somewhat more individualized comprehension of learning permits for moral education to take place as well. Pike states that "we need to appreciate

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[109] Cairney, 17.

[110] Cairney, 20.

[111] Pike, 257.

the aesthetic experiences and education of our students but also take moral education seriously."[112] By appreciating the student's own self and education, secondary educators that are at Christian schools may also focus on the student's own religious beliefs and values and teach how they may be amalgamated into science fields and debates. As apologetics is brought into the science classrooms faith will grow, scholarship will appear, and moral development will happen in a collective process.

It has been concluded by many that the action of seeking knowledge can be seen as an act of worship to God. Palmer writes "...a knowledge that originates not in curiosity or control but in compassion, or love – a source celebrated not in our intellectual tradition but in our spiritual heritage."[113] This statement can support the importance of not only seeking knowledge from an academic standpoint, but seeking this academic information through a spiritual outlook as well. Christians are called to love the Lord with all their hearts, souls, and minds.[114] In this verse, (Luke 10:27), asserts that the mind should be used as an act of worship to the Lord, therefore apologetic instruction is necessary in the classrooms of secondary Christian schools.

## Scriptures for Apologetics in Education

The Bible gives believers many scriptures that express the importance of education and instructions to Christians. The main passages that will be used for evidence and studied are 2 Timothy 3:14-17, Colossians 3:16, verses from Proverbs chapter 3 and 22:6, and 1 Peter 3:15. These passages call Christians to "be prepared to give an answer...with gentleness and respect", to teach one another "through psalms, hymns, and songs...with gratitude", and tell of how the

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[112] Ibid.

[113] Shortt, Smith, and Cooling, 26.

[114] Luke 10:27.

law is “useful for teaching, rebuking, correcting, and training in righteousness”. Verses such as these highlight the importance of religion and education working alongside each other.

To start examining just a few Scriptures, 1 Peter 3:15 holds what is most likely the clearest apologetic call to believers found anywhere in the Bible, “but in your hearts revere Christ as Lord. Always be prepared to give answer to everyone who asks you to give the reason for the hope that you have. But do this with gentleness and respect.”[115]The first and foremost theme that must be pointed out is the Greek word used for defense, ἀπολογίαν. This word means to plea, give answer, to clear oneself, or a defense.[116] This word is where the term apologetics got its name from, to defend the Christian faith and answer for the existence of God. It is important, however to note that the scripture commands believers to give an apology for the hope that they have in a gentle and respectful manner. There is no point in giving reason for one’s hope or joy, if it is done in such a manner that is rough and callous causing the other person to now struggle to see the hope that was originally being defended.

It has been stated that when conflict or controversy arises to “use very hard arguments and very soft words,” you may never get much out the opponent by tugging at his reason, but may have luck persuading him through his affections.[117] This may be what the Apostle Peter is referring to when he speaks of giving answer with gentleness. The audience of believers is told to be prepared to give answer.[118] No matter what is of topic, one will not be prepared if they do not practice or have not previously sought to learn on the particular topic. Just as a high school

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[115] 1 Peter 3:15.

[116] James Strong, *New Strong’s Concise Dictionary of the Words in the Greek Testament* (Nashville, TN: Thomas Nelson Publishers, 1995), 11.

[117] Kesmez, 58.

[118] 1 Peter 3:15.

student may not be adequately equipped to defend the existence of God through teleological arguments when they have never practiced nor been taught these very strong defenses. In the pedagogy of apologetics in science, classes of secondary Christian schools will be better prepared to defend their faith and hope that is found in salvation.

Colossians 3:16 provides support for apologetic instruction for students and the importance of the quest for wisdom. "Let the message of Christ dwell among you richly as you teach and admonish one another with all wisdom through psalms, hymns, and songs from the Spirit, singing to God with gratitude in your hearts."[119] In this passage Paul is writing to encourage his audience to seek the wisdom of God and let it dwell within themselves. The interesting thing about this scripture is not the guidance to seek the wisdom of God, but in the way in which it tells the audience to seek wisdom through hymns, psalms, and songs with gratitude. Many times, when one thinks of learning and instruction of an academic type gaining knowledge is not generally connected with singing. Paul clearly lists three different types of Christian psalmody in the quest for wisdom from God.[120] The Greek word ψαλμοῖς means psalms generally meant to be accompanied by musical instruments, ὕμνοις or hymns are used in a celebration terminology; and ᾠδαῖς is translated song or chant.[121]

The latter can all be used for different purposes, psalms are used for expression of any type praise, lamentation, or worship. Psalms and hymns both are typically accompanied with musical instruments, yet hymns are only used for celebration, whereas chants are a repetition of a

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[119] Colossians 3:16.

[120] Murray J Harris, *Colossians and Philemon: Exegetical Guide to the Greek New Testament* (Nashville, TN: B & H Publishing Group, 2010), 137.

[121] Strong, 100.

chorus or praise. The point of discussion of this particular part of the passage is to bring light to the fact that wisdom can be found in any area of life. It is beneficial to recall that the times in which these Scriptures were written were in which the oral tradition was the main vehicle for teaching and passing along information. With that in mind Paul's encouragement to gather wisdom from the songs and psalms appears more fitting. The Greek word ᾠδαῖς would be more than likely discussing a song that repeats its central knowledge over again so the wisdom would be sure to be absorbed.[122]

The way in which Paul communicates to the audience how to allow the Word and God's wisdom to dwell within them and the Greek word he uses is νουθετοῦντες. This word means to admonish, to put in mind, to mildly rebuke or warn.[123] The use of the word νουθετοῦντες in regards to the way of instruction and seeking knowledge can be applied to the various science focuses, in putting God's Word and His wisdom into the student's minds and to warn or rebuke them as to the truths and evidences which God created. In following such a path of instruction, the pupil will seek integration of faith into every area of their life, attempting to put in mind the wisdom provided through God's creation in revelations about Himself.

The last point of this passage desired to make is the attitude in which Paul tells believers to seek the wisdom through songs "with gratitude in your heart".[124] The Greek word that is used is χάριτι, which translated to "divine influence upon the heart", gift of grace, graciousness, and joy.[125] This word χάριτι stands out throughout the whole passage in that it speaks to the way in

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[122] Harris, 137.

[123] Strong, 61.

[124] Colossians 3:16.

[125] Strong, 98.

which the student should seek out wisdom and the manner of accepting the knowledge that follows the search. As individuals gain wisdom this particular passage reminds them to let the wisdom and knowledge find a place of divine influence in their hearts as well as dwelling in their minds. As the wisdom finds a place in their hearts and minds, the individual will discover correlations between their academic learnings and the beliefs they hold.

The book of Proverbs holds a plethora of wonderful wisdom, therefore it only seems fitting that some passages it holds be used as defense for the importance of apologetic instruction for students. Proverbs 22:6 is a favorite for the defense education of any type for children. "Start children off on the way they should go, and even when they are old they will not turn from it."[126] This verse is somewhat of a mantra to Christian parents, teachers, and pastors. When a child is taught throughout his whole life the correct way in which they should go, when they are older they will remember the correct path even when the briefly wander.

The Hebrew word c*hânak* means to discipline or to dedicate training to.[127] In this term of dedication to the child's training while he is young stresses the importance of education in the student's youth. According to Strong's the Hebrew word *sûwr* can be defined as to turnoff, call back, leave undone, withdraw, turn aside, rebel, or revolt.[128] As a child is thoroughly trained in their youth this passage tells that they likely stay and remember their previous teachings. Likewise, if a student is instructed in how a Christian perspective can be applied in the field of science through apologetics in secondary schools they will continue on that path of thinking and search out for more knowledge and evidences as they become older. When not only Christian

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[126] Proverbs 22:6.

[127] Strong, 45.

[128] Strong, 98.

morals are taught at secondary schools, but apologetics as well students will become Christian intellectuals that are able to defend faith, the existence of God, and His creation in academic debates.

While the above is just one verse that was short and incisive, Proverbs chapter 3 holds many insights into wisdom and knowledge.

> My son, do not forget my teaching, but keep my commands in your heart for they will prolong your life many years and bring you peace and prosperity. Trust in the Lord with all your heart and lean not on your own understanding; in all your ways submit to Him, and He will make your paths straight. Blessed are those who find wisdom, those who gain understanding. My son, do not let wisdom and understanding out of your sight, preserve sound judgment and discretion; they will be life for you, an ornament to grace your neck. Then you will go on your way in safety and your foot will not stumble.[129]

In the first section of this chapter (3:1-12), is speaking of the training that sons receive from their fathers and how these teachings will preserve the son's life.[130] In keeping the commands in the son's heart he will not likely forget about them and meditate on them causing even more growth toward wisdom. When the teachings and commands of the Lord are taught and followed the individual will find *shâlôm* meaning prosperity and good welfare. In particular verse 1-3 calls upon the importance of not just parental figures teaching their children, but highlights the importance of leaders teaching the young in the ways of the Lord's commands.

Verses 5-6 speak of placing trust in the Lord and not depending on your own understanding or knowledge, but to fully trust and submit to God. The Hebrew for trust is *bâtach* and means not only to trust but to be bold and confident in that trust.[131] One comes to have bold, confident beliefs by studying and seeking the evidences to form foundation for these beliefs. In

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[129] Proverbs 3: 1-2, 5-6, 13, 21-23.

[130] Katherine M. Hayes, *New Collegeville Bible Commentary: Proverbs.* (Collegeville, MI: Liturgical Press, 2013), 21.

[131] Strong, 18.

submitting to or acknowledgement of God the word *yâda* is used. This word *yâda* has quite an expansive meaning. It can vary from observation, care, or recognition, to instruction or punishment followed by assuredness and certainty.[132] There is a familiar relationship that must be held in order for *yaya* to be used; it is used between friends, kinsfolk or family.[133] This passage calls upon the reader not only to submit their learning and wisdom to the Lord, but to come to know the Lord on a personal level through their submission.

The proverb says that those who seek after wisdom and continue to gain understanding are blessed. It is important to highlight that the scripture here does not simply say blessed are those that seek wisdom, it says blessed are those that seek and gain understanding. In seeking wisdom and continuing to seek that wisdom until they have understanding can be applied to the instruction of apologetic teaching in secondary schools. Students are taught to grow their faith in the Christian schools. However, when students are taught to continue to seek wisdom and understanding on how their faith can be incorporated into their academic lives as well as simply growing their faith the students will gain a deeper understanding of their faith and in turn begin the process of practicing apologetics. All students in an educational setting are obviously on a journey to gain knowledge, but when apologetic instruction is employed then a true understanding can take place thereby transforming the student's full comprehension and knowledge.

In verses 21-23 readers are reminded to keep wisdom and understanding always in their sight and to let the sound judgment and discretion gained through that wisdom and understanding be their guiding force of living so that they may not stumble. Through the use of wisdom and

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[132] Strong, 53.

[133] Ibid.

knowledge gained by following the Lord's commandments individuals will grow in sound judgment and they should make those things a center of their life, as an ornament for all to see the sound judgment and wisdom found through seeking God. As the scriptures expresses when one practices discretion and seeks understanding through God they will remain in safety and not stumble, just as a student taught apologetics in the science fields would have an understanding of the universe through a Christian perspective. When the apologetic instruction takes place, the student will be able to grasp a new understanding of God's creation and then share this new understanding with others, as one would show a new ornament on their neck.

Lastly, 2 Timothy 3:13-17 gives abundant detail covering every reason that apologetics is important in the Christian's life and should be incorporated into pedagogy.

> while evil men and imposters will go from bad to worse, deceiving and being deceived. But as for you, continue in what you have learned and have become convinced of, because you know those from whom you learned it, and how from infancy you have known the Holy Scriptures, which are able to make you wise for salvation through faith in Christ Jesus. All Scripture is God-breathed and is useful for teaching, rebuking, correcting and training in righteousness, so that the servant of God may be thoroughly equipped for every good work.

Paul is speaking to Timothy encouraging him and providing guidance on how to remain from being deceived, as well as how to apply the Scriptures in teaching of every area of life. This passage can speak to the importance of apologetic teaching in the field of science for secondary students. Paul begins the passage speaking of "false teaching" and applying the Scriptures in order to have a keen awareness of the false teachings and the truth.[134] This warning holds just as true today as it did in when Paul wrote this, if students are taught the sciences from an intellectual Christian perspective, then they will likely follow what they learn from secular

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[134]Walter L Liefeld, *The NIV Application Commentary: 1 &2 Timothy, Titus* (Grand Rapids, MI: Harper Collins Christian Publishing, 1999), 73.

scientists and educators. Apologetic instruction in science classes can prevent students from being deceived from things such as evolution and how the Earth came to be created.

In this passage the terms ἔμαθες and παιδείαν mean what you have learned. Paul uses these words for teaching and instruction to stress the importance of the education that one has received from "those from you have learned it".[135] This phrase speaks to the educator allowing them to acknowledge that the students require instruction; they will not learn these truths from Scripture on their own accord. Parents, leaders, teachers, educators, and the like are needed to further the teachings of truth to students as they develop in their own knowledge and understanding of the world. Paul expresses to Timothy. Through the reminder that instruction and teaching do not happen unintentionally, it is something that others before them put exertion into so that the pupils may gain knowledge in the teachings, it reminds readers that an intentional effort must be put into the instruction of apologetics and academics if educators wish to produce Christian intellectuals.

Verse 16 conveys the Scriptures being not only true, because they are God-breathed, and worth passing down, but details all the uses of the Scriptures. The Greek word ὠφέλιμος means profitable, useful, helpful, or advantageous.[136] Instruction of the Scriptures is for doctrinal teaching, but it is helpful to the individual and provides them an advantage over others that have not gained these teachings or laws, values, and morals.[137] Scriptures are to be used in "...teaching, rebuking, correcting and training in righteousness..." Through all these things the

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[135] 2 Timothy 3:14.

[136] Strong, 101.

[137] Liefeld, 74.

individual will grow in their knowledge and understanding of faith and how the Christian faith intersects with every expanse of life.[138] This is a theme that is found in Paul's writings of encouragement to others that they should blend sound doctrine with a godly life, holding good conscience, faith, and purity in all areas.[139]

The final and strongest point for the importance of apologetic teaching from this passage can be found in verse 17. Paul articulates the reason for the instruction from Scriptures and it is "so that the servant of God may be thoroughly equipped for every good work."[140] The scriptural instruction is not simply so that God's servants may do good works; it is so that they may be fully equipped to represent their faith, defend their God, and furnish adequate explanation to those around them as to why they do good works. Paul's writings encourage all believers, not just the leaders of the church, to give doctrinal teachings a place of prominence in their lives so that they may be fully prepared to guide others to their own faith not only by works but their skillful knowledge as well.[141] This thought still holds true to the application of apologetics in the science classrooms in secondary Christian schools.

## Apologetic Benefits for Educators

Instruction of apologetics can be applied through different subjects in schools easily without interfering with the academic process. There is no need to change the entire curriculum so that apologetics may be taught, nor is there the need for each teacher to have an apologetic degree, they simply must become willing to shift their own and their student's view to dig a

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[138] 2 Timothy 3:16.

[139] Liefeld, 75.

[140] 2 Timothy 3:17.

[141] Liefeld, 78.

little bit deeper to find God's handiwork as the only explanation for many scientific answers. As apologetics is incorporated into multiple subjects the students will continually be enhancing their knowledge of faith and the historicity of the Bible, therefore making them more effective disciples.

In particular when evidential apologetics is included in science instruction the teachers are able to not only add another dimension of learning, but they are able to create a correlation of understanding in the student's personal faith and their academic learning. Students need guidance on the process of realizing that the scientific world which they already are studying about is the same world which God created, consequently why should not students be learning about science through a Christian apologetic standpoint? Science is understood as knowledge of the natural world based on facts that are gathered through observations and experiences, known as the scientific method, in manners that are testable and repeatable.[142] In the beliefs of the theist student and educator, the natural world is that in which God created as recorded in Genesis chapter 1, therefore one could provide sound argument for the incorporation of Christian perspective in the subject of science.

1. Science is knowledge about the natural world that is gained through experiment and/or observations.
2. God is the Creator of the universe (natural world).

   Therefore,

3. Science instruction must include apologetic evidences and proofs that showcase God's hand in the workings of the universe.

Through incorporating apologetics into science instruction teachers can help the students break down barriers that have divided their personal faith and academic growth. This breakdown of the

[142] Schroeder, 12.

barrier of the two lives, religious and intellectual, may become a benefit to the teachers themselves. As apologetics is taught in Christian secondary schools these students will know and continue to view scientific findings and discoveries with a Christian viewpoint, hereby creating somewhat of a more expectant setting of integration of faith and academics. Educators can benefit by the practice of apologetics in classroom directives through the beliefs and foundations that will be laid in their students. As the educators lay evidential apologetic foundations in the science classroom in their students, these same students can continue outside of their secondary schooling and effectively witness and share the truths surrounding the Bible, God, and His creations.

Apologetics can be applied in these various disciplines as a help to teachers at Christian school to integrate biblical teachings and apologetics throughout all teachings. Teachers need to be well versed in apologetics, especially in the Christian school, as to be able to thoroughly answer students' questions. Many science topics such as how the Earth came to existence, gravity, and the origin of life, just to name a few, are difficult for students to grasp and may result in the development of valid and clarifying questions. When the teacher is able to make that connection between biblical truth and science by using apologetic answers such as teleological arguments, fine-tuning defense, and irreducible complexity in response the teacher helps build the connection between the mind and faith. As educators apply apologetic instruction into their classes they will nourish the student's mind, as well as their faith.

Knowledge of the Lord, Scriptures, theology and history of religion, and nonbiblical areas such as science can allow the individual to better serve their Creator. The individual does not need be an academic scholar and believe they hold all knowledge, they simply need to strive to use the faculties with which God gifted them, and educators are able to help students in their

science classrooms fulfill this task. It has been said that without the nourishment of the believer's mind evangelicals shy away from issues such as God's nature and character, moral issues such as gender or sexuality, authority of the Bible, and their very personhood being His created persons.[143]

Educators will be equipping their students to create an ample defense to topics such as these instead of shying away from such important issues and allowing the secular voices of the world to set the standards and ways in which the world operates. Christian educators in secondary schools will reap the benefits of apologetic instruction in their classrooms by seeing Christian academics begin to take part in the shaping of culture.[144] These teachers are able to help their students realize the imperative position they have been given, becoming intellectuals who are able to be mouthpieces for God's Word in this world.

[143] Cairney, 9.

[144] Ibid., 14.

## Chapter 4

## Apologetic Instruction in Biology and Anatomy

### Anatomy and Irreducible Complexity

Anatomy is the subdivision of science that studies the bodily structures of humans, cells, and animals, with special attention to the separation of its parts. Anatomy is expended and taught in secondary science classes, with a class of its own in upper secondary school. The following can be incorporated into anatomy instruction easily seen as a way that reveals God's essential role in creation. Irreducibly complex things have a design that cannot be taken apart. The word design simply means a purposeful arranging or gathering of parts.[145]

The argument for irreducible complexity is based upon proving whether the start of the universe by chance could not have created such complex beings, therefore demonstrating the presence of an intelligent design. Irreducible complexity cannot be broken down into multiple different changes or modifications, the thought of this complexity is that all parts need to be present in order for the being or item to function properly.[146] Such an example has been given by Behe of a modest mousetrap composed of five simple parts. The base, hammer, spring, catch, and metal bar to connect the catch and hammer all must be present in order to perform its functions properly.[147] Life and nature within the universe is full of similar examples of irreducible complexity, that could not function properly if even one small part was out of place or not yet developed. However, with an intelligent designer of the universe irreducible

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[145] Sweis and Meister, eds., 104.

[146] Ibid., 101.

[147] Ibid., 101.

complexity does not pose a problem, as that designer would understand the importance of each function that is needed in order to make a livable universe and the complex human body.

One such example of irreducible complexity is blood clotting. There are several factors that must line up exactly in the right way and moment in order for blood to clot in man or animal.[148] In order for blood to clot Hageman must stick near the wound, then together with HMK converts into prekallikrein which is a protein, in the active form kallikrein speeds up HMK to make more Hageman, so they may form PTA, in order to make another protein convertin, followed by the Christmas and antihemophilic factor, then Stuart factor converting accelerin into prothrombin, thrombin into fibrinogen, and finally into meshwork clot.[149] Each one of these steps must be followed specifically, in the right order and right amount every single time in order for the blood to clot perfectly.

There are other biochemical systems that are irreducibly complex. The eye and the cilium are of this category. Cilium is the structure that appear hairlike on some plants and animals.[150] The cilium contains fibers called the axoneme, each axoneme contains microtubules rings, encompassing filaments, with alpha and beta tubulin.[151] All of these components have a particular job that they must perform in order for the cilium to move in its fluid-like motion.[152] Microtubules require cross-link proteins between each other to prevent the microtubules going

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[148] Hsieh Chen, Mohammad A. Fallah, et. al. "Blood-Clotting-Inspired Reversible Polymer-Colloid Composite Assembly in Flow" (*Nature Communications.* 4 no.1:1-8, 2013), 2.

[149] Ibid., 3

[150] Sweis and Meister, eds., 101.

[151] Ibid.

[152] David A. Hoey, Matthew E. Downs, et. al. "The Mechancis of the Primary Cilium: An Intricate Structure with Complex Function" (*Journal of Biomechanics.* 45, no.1:17-26. 2012), 18.

over one another, followed by dynein sliding and bending across the entire axoneme, and each working together as a motor.[153] These are intricately involved examples of how things must work together in order for each to complete its role properly, without all of its parts in existence at one time the cilium cease to exist.

The eye is an irreducibly complex part that falls under the category of biological evidences against evolution, but for now the irreducible complexity will be discussed. In order for vision to take place a series of actions and procedures must occur at once. Here is a brief explanation of just the beginning parts of the irreducible complexity of the eye.

> When first light strikes the retina, a photon interacts with a molecule called 11-cis-retinal, which rearranges within picosenconds to trans-retinal. The change in the shape of retinal forces a change in the shape of the protein, rhodopsin, to which the retinal is tightly bound. The protein's metamorphosis alters its behavior, making it stick to another protein called transducim. Before bumping into activated rhodopsin, transducing had tightly bound a small molecule called GDP.[154]

The process continues from GDP to GTP, through a phosphodiesterase to cGMP molecules followed by an ion channel eventually transmitted to the optic nerve in the brain therefore causing vision.[155] Again to be pointed out, if any of these parts or segments were missing along the process from the very beginning the process would be unable to work, all must be present and fully developed at the same moment from conception of process. Irreducible complexity refutes thought of the universe and all it contains coming into existence through a bang or without an intellectual designer fully capable of creating such beautifully, complex beings.

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[153] Sweis and Meister, eds., 101.

[154] Ibid., 100.

[155] Ibid.

## Defense Against Biological Evolution

Evolution is the science theory that claims that all living things have developed out of earlier simpler forms.[156] Charles Darwin the author of evolution or natural selection, claims that all creators are formed from changes over time in order to better adapt and survive in different environments. Evolution is taught in public schools and briefly covered as an opposing view in Christian secondary schools. Biological defenses to evolution can and should be employed in the study of animals and other workings of the body, such as the eye.

Darwin had his own doubts about evolution and the thought processes if proof of an intellectual being ever was substantiated it would cause his theory to fall apart.[157] The theory of evolution Darwin proposed, could not explain everything, he believed the process was working in random variations.[158] The theory of evolution does not account for the molecular assembly of all life.[159] There are far too many different and complex creatures on the earth to have all evolved from the same set of cells.[160] In just animals alone if all came from a single pair of cells there would be no true way to classify them in separate species.[161] Some Christian apologists refute the

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[156] Manson, 277.

[157] Ibid., 278.

[158] Ibid.

[159] Ibid., 291.

[160] Immanuel Kant and Jon M Mikkelsin, *Kant and the Concept of Race: Late Eighteenth-Century Writings* (NY: State University of New York Press. 2013), 138.

[161] Ibid.

claim of evolution with the theory that God created the universe and all that it contains, yet He left room for contrivances as natural selection to work on its own.[162]

Paley's answer to design versus evolution was to look at the anatomy of humans and animals. He draws attention to the physical makeup of bones in the different species of animals. First consider the neck of a human, it can move side-to-side, up and down, holds the head upright; it is a hinge jointed.[163] A shoulder blade is an individual bone that many mammals have, yet quadrupeds do not have one because they have no need for it.[164] The forearm is another bone that only some mammals have, again because not all of them have need to swing the arm at the elbow or bend at the wrist.[165]

Yet another even more intricate example of anatomy makeup is the spine. The spine is a chain of joints that are able to remain firm enough to support the body whilst one stands and flexible enough to allow one to bend down.[166] However, think of its purpose when one is paralyzed, the spines function then becomes a passage way for medullary substance to the brain.[167] These and many other bones, serve very specific purposes and have been the same, serving the same purpose in these animals always, since the beginning of the universe.

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[162] Avery Cardinal Dulles, *A History of Apologetics* (San Francisco, CA: Ignatius Press, 1999), 364.

[163] William Paley, *Natural Theology,* 133.

[164] Ibid., 138.

[165] Ibid., 137.

[166] Ibid., 138.

[167] Ibid., 139.

Different animal species have different varieties of eyes that meet the specific needs or requirements of that animal. [168] Human beings have extremely complex eyes as discussed earlier, whilst other animals such as tiny creatures only have eyes that allow them to simply spot light.[169] However, the eye has never shown any changes in the species of each particular animal, the eye has not evolved into a more complex part in the same species. The differences found in the eyes are accountable to the various species, no variances of eyes have been found within the same species which would then account for evolution.[170] The eye is another illustration of the complexity in which evolution cannot account.[171]

## Conclusion and Application Drawn from Apologetic Defenses in Biology

Through the instruction of apologetics in these deliberations the educator will help break away the barriers of misunderstanding or misrepresentations in science who may have been affecting the student's faith or their ability to share that faith. As students are taught to recognize and unearth scientific information that has voids in completion of understanding, students can explore the universe through their faith as they search for answers to the questions in which God holds the answers. Instead of accepting evolution as the end all answer, when students are taught to think apologetically even in the field of science, they will find ways in which to answer questions. The answers will lead them to truths that substantiate God as the creator of the universe because no amounts of evolving can account for the irreducible complexity and biological makeup of so many living creatures.

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[168] Sweis and Meister, eds., 99.

[169] Ibid.

[170] Ibid.

[171] Ibid.

William Paley concluded his work of *Natural Theology* on the point that no single subject was able to demonstrate the existence of an intelligent Creator, one must look at all the different biological examples and see the evidences.[172] The more man searches for wisdom and knowledge of the world around him the more he is pointed to contemplation of God's existence as the Creator of the universe. William Paley said, "The contemplation of universal nature rather bewilders the mind than affects it."[173]

The best approach to the incorporation these apologetic arguments is through Inquiry-Based Instruction in the science classroom. This learning method is not new to educational techniques. Simply put it is a hands-on learning approach. In allowing students to explore these new concepts with a hands-on approach they can gain a deeper understanding of how their faith should guide their academic learning in all subjects. For example, when instructing on the topic of irreducible complexity the students can observe the workings of simple mousetraps. By investigating and observing the working of the mousetraps, students can gain a better understanding as to how many things in the universe could have not possibly came to existence without God as Creator. When studying animals, anatomy, or life science the educator can incorporate a unit on animals and how their eyes vary from each other through different size and shape objects the students can not only visualize but hold to make a concrete connection, as a way to bring God's irreducibly complex design into a subject that would not necessarily have been correlated to God's hand in creation. Through the use of Inquiry-Based instruction, students

[172] Paley, *Natural Theology*. 686.

[173] William Paley, *The Principles of Moral and Political Philosophy,* (Indianapolis, IL: Liberty Fund, Incorporated, 2002). 41.

are encouraged to work together, encourage each other, as well as question and teach each other this in turn provides training for the students to later use in defense or explanation of their faith.[174]

When secondary Christian school teachers apply these apologetic defenses to their science classrooms, they encourage the students to find use of their faith in academic fields, that are not generally thought as having any valuable correlation to each other. Through the instruction of incorporating religious beliefs into science and the encouragement in exploration of secular scientific views Christian students will grow to become intellectually aware of the importance of cojoining their beliefs and academics. As Christian secondary schools allow for their students to become Christian scholars, they can begin to be the mouthpieces and speak up for Christianity's place in intellectual circles.

[174] Ferrin, 113.

## Chapter 5

### Apologetic Instruction in Astronomy and Physics

Astronomy and Teleological Defense

Licona and Habermas note in their book on the evidences for the resurrection of Jesus, that Robert Jastrow, an agnostic physicist from NASA's Goddard Institute for Space Studies has stated that the constant variables that permit life in the universe are "the most theistic result ever to come out of science."[175] Yet another physicist turned from promoting atheism up until 1984, then Paul Davies, claiming that "the laws [of physics]...seem themselves to be the product of exceedingly ingenious design," and in 1988 expressing that there "is for me powerful evidence that there is something going on behind it all. The impression of design is overwhelming."[176] The final example, although the list could go on and on, will be Hugh Ross an astrophysicist that in 1998 had twenty-nine constants of the universe and forty-five related to the planet, moon, star, and galaxy relationships.[177] Yet in 2002, Ross updated his list to forty-five constants of specific universe and 118 constants of planet, star, moon, and galaxy relationships.[178]

A team of physicists from MIT authored a paper discussing the constants of the universe conclude that apart from the assistance of an unknown cause outside of the universe the appearance and existence of life is unlikely and "statistically miraculous events".[179] Consequently, Dyson, Kleban, and Susskind the authors of the paper do not look for a possible

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[175] Jastrow quoted in Gary R. Habermas and Michael R. Licona, *The Case for the Resurrection of Jesus (*Grand Rapids, MI: Kregel Publications, 2004), 177.

[176] Ibid.

[177] Ibid.

[178] Ibid.

[179] Ibid.

Creator. They suggest that there is something wrong with the laws of physics.[180] While scientist are continually discovering new possibilities, it seems unlikely that the laws of physics are mistaken, that they instead point to a complex design that could only have taken place through a divine omnipotent Creator. As these physicists continue to study and make discoveries the more evidences, they find that suggest a grandeur design.

The idea of multiple universes concludes there are several universes that are said to have existed, although the majority of them would not have been conducive for human life.[181] The thought can be referred to as oscillating universes, meaning multiverse has been possible through consecutive expansions and contractions of the universe.[182] In theory the oscillating universes would bounce around, in, and out until one of the expansions or contractions configured to something that was conducive to the requirements of living.[183] A problem this multiverse theory poses is that in each consecutive crunch or implosion of the previous universe is that the matter and particulars would be highly disordered causing even more of an improbability of forming a surface that is favorable to human survival.[184] A rebuttal to the argument of multiple universes is where did the design and beauty of the Earth come from. If atheists claim the universe spontaneously appeared how did its design and inhabits come to be in such a majestic form.[185]

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[180] Ibid., 178.

[181] Sweis and Meister., 113.

[182] Rodney Holder, *Big Bang Big God: A Universe Fit for Life* (Chicago, IL: Lion Hudson LTD. 2013), 78.

[183] Ibid., 78.

[184] Ibid.

[185] Sweis and Meister., 114.

The argument to this thought postulates that there is and has only been but one universe designed intentional for human inhabits.

## Fine-tuning Arguments

Fine-tuning is the way in which so many of our constants that are needed for life are "balanced on a razor's edge".[186] Water existing in liquid form, chains of atoms forming complex organic molecules, and hydrogen atoms being perfectly balanced as they are through the laws of physics. These balancing acts, parameters of physics and the initial constants for the universe are referred to as "fine-tuning of the cosmos".[187] Robin Collins in his defense for fine-tuning as evidence for God as the designer gives the example of a hiking trip in the woods as a simple representation for fine-tuning. If he were to find a group of rocks arranged with the words "Welcome to the mountains, Robin Collins", on his walk he could form two hypotheses. One hypothesis is that by chance the rocks formed the words at random or two that his brother had come along before him to arrange the rocks.[188] The majority of hikers in the woods would come to strongly believe that the brother had come through earlier and was responsible for the words. This example is from the *General Principle of Reasoning Used,* simply put without illustration when "two competing hypotheses, an observation counts as evidence in favor of the hypothesis under which the observation has the highest probability (or is the least improbable)."[189] With this example and comprehension of the principle in mind the evidences for fine-tuning that should be presented to students in the science classrooms will be presented below.

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[186] Sweis and Meister, 106.

[187] Ibid.

[188] Sweis and Meister, 109.

[189] Ibid., 108.

It has been stated in arguments of an intellectual designer "that life itself must have its source in the actions of a divine being who has ordered all creation…every individual element is attuned to the purpose of the whole…"[190] Fine-tuning is a strong defense for the proof of the universe having a designer and not being formed by mere coincidence. There are so many factors of the universe that would have had to fall perfectly into place, so that humans can survive on the earth. If the universe were to have come into existences by an inflation or supernova, the vacuum energy density would have been $10^{53}$ to $10^{120}$ higher than what is sustainable to life.[191] Things such as the force of gravity, the closeness of the sun, the inner workings of human body, and much more. The cosmic fine-tuning of the universe, argues the fact that the universe did not appear by happenstance, yet by a Designer.[192]

A universe favorable to human survival being created out of happenstance holds extremely unfavorable percentages. There are over two thousand enzymes that exist and there is about a $10^{40.000}$ percent chance of a random beginning of the universe in which life could exist.[193] Calculations of the nuclear force that fuse protons and neutrons together in an atom have a margin of error as little as five percent, in being stronger or weaker and life would have no chance of existing.[194] Even Hoyle, who shows apparent negative thoughts towards religion in his works *Ten Faces of the Universe* states that the fine-tuning, chemical elements of the stars, and

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[190] Kant and Mikkelsin, *Kant and the Concept of Race,* 80.

[191] Manson, 181.

[192] Gould, Dickinson, and Loftin, 42.

[193] Sweis and Meister, 107.

[194] Ibid.

laws of nuclear physics hold connections between religion and the creation of life.[195] Hoyle postulated that the "connections are either 'random quirks' or signs of a super-intellect behind the universe".[196] If electromagnetic forces were slightly weaker or stronger life would not be possible for multiple different reasons.[197] And the last example to consider is the dialing of a dial radio, if the dials are not set in the completely right position then no signal or noise may be heard; as is the same with the finely tuned constants that must exist and fall perfectly into place with each other and the universe so that life may be sustained.

## Teleological Arguments for an Intelligent Designer

In an article on incorporating Intelligent Design into science curriculum, Vicki Johnson defines intelligent design as "the belief that the origin and complexities of life can be attributed only to the action of a supernatural intelligence, and that the origin of life cannot be ascribed to natural causes or material mechanisms, such as those described by evolutionary science."[198] Intelligent design is able fill in the gaps that Darwin's theory of evolution leaves as to the origins of life and all that his theory says has evolved.[199] Intelligent design need not answer every doubt that one might have, it need only cast a reasonable doubt towards the theories of evolution.[200]

In William Paley's opening statement in *Natural Theology,* he gives the analogy of passing along and finding a watch on the ground. The one that finds the watch clearly realizes

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[195] Holder, 26.

[196] Ibid.

[197] Sweis and Meister, 107.

[198] Johnson, 222.

[199] Ibid.

[200] Ibid., 225.

that there is a designer of the watch, that the watch did not sprout from the ground. When looking at the watch one notices the springs coiled perfectly inside, the wheels working together, the small teeth that cause motion, and the face of the watch, all the intricate and complicated innards of the watch. Even though the one beholding the watch may have never witnessed how a watch is made; that individual can logically conclude that there is a designer that made this watch with an intended purpose.[201] The watch did not create itself and it undoubtedly has a specific point of time when it came to existence, a point in which its maker decided to create the watch.[202]

Paley debated the nonsense of telling the one in whom found the watch that the watch came to be simply as an outcome of laws of *metallic* nature.[203] Presuppositions of a law understand that the law itself has an agent that proceeds it and is able to cause an act of power.[204] This is no different than claiming the earth exists through laws of nature, the law itself implies an agent that proceeds the actions of nature. Paley asserts that the universe is similar to the watch, the universe holds distinct evidences of an intelligent designer and it naturally has a beginning. According to Paley creation itself reveals God's disposition. In the pursuit of finding understanding to the creation of the world, humans are led to a divine governing, with an intended purpose. The Maker created beings that have the ability to make rational decisions, follow or not follow in moral obedience, and pursue the knowledge of the beginning of the

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[201] Paley, *Natural Theology,* 19.

[202] Ibid., 17.

[203] Ibid., 23

[204] Ibid., 24.

universe leading them to their Creator.[205] The capability of knowing the difference between right and wrong and being able to make that choice, lends to the fact that there is an intelligent designer of the universe.

The apologist seeking teleological arguments receives more and more evidences for God's existence as science evolves, even if that is not the intended purpose of modern intelligent designs. As the scientific fields expand and biologist study, discover, and research modern intelligent designs continue to refute the opposing worldviews. Modern intelligent designs emphasis is on the scientific evidences that creation simply needs an intelligent designer in order to explain all that's in it. Modern intelligent designs are not focused on proving God's existence or supporting religious beliefs.[206]

Modern Intelligent Designs claim that they are not concerned with existence of evil in the world when proving the presence of an intelligent designer, only that the claims that are made are in line with correct biological examples.[207] DNA, even with today's ever-expanding knowledge, is still much of a mystery. Only about two percent of a DNA sequencing is liable for producing proteins.[208] Even with the advances being made there is still ninety-eight percent of DNA that remains unknown.[209] DNA is a highly sophisticated structure that does not happen in a random order.[210] The patterns and structures observed in DNA hold a probability of $10^{40.000}$

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[205] William Paley, *Evidences of Christianity,* (London: W. Clowes and Sons, 1851), 5.

[206] Manson, 276.

[207] Ibid., 276.

[208] Paul Weingartner, *Nature's Teleological Order and God's Providence: Are They Compatible with Chance, Free Will, and Evil?* (Boston, MA: De Gruyter, Inc., 2014), 80.

[209] Ibid., 80.

[210] Ibid., 81.

being formed in chance hypothesis.[211] The more advances that are made in science and the new findings that are discovered point to an intelligent designer.

Conclusion and Application Drawn from Apologetic Defense in Astronomy and Physics

Apologetics must be part of science instruction just as Van Til explains that as God created the world all things work together in a system of meaningful contact and purposes.[212] For without consideration of God in understanding the world and the way in which it functions one cannot truly comprehend the fields of science as a whole.[213] Apologetic defenses can be incorporated in astronomy and physics through the teacher first working on familiarity and conceptual comprehension that the students already have, then build upon that comprehension with a new concept through in-depth instruction, and then allowing for critical thinking instances so that the idea will remain with the student.[214] In using this method of instruction with topics such as fine-tuning or evidences of an intelligent designer it allows the student to slowly become familiar with concepts they may have never heard before. The learning cycle would also be a beneficial method that ought to be applied to these topics.[215] The steps in the learning cycle and how they could be specifically applied to apologetic sciences are as follows.

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[211] Ibid., 83.

[212] Morley, 66.

[213] Ibid.

[214] Schroeder,35.

[215] Ibid., 36.

1. Exploration Phase: students are introduced to a new concept slowly, perhaps given a new vocabulary word and then allowed to confront misunderstanding about this.[216]
    a. Fine-tuning: provide student with vocabulary phrase of *fine-tuning of the cosmos*, then allow the student to postulate what they believe it to mean from their preconceptions.
    b. Intelligent Designer: provide student with the vocabulary phrase of *intelligent design*, then allow the student to postulate what they believe it to mean from their preconceptions.
2. Concept Introduction: the students are given new information by their educator in a short lecture in order to refine their previous assumptions.[217]
    a. Fine-tuning: the teacher may provide the definition as a series of precise balancing acts, parameters of physics, and initial constants for the universe.
    b. Intelligent Designer: the teacher may provide the definition of beginnings and complexities that cannot otherwise be accounted for without supernatural intelligence.
3. Concept Application: the student is provided the opportunity to develop the new understanding in relation to their previous knowledge in hypothesis and testing the new concept.[218]

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[216] Ibid.

[217] Ibid., 37.

[218] Ibid.

a. Fine-tuning: students can explore the different parts of physics that substantiate the proof of a universe that could not have formed by chance.
b. Intelligent Designer: students can explore concepts found in astronomy and examples that Paley provides that leads to the need for God as Designer of the universe.

In all the exploration that takes place of these topics it is imperative that instruction of these topics allow for open dialogue. The students must be allowed to ask questions and have them answered honestly. In this way learning is facilitated and it raises their confidence and understanding of the topics at hand.[219] Another method that should be remembered in apologetic instruction of science is simply allowing time for exploration and time for circling back to the same topic later.[220] Circling back to the same concept at a later date allows for educators to reinstate the concept and gives students the opportunity to ask any questions that they may have formulated since the previous lesson.

In order to fully understand the wonderment of the universe and the Intellectual Designer, one must first attempt to comprehend their own temporal existence does not commence to compare to the eternity and greatness of God.[221] William Paley supposed that the universe was an example of the unity between itself and the Creator, all of the parts working together and depending upon each for subsistence.[222] One of his defenses is that as new countries and

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[219] Ibid., 82.

[220] Ibid.

[221] Jonas Grethlein, *Experience and Teleology in Ancient Historiography: Futures Past from Herodotus to Augustine* (New York, NY: Cambridge University Press. 2013), 314.

[222] Paley, *Natural Theology*, 578.

scientific laws were being discovered, no matter where the country was discovered the same laws of nature still applied; Paley contended that this was because all have the same Creator of the universe.[223]

This claim still holds true today, no matter where or when someone contracts an illness, that particular illness attacks that person's body, the same way it would in another town, state, or country. The laws of gravity still cause a person to fall to the ground no matter where they may be. The laws of the universe act the same way no matter where they are acted out, because God is the Creator of the whole universe and the laws are the same as they were in Paley's time. Paley uses an example of comparing an eye to a telescope. He contended that both are made for vision, yet one is more complicated than the other.[224] While both work in similar ways and process rays of light, one is able to adjust on its own according to how much light needs to transmit or refract through the eye.[225] Both the example of the telescope and the eye lend proof to having an intellectual designer, yet the eye's designer is divine, powerful, and able to create the entire universe. With this statement in mind it is ever important that students are well trained in apologetics through science instruction so they are capable of giving an explanation of the Creator and His creation.

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[223] Ibid., 580.

[224] Ibid., 38.

[225] Ibid.

## Results

Second Corinthians 10:5 will sum up the results of this thesis, "We demolish arguments and every pretension that sets itself up against the knowledge of God and we take captive every thought to make it obedient to God." Through the practice of apologetics in Christian secondary science classrooms educators will prepare students to defend against every opposing principle science holds. Second Corinthians 10:5 can be applied directly to theories such as evolution, this is the call to the student to rise up in academic standings and show the secular scholars the truths science holds that highlight God's existence. Moreland in his book *Love Your God with All Your Mind* states that one should expose themselves to ideas that disagree with one's own thoughts and beliefs so that they may better form intellectual rebuttals.[226] This is relevant when speaking of incorporating apologetics into science instruction, Christian secondary teachers should not simply take science curriculums and instruct from a secular worldview, they should take the topics and teach the students how to use the scientific findings as intellectual evidences for God's hand in creation.

Science as defined earlier, is the knowledge about the natural world that is gained through experiment and/or observations. God is the creator of the universe students study through science so why should students not be taught methods and evidences that point to God's existence and His hand as the Intelligent Designer of the universe and the laws that lie within His creation? Multiple evidences such as irreducible complexity, constants found in physics, and teleological argument, were given that can and should be applied in the instruction of Christian science secondary classes. Intellect and the use of reason have seen a regression of importance in the Christian's life when compared to faith and a

[226] Moreland, 109.

decline of prominence in the world compared to scientific inquiry and discoveries.

Christians must come again to the conclusion found in the Scriptures of imploring both faith and reason in their daily lives and understanding the symbiotic relationship of the two. There should not be a separation of religious and secular world knowledge and findings, as God is the Creator of the whole world, it is not the secular world, as Christians have let it become claimed as. Christians must answer the call to research, discover, and explore the world in which God created and calls Christians to gain an exegetical knowledge of. The Christian's reasoning faculty was not given to them so they would only use it in study of the Bible, but to gather logical inferences and gain knowledge about the world around them in which their Creator designed. As educators use apologetics in the instruction of their science classes, they will create intellectual, Christian students who will stand up to be the ones to make new discoveries in the field of science. These students will be adequately prepared to explain to others and fully equipped to defend the Christian faith to anyone who asks.

## Further Study

There are two particular areas of further study that would be greatly beneficial to this subject of apologetic teaching in science instruction. The first being to explore the instruction of scientific apologetic arguments in public/non-Christian schools. For the public/non-Christian schools that are teaching Intelligent Design theory and evolution how much curriculum does each topic get? Are they both taught on equal playing fields or is evolution still taught as the main answer to the Earth's inhabits?

The second topic that could be explored pertains to secondary Christian schools only. Further study to look at the incorporation of apologetics in other subjects such as

social sciences and literature. Does social studies include the apologetic instruction of looking into historical documents, archaeology, and other evidences that have occurred throughout history and can be used to defend the Christian faith? Does the literature classes apply practice hermeneutics in analyzing Scriptures and cover works of apologist?

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