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 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. 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**

H$_1$ - 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.

H$_2$ - 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.

H$_3$ - 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.

H$_4$ - 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.

Table 1. Evolution, Creation, and Biblical Creation models

<table>
<thead>
<tr>
<th>Evolution model</th>
<th>Creation model</th>
<th>Biblical Creation model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Net present increase in complexity.</td>
<td>2. Net present decrease in complexity.</td>
<td>2. Creation in the bondage of decay because of sin and the curse.</td>
</tr>
<tr>
<td>3. Earth history dominated by uniformitarianism.</td>
<td>3. Earth history dominated by catastrophism.</td>
<td>3. Earth history dominated by the great flood of Noah’s day.</td>
</tr>
</tbody>
</table>
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.

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.

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.’ (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.’

‘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.’

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.’

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.’

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’ (emphasis added).

Christian Creation worldview and science education

Henry Morris defined elements of a Christian YEC worldview and his Biblical Creation model. (See Table 1) Deckard proposed ten tenets for a creationist-based science education. Points 2 and 3 were later slightly modified. These tenets are summarized as follows:

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

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

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, 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 (p = 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.

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean</th>
<th>N</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>THPRE</td>
<td>82.41</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>THPOS</td>
<td>87.55</td>
<td>195</td>
</tr>
<tr>
<td>Pair 2</td>
<td>SCIPRE</td>
<td>52.94</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>SCIPOST</td>
<td>62.57</td>
<td>195</td>
</tr>
<tr>
<td>Pair 3</td>
<td>AGEPRE</td>
<td>42.16</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>AGEPOST</td>
<td>65.82</td>
<td>195</td>
</tr>
<tr>
<td>Pair 4</td>
<td>TSSPRE</td>
<td>61.03</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>TSSPOST</td>
<td>72.13</td>
<td>195</td>
</tr>
</tbody>
</table>
Table 4. Liberty University apologetics paired pre/post t-test

<table>
<thead>
<tr>
<th>Test Pairs</th>
<th>Mean difference</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>THPRE—THPOST</td>
<td>-5.14</td>
<td>-3.553</td>
</tr>
<tr>
<td>Pair 2</td>
<td>SCIPRE—SCIPOST</td>
<td>-9.63</td>
<td>-5.757</td>
</tr>
<tr>
<td>Pair 3</td>
<td>AGEPRE—AGEPOST</td>
<td>-23.66</td>
<td>-11.924</td>
</tr>
<tr>
<td>Pair 4</td>
<td>TSSPRE—TSSPOST</td>
<td>-11.10</td>
<td>-7.687</td>
</tr>
</tbody>
</table>

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.’

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. 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.

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.

<table>
<thead>
<tr>
<th>Test Pairs</th>
<th>N</th>
<th>Correlation</th>
<th>Corr²%</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>195</td>
<td>0.284</td>
<td>8</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Pair 2</td>
<td>195</td>
<td>0.514</td>
<td>26</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Pair 3</td>
<td>195</td>
<td>0.530</td>
<td>28</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Pair 4</td>
<td>195</td>
<td>0.489</td>
<td>24</td>
<td>&lt;0.0005</td>
</tr>
</tbody>
</table>
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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References

17. Ray, Ref. 5 p. 139.
19. Deckard and Sobko, Ref. 6, p. 158.

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Steve Deckard has a B.A. from McKendree College, Illinois, a M.S. in biology from the University of Illinois, an Ed.D. in curriculum and evaluation from the University of Sarasota and a Ph.D. in Christian education. He is currently vice president of academic affairs and academic dean at Vision International University in Ramona, California.

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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.

<table>
<thead>
<tr>
<th>Sub-Scale</th>
<th>Liberty U. Mean-Pre-test</th>
<th>Trinity BC Mean-Pre-test</th>
<th>Mean-Post-test</th>
<th>Post-Pre Diff</th>
<th>Sub-Scale</th>
<th>Liberty U. Mean-Pre-test</th>
<th>Trinity BC Mean-Pre-test</th>
<th>Mean-Post-test</th>
<th>Post-Pre Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Evolution Age 26.0</td>
<td>54.5</td>
<td>28.5</td>
<td></td>
<td>Evolution Age 27.0</td>
<td>54.5</td>
<td>27.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creation</td>
<td>Evolution Creation Age 60.0</td>
<td>94.5</td>
<td>34.5</td>
<td></td>
<td>Evolution Creation Age 60.0</td>
<td>94.5</td>
<td>34.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theology</td>
<td>Evolution Theology Age 70.0</td>
<td>94.5</td>
<td>24.5</td>
<td></td>
<td>Evolution Theology Age 70.0</td>
<td>94.5</td>
<td>24.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>Evolution Science Age 31.0</td>
<td>54.5</td>
<td>23.5</td>
<td></td>
<td>Evolution Science Age 31.0</td>
<td>54.5</td>
<td>23.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evolution</td>
<td>Evolution Evolution Age 70.0</td>
<td>94.5</td>
<td>24.5</td>
<td></td>
<td>Evolution Evolution Age 70.0</td>
<td>94.5</td>
<td>24.5</td>
<td></td>
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</tr>
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