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Impact of a young-Earth creationist apologetics course on student creation worldview

Tom Henderson, Steve Deckard and David A. DeWitt

Science educators holding an evolutionary worldview are concerned about the teaching of young-Earth creationism (YEC) and generally oppose its presentation in public schools. This paper examines the influence of a YEC apologetics course on Creation and evolution worldview attitudes of Liberty University students. The creation worldview test (CWT) was administered and a total scale score along with three subscales scores in theology, science and age were analyzed. Student pre-test scores indicated some weaknesses, suggesting departure from a solid YEC worldview. Following the course, students shifted significantly toward stronger agreement with the YEC position in total score, science and age. The results demonstrate that when Christian college students are taught from a YEC perspective, they shift toward stronger beliefs in YEC.

Scripture mandates that Christians ‘Train up a child in the way he should go’ (Proverbs 22:6a). Yet, today in American public and private schools, most students are being bombarded on a daily basis with Naturalism and an evolutionary perspective. This worldview impacts nearly every aspect of these students’ lives as it is trumpeted through the

Table 1. *Evolution, Creation, and Biblical Creation models*

Evolution model	Creation model	Biblical Creation model
1. Continuing naturalistic origin.	1. Completed supernaturalistic origin.	1. Creation completed by supernatural processes in six days.
2. Net present increase in complexity.	2. Net present decrease in complexity.	2. Creation in the bondage of decay because of sin and the curse.
3. Earth history dominated by uniformitarianism.	3. Earth history dominated by catastrophism.	3. Earth history dominated by the great flood of Noah’s day.

media and both public and private school curriculum. Even though some of the above mentioned students are brought up in Christian homes and somewhat insulated from the influence of the evolutionary naturalism, many go off to secular colleges and universities and lose their Christian worldview. For these reasons a sound apologetic based on a young-Earth creationist (YEC) worldview should play a vital role in the curriculum of Christian colleges across America and around the world.

One way to determine the status of young peoples’ view on the key issues related to evolutionary and creationist worldviews is through assessment. The Creation Worldview Test (CWT) is an instrument that enables the measurement of student YEC worldview. Measuring this construct before entry and after taking an apologetics course may give the instructor a picture of the views of the students and an indicator of the teaching effectiveness toward the goal of teaching from a YEC worldview.

Recently it has been shown that courses taught from a YEC perspective show significant improvements in student creation worldview attitudes.¹⁻⁵ DeWitt teaches apologetics at Liberty University. Since Fall 2001 he has pre/post tested his students with the CWT tool. This paper discusses the results of the assessment for the Spring 2002 classes.

Purpose and focus of the study

The CWT was used to determine Liberty University student creation worldview attitudes before and after taking an apologetics course, which was taught from a YEC perspective. Three specific subscales are measured by the CWT along with an overall score. These three subscales are: theology, science and age aspects.

Null Hypotheses

H₁ - There will be no significant difference in measured student attitudes between the CWT Pre-Test *Theology* Subscale Score mean and CWT Post-Test *Theology* Subscale Score mean.

H₂ - There will be no significant difference in measured student attitudes between the CWT Pre-Test *Science* Subscale Score mean and CWT Post-Test *Science* Subscale Score mean.

H₃ - There will be no significant difference in measured student attitudes between the CWT Pre-Test *Age* Subscale Score mean and CWT Post-Test *Age* Subscale Score mean.

H₄ - There will be no significant difference in measured student attitudes between the CWT Pre-Test *Total Scale* Score mean and CWT Post-Test

Total Scale Score mean.

Definitions

Creation Worldview Test (CWT) — an instrument developed by Deckard to measure attitudes and beliefs related to the creation /evolution controversy.⁶

Construct — an abstraction at a higher level than a concept used to explain, interpret, and summarize observations and to form part of a conceptual content of a theory.⁶

Review of literature

Background related to the worldview construct

A number of authors have defined/described the worldview construct. Wisniewski states ‘A worldview is an internal belief system about the real world—what it is, why it is, and how it operates. Within a person’s mind, it defines the limits of what is possible and impossible.’ He adds, ‘The worldview is all encompassing, there is NOT ONE area of interpretation that the worldview does not affect.’⁷ (Emphasis in original)

Noebel states,

‘The term worldview refers to any ideology, philosophy, theology, movement, or religion that provides an overarching approach to understanding God, the world, and man’s relations to God and the world. Specifically, a worldview should contain a particular perspective regarding each of the following ten disciplines: theology, philosophy, ethics, biology, psychology, law, politics, economics, and history.’⁸

‘A worldview is a way of viewing or interpreting all of reality. It is an interpretive framework through which or by which one makes sense of the data of life and the world.’⁹

Jeeves and Berry ‘described a worldview as primarily concerned with the ultimate nature of reality, and is a set of beliefs that produces a framework of meaning for interpreting life as a whole.’¹⁰

Evolution worldview

The ‘Science Establishment’ in the USA consists of organizations such as the National Science Foundation (NSF), National Science Teachers Association (NSTA), National Education Association (NEA), and the National Association of Biology Teachers (NABT)—all assume evolution as a fact. They hold an evolutionary worldview. Dobzhansky quotes Teilhard de Chardin:

‘Is evolution a theory, a system, or a hypothesis? It is much more—it is a general postulate to which all theories, all hypotheses, all systems must henceforth bow and which they must satisfy in order to be thinkable and true. Evolution is a light which illuminates

all facts, a trajectory which all lines of thought must follow—this is what evolution is.’¹¹

Dobzhansky also states:

‘Evolution as a process that has always gone on in the history of the earth can be doubted only by those who are ignorant of the evidence or are resistant to evidence, owing to emotional blocks or to plain bigotry. . . . the mechanisms that bring evolution about certainly need study and clarification. There are *no alternatives* to evolution as history that can withstand critical examination’¹² (emphasis added).

Christian Creation worldview and science education

Henry Morris defined elements of a Christian YEC worldview and his Biblical Creation model.¹³ (See Table 1)

Deckard proposed ten tenets for a creationist-based science education.¹⁴ Points 2 and 3 were later slightly modified. These tenets are summarized as follows:¹⁵

1. *Worldview development* should be an integral part of true science education.
2. A YEC worldview can be viewed in terms of three measurable domains: *theological*, *science*, and *age* aspects. (This paper uses the same three.)
3. Learning encompasses senses (*hands-on*), intellect (*minds-on*), and spiritual discernment (*hearts-on*). Effective teaching should address *all three* components of this three-fold nature.
4. *Testing* should cover factual knowledge, understanding of creation, aspects of worldview development, and the learning components as stated in 3.
5. Biblical and scientific creationism should be *fully integrated* into textbooks.
6. Evolutionary philosophy exposure should occur *after* a thorough grounding in a creationist worldview.
7. Both Creation and evolution are *belief systems*.
8. *God* is the source of all knowledge.
9. Creationism must be taught *systematically* (7 principles noted).
10. Student *spiritual* beliefs parallel their *scientific* beliefs.

Previous reported testing using the CWT instrument

DeWitt conducted CWT pre-testing and post-testing around his Apologetics 290 course at Liberty University. He taught this fall 2001 course from a YEC perspective. Analysis revealed statistically significant upward shifts in CWT *Science* subscale score 50→59, CWT *Age* subscale score 36→59 and CWT *Total* scale score 58→68. The *Theology* Subscale Score began and remained at a high level 81→83.² Scientific creation and age-related issues are less well understood by the students. This is true for all groups tested with the CWT, not just Liberty University.^{1 5}

Table 2. Trinity Bible College creation worldview pre→post course tests.

TBC Scores	Apologetics	Creation-Evolution	Biology 1	Biology 2
Total Scale	63 → 76	68 → 82	54 → 59 not sig	52 → 55 not sig
Creation Issues	62 → 79	62 → 88	48 → 61 not sig	46 → 53 not sig
Evolution Issues	53 → 68	63 → 76	48 → 49 not sig	46 → 52 not sig
Theology Scale	81 → 82 not sig	84 → 78 not sig	77 → 72 not sig	75 → 60 not sig
New Age Scale	60 → 71 not sig	80 → 79 not sig	62 → 65 not sig	62 → 65 not sig
Creation Age	67 → 71 not sig	69 → 80	41 → 58 not sig	43 → 55 not sig
Evolution Age	44 → 59	66 → 72	46 → 42 not sig	37 → 41 not sig

Deckard conducted CWT pre-testing and post-testing around his apologetics and Creation-evolution classes plus two biology classes at Trinity Bible College. The biology classes were team-taught with a theistic evolutionist. Analysis by Deckard, Henderson, and Grant showed statistically significant shifts toward a stronger creation worldview occurred in the apologetics and Creation-evolution classes but not in the freshmen biology classes where there was a mixed message.¹⁶ The CWT statements were grouped in six sub-scales: creation, creation-age, theology, new-age, evolution and evolution-age. See Table 2 and shaded TBC column in Appendix A.

Ray studied Atlanta high school students from a wider variety of backgrounds: Christian schools, church youth, public school, and home school. Ray utilized both the CWT and PEERS tools to help answer questions concerning education, religion, and social issues, views towards God and Christianity, and influence of high school background. He used scaled scores (-100 to +100) and worldview attitude classifications shown below as defined by the PEERS. He also applied these descriptors to the CWT. Correlation of the PEERS with the CWT showed the two instruments were measuring something very similar ($\rho = 0.79$).¹⁷ For a concise summary of his dissertation see Deckard and Smithwick.¹

Development of tools to measure Creation worldview

Creation Worldview Test (CWT)

The CWT is an instrument for measuring attitudes and beliefs related to the Creation/evolution controversy. It was developed by Deckard in 1995 and field-tested in 1995-1997.¹⁸ The ICR Tenets of Biblical and scientific creationism were used as a basis for instrument development.¹³

The CWT instrument was unveiled to the Creation community at the Third International Conference on Creationism by Deckard & Sobko. This paper also detailed the instrument validity and reliability analysis.¹⁹

In 1998–1999 the CWT contained 49 statements on Creation-evolution. In 2000 two questions were dropped

and others edited. Four new ones were added, bringing it to the current configuration of 51 statements (see Appendix 1). Eighteen statements (35% of 51) are categorized under *theology*, twenty-two (43%) under *science*, and eleven (22%) under *age*.

Methodology

Students entering the Liberty University *History of Life* course were pre-tested on their creation worldview attitudes using the CWT instrument. The 14-week course (eleven 50 minute lectures plus 3 tests) met once a week. Course topics included: limitations of science, genetic limits of evolution, fossil record, human evolution, origin of matter and energy, age of the Earth, origin and complexity of life, science and Scripture.²⁰ The data set combines two classes taught by DeWitt. Students who had only taken the pretest or the post-test were excluded from the study. The classes were taught back to back to minimize any teaching differences between them. The textbook used for Fall 2001 & Spring 2002 classes was *Scientific Creationism*.²¹ At the end of the course the students were post-tested with the same CWT instrument. Students who had only taken the pretest or the post-test were excluded from the study. The 51 CWT statements were used to discern student Creation worldview in

Table 3. Liberty University apologetics paired pre/post test statistics. TH=thology score; SCI=science; AGE=age; TSS=total scale score.

	Test	Mean	N	Std. Dev
Pair 1	THPRE	82.41	195	15.683
	THPOS	87.55	195	17.945
Pair 2	SCIPRE	52.94	195	21.522
	SCIPOST	62.57	195	26.564
Pair 3	AGEPRE	42.16	195	27.510
	AGEPOST	65.82	195	29.528
Pair 4	TSSPRE	61.03	195	17.904
	TSSPOST	72.13	195	21.509

Table 4. Liberty University apologetics paired pre/post t-test

Test Pairs	Mean difference	t	Sig. (2-tailed)
Pair 1 THPRE – THPOST	-5.14	-3.553	<0.0005
Pair 2 SCIPRE – SCIPOST	-9.63	-5.575	<0.0005
Pair 3 AGEPRE – AGEPOST	-23.66	-11.924	<0.0005
Pair 4 TSSPRE – TSSPOST	-11.10	-7.687	<0.0005

three component areas (theology, science and age aspects). Data gathered from these two tests were processed using the SPSS statistical analysis program.

A Likert 5-step scale was used for students to choose their level of agreement with each statement (strongly agree, agree, neutral, disagree, strongly disagree). The answers were accordingly scored 5, 4, 3, 2, or 1. Scoring for negatively worded statements were reversed by the SPSS to maintain a 5 score being the strongest creation worldview attitude. The scale score was then converted to a 200 point scale with 100 being a perfect score for a creationist worldview and -100 a perfect score for an evolutionist worldview.

Data analysis and findings

The four pairs of pre-post Apologetics course test results in Table 3 are the *theology*, *science*, and *age* sub-scales, followed by the *total* scale scores. PEERS designated scores of 70+ as *Biblical Theist*, 30–69 as *Moderate Christian*, 0–29 as *Secular Humanist*, and <0 as *Socialist*. The post-test mean scores all increased. *Theology* stayed at a solid *Biblical Theist* level. Greatest increase was in *age*-related issues. Overall, the *total* scale score moved from a *Moderate Christian* level to a *Biblical Theist*.

All scores were slightly higher than results from the Fall 2001 classes, but showed the same trend. (See Previous reported testing using the CWT instrument.)

The *standard deviation* shows there was a greater spread of answers concerning age-related issues. This indicates the students, as a whole did not grasp YEC science and age aspects. Some scored well, while others scored low. In spite of significant increase, the science and age apologetics scores are weak.

The differences in the means of Table 3 are shown in the *Mean difference* column of Table 4. The t-values show that none of the differences in the pre-test/post-test means are due to chance. Increases in these already high theology scores may have also been limited by *statistical regression*. This is the ‘tendency for subjects who score extremely high or extremely low on a pretest to score closer to the mean (regression toward the mean) on a post-test.’²²

All four null hypotheses are rejected and their alternates accepted,

indicating that there are significant differences in measured student attitudes between CWT Pre-Test Total Scale Score means and the Science, Age, and Theology Subscale Score means. Therefore these observed differences are not likely to be due to random or chance factors.

Table 5 indicates a positive correlation of all pre-test scores with all post-test scores. The squared correlation coefficient is called the *coefficient of determination*. It shows the percentage of correlation between the two variables.²³ The significance figures show that there are less than 5 chances out of 10,000 that these correlations are due to chance. The theology scores, while high, show weak pre-post-test correlation. The other three pairs have moderate correlations of 24–28%.

Conclusions

The study showed the value of conducting courses in YEC Apologetics. Significant improvements were achieved in all aspects of student YEC worldview. *Theology* scores while high showed some inconsistency. These Spring 2002 classes scored slightly higher than the Fall 2001 classes but both exhibited the same trend.

The study shows that Christian college students have weaknesses in science and age aspects of a YEC worldview. Instruction to form the YEC perspective is effective in strengthening the creation worldview of the students. These results should encourage educators and administrators from Christian colleges and schools to include YEC apologetics instruction in their curriculum.

Compromise with establishment science views by many Christians, especially Christian educators, will continue to hinder shifting educational curriculum to a YEC viewpoint. Continued creation research, such as that by the RATE (Radioisotopes and the Age of The Earth) research group, is crucial to establish the base in solid science that supports the YEC position.²⁴

Recommendations for further research

Appendix 1 shows that answers to all 11 CWT age statements improved post-test. In science, 4 of 22 worsened and

Table 5. Liberty University apologetics paired pre/post test correlation.

Test Pairs	N	Correlation	Corr ² %	Sig.
Pair 1 THPRE – THPOST	195	.284	8	<0.0005
Pair 2 SCIPRE – SCIPOST	195	.514	26	<0.0005
Pair 3 AGEPRE – AGEPOST	195	.530	28	<0.0005
Pair 4 TSSPRE – TSSPOST	195	.489	24	<0.0005

in theology, 3 of 18 worsened slightly. Answers to particular CWT statements can be analyzed to uncover additional insights as well as to improve statement clarity. For example, noting which questions had significant improvements can show the subject areas that could use more emphasis in related courses taken prior to the Apologetics course. Noting the statements which did not show improvement can be useful in evaluating those subject areas in the Apologetics course and as well as evaluating CWT statement clarity.

Effects of pre-course demographics can be further studied. The data affords the opportunity to partition responses according to gender, class status, high school and church background, previous science and creation classes and GPA.

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Appendix 1. CWT statements and question sub-scales. Item analysis of pre-test/post-test means. Item means pre- and post-test: answers have been recoded so that higher values reflect six-Day young-Earth creationism with a high value of 100 and low value of -100.

	Liberty U. Sub-Scale	Trinity BC Sub-Scale	Mean-Pre-test	Mean-Post-test	Post-Pre Diff.
1 Space, time and matter have always existed.	Age	Evolution Evol. Age	26.0	54.5	28.5
2 An eternal Creator supernaturally made the physical universe.	Theology	Creation Cr. Age	94.0	96.5	2.5
3 Biological life developed by a series of natural processes.	Science	Evolution	59.5	71.0	11.5
4 Biological life came from non-living matter by chance.	Science	Evolution	92.5	90.5	-2.0
5 Each of the major kinds of plants and animals were made functionally complete.	Theology	Creation	80.0	90.5	10.5
6 Genetic mutations have caused beneficial changes in living things.	Science	Evolution	1.0	15.5	14.5
7 The first humans were specially created different from all other life on Earth.	Theology	Creation	77.5	82.5	5.0
8 The rocks and fossils show that the Earth is millions of years old.	Age	Evolution Evol. Age	52.0	74.5	22.5
9 Great quantities of sedimentary rock layers and fossils were deposited by a worldwide flood.	Science	Creation	76.5	89.0	12.5
10 The Creator continuously maintains all laws of nature.	Theology	Creation	79.0	86.0	7.0
11 The original creation did not include disease, aging, and extinctions.	Theology	Creation	80.0	93.0	13.0
12 The competent Creator made the universe for an ultimate purpose.	Theology	Creation	93.0	96.5	3.5
13 It is appropriate in scientific studies to consider Creation.	Science	Creation	91.0	89.5	-1.5
14 Evolution can be proven as a scientific fact.	Science	Evolution	82.0	84	2.0
15 Examples of special design in nature can be explored scientifically.	Science	Creation	54.0	53.5	-0.5
16 A triune God -- Father, Son, and Holy Spirit -- all participated in the work of Creation.	Theology	Theology	59.5	76.0	16.5
17 There is only one eternal God who is the source of all being and meaning.	Theology	Theology	98.0	98.0	0.0
18 Nature reveals itself as the creator.	Theology	New Age	66.5	66.0	-0.5
19 The Bible is scientifically correct.	Science	Theology	82.0	82.0	0.0
20 All things in the universe were made by God in six twenty-four hour days.	Age	Creation Cr. Age	70.0	90.0	20.0
21 Man's sin brought God's curse of death and separation to all of His Creation.	Theology	Theology	85.5	92.5	7.0
22 Genesis chapters one through eleven lack historical truth.	Theology	Evolution	80.5	86.0	5.5
23 Man's separation from God can only be remedied by Jesus Christ's death and bodily resurrection.	Theology	Theology	92.5	96.5	4.0
24 Fellowship with the Creator requires belief and personal trust in Jesus Christ.	Theology	Theology	96.0	97.0	1.0
25 There is not a real place of permanent suffering which is known as hell.	Theology	Evolution	91.5	88.0	-3.5
26 Those who refuse to put their trust in Jesus Christ will spend eternity in hell.	Theology	Theology	86.0	86.0	0.0

	Liberty U. Sub-Scale	Trinity BC Sub-Scale	Mean-Pre-test	Mean-Post-test	Post-Pre Diff.
27 Not all Christians have to share the gospel of Christ.	Theology	New Age	85.5	88.0	2.5
28 Christians participate in subduing the Earth for God's glory.	Theology	Creation	53.0	76.0	23.0
29 Dinosaurs and man lived at the same time.	Age	Creation	53.0	83.0	30.0
30 God created land dinosaurs on the sixth day of Creation.	Age	Creation Cr. Age	17.5	63.5	46.0
31 Dinosaur fossil graveyards are evidence of catastrophic burial.	Science	Creation	37.0	65.5	28.5
32 The rock layers in the Grand Canyon show evidence of being rapidly laid down.	Age	Creation	36.0	67.0	31.0
33 Fossils in the Grand Canyon layers reveal the exact geologic column proposed by most scientists.	Science	Evolution	9.5	28.5	19.0
34 Formation of sedimentary layers and canyons caused by the eruption of Mt. St. Helens supports a creationist model.	Age	Creation	28.0	48.0	20.0
35 Entropy (increasing disorder) and evolution are compatible.	Science	Evolution	33.5	41.0	7.5
36 The Creation model and the Second Law of Thermodynamics are compatible.	Science	Creation	27.0	64.0	37.0
37 It is important to recognize Jesus Christ as the Creator.	Theology	Theology	85.0	81.0	-4.0
38 Man has taken millions of years to get to his present form.	Age	Evolution Evol. Age	83.0	89.0	-6.0
39 The universe has gone through many changes since it exploded into existence billions of years ago.	Age	Evolution Evol. Age	84.5	91.0	6.5
40 Life evolved slowly from a "primordial soup."	Science	Evolution	88.5	91.5	3.0
41 Life evolved from a simple cell to more complex organisms.	Science	Evolution	80.5	85.5	5.0
42 There is no evidence that life is continuing to evolve today.	Science	Creation	16.5	28.5	12.0
43 The fossil record provides examples of transitional forms.	Science	Evolution	29.5	55.0	25.5
44 Fossils should be dated according to the rocks in which they are found.	Age	Evolution	5.5	32.0	26.5
45 Rocks should be dated according to the fossils found in them.	Age	Evolution	9.0	31.0	22.0
46 Geologic evidence indicates there was once a worldwide flood.	Science	Creation	83.5	90.0	6.5
47 In modern geology the present is the key to the past is an established fact.	Science	Evolution Evol. Age	-17.5	-23.5	-6.0
48 Micro-evolution (small changes within a particular species) is evidence that macro-evolution (changes from "kind to kind") has happened.	Science	Evolution	48.5	64.5	16.0
49 Plant life can experience emotions like anger and joy as humans do.	Science	New Age	74.0	80.0	6.0
50 Animals have the same reasoning ability as humans, but on a lower level.	Science	New Age	48.5	55.0	6.5
51 In time, humans will likely develop into a higher life form than what is known of now.	Science	New Age	68.0	77.0	9.0