

ARTICLES

THE ATTITUDE OF UNIVERSITY STUDENTS TOWARD THE TEACHING OF CREATION AND EVOLUTION IN THE SCHOOLS

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WHAT THIS ARTICLE IS ABOUT

The recent increase of activity in the evolution-creation controversy has emphasized the significant dichotomy that exists in public education between the wishes of the taxpayers that support the schools and the evolutionists who would have only their views presented. A number of public opinion polls have been taken, showing that about ¾ or more of the general public would prefer that both creation and evolution be taught. A study of secondary-school biology teachers also showed that about half thought that evolution was a theory and not a fact and that alternative theories should be presented. The study reported in detail here deals with the opinions of prospective teachers in a teacher-training program.

An opinionnaire was designed to assess the attitudes of undergraduate students about the creation-evolution question. In addition, a sample of biology graduate students was utilized to compare graduate and undergraduate opinions. From a total of 516 undergraduates, 91.0% felt that both creation and evolution should be taught. In addition, 43.0% of the undergraduate students classified themselves as "pure creationists," 46.0% as "theistic evolutionists," and 8.0% as "atheistic evolutionists." Of the sample of 74 natural-science graduate students, 72.0% felt that both evolution and creation should be taught in the schools. Also, 36.0% classified themselves as "pure creationists," 46.0% as "theistic evolutionists," and 14.0% as "atheistic evolutionists."

Since the beginning of his existence, man has sought an answer to the question, "Where have I come from?" Children commonly ask their parents this question and usually receive some type of explanation about sexual reproduction and the process of pregnancy and birth. The realization that one "comes from" one's parents may temporarily satisfy the need to explain one's existence, but sooner or later children begin to wonder, "Where did mankind as a race, and indeed all things, come from?"

Some parents explain that God created man, but this answer sooner or later elicits the response, "Who created God?" Other parents explain to the child that man came from the monkeys, and monkeys came from reptiles which came from fish, which evolved from one-celled animals which formed naturally in a primordial soup. A child's next question then might be, "Where did the primordial soup come from?" No matter which

explanation a parent uses (and we have oversimplified and dichotomized the two basic explanations, i.e., creation and evolution), *neither is fully satisfactory*.

Because the subject of origins deals with the things that have happened in the past, as does history itself, much speculation is involved. In addition, one's beliefs regarding the "purpose" of man influences his or her beliefs regarding origins. As the question of origins is connected with belief structures, it would be expected to be an emotional issue; and indeed it has been such since the popular acceptance of the theory of evolution in the late 1800s.

As evolution gained acceptance, opposition to teaching it in the schools surfaced almost immediately. For decades, only a few schools taught the subject (Laba & Gross 1950). Even many colleges did not include evolution in their biology courses until the 1930s. Within the last 70 to 80 years evolution has been highly accepted, and though it is still not universally taught in American schools, it is clearly the most widely taught theory of origins. Now that the shoe is on the other foot, for the past 30 years or so, evolutionists have opposed the teaching of competing theories of origins in the schools. When creation held sway in the people's minds, the teaching of evolution was resisted by various means, and when evolution became the accepted theory of origins, the teaching of the previously accepted theory — creation — was resisted.

THE SCOPES TRIAL

The most famous confrontation relative to the question of teaching origins in the schools is the Scopes Trial of 1925. Essentially, Clarence Darrow for the defense argued that teachers, being knowledgeable about the subject area, should teach what they feel is correct. Parents are not the "experts" and thus should defer to the teacher's judgment as to what is to be taught. On the other hand the prosecution, headed by William Jennings Bryan, felt that the *parents*, who provide financial support for the schools, should make the final decision on what is taught. In essence, the prosecution felt that "if I hire a painter to paint my house, the painter should use the color I choose, because I am paying the costs and have to live in the house; the painter is my employee." Because parents are essentially hiring the teachers to educate their children for them, Bryan felt they should be allowed to determine how the teachers do the job. Bryan further argued that since the majority of people at that time in Dayton, Tennessee, were creationists, the creationist position should be favored. Unfortunately, the common perception of the Scopes Trial, such as expressed in the play and movie "Inherit the Wind," is grossly distorted, as anyone who has read the original trial transcript can easily discern.

REVIEW OF THE LITERATURE

At this point, most of the literature concerning people's attitudes toward evolution consists of "random phone surveys" usually done by individuals who favor the creationist position. For example, the *ICR Midwest Center Newsletter* of 1976 stated that "a 1976 random phone survey in the Midwest, a random home survey in California and a newspaper survey in the Chicago area all yield similar results in the public opinion regarding the teaching of origins in our public schools." The Midwest survey utilized volunteers to first pick a phone number from the phone book at random, and then to call the number and read the following:

I am helping conduct a random telephone survey. We are attempting to determine the community opinion about how our public school system should handle the subject of origins, or how things began. I will suggest three choices, and you may state your preference.

1. *I prefer that only the evolution model be taught as the explanation of how things began.*
2. *I prefer that only the creation model be taught.*
3. *I prefer that both creation and evolution be taught as alternative explanations of how things began.*

QUESTION: Which do you prefer to be taught; only evolution, only creation or both the evolution and creation models? (record if they vote "no opinion").

The researchers called individuals in five states, but did not report the number of responses obtained. The percentage distribution of responses is given in Table 1, Survey I. A second ICR Midwest Center survey that sampled 989 is broken down in Table 1, Survey II. A more recent survey that polled 4506 individuals found "the percentages remain basically the same."

TABLE 1

	Midwestern	Midwestern	
	Survey I	Survey II	
	%	No.	%
Creation and Evolution	68	719	72.6
Creation only	16	125	12.6
Evolution only	5	53	5.0
No opinion	11	92	9.0
Total creation only or creation and evolution	84	844	85.3
Total	100	989	100.0

In two other polls, "a representative sample of homes were contacted in two California school districts with 89% (1346 homes) in the Del Norte and 84% (1995 homes) in the Cupertino area district preferring that both creation and evolution be taught in the public school system."

A survey of secondary-school biology teachers in Indiana (Troost 1966) showed that 173 out of 325 felt that evolution was a theory and not a fact, and 163 out of 330 thought that evolution should be presented as one of several alternative theories.

The only longitudinal studies of which the author is aware indicate that the creationistic explanation is growing in acceptance among college students. The percentage of students at Brigham Young University accepting the creationist alternative to evolution was surveyed by Christensen and Cannon (1978). They found that in 1935, 36% of the students agreed with the statement: "Man's creation did not involve biological evolution," compared to 81% in 1973. The affirmative response to the statement: "The world's creation did not take millions of years" was 5% in 1935, compared to 27% for 1973. This is one of the most significant changes Christensen and Cannon found. The sample size was 1159 for the 1936 study and 1056 for the 1973 sample.

PRESENT STUDY

According to all recent studies, the vast majority of the public favors teaching *both* creation and evolution in the schools (Bliss 1978, Bergman 1979). It is usually assumed, though, that while the public may favor teaching both theories, the teaching profession favors teaching only the theory of evolution. To further answer this question, the writer developed the following opinionnaire which was administered to 442 undergraduates (most of whom were in their last year of a teacher-training program) and 74 graduate students taking courses in the area of biology.

OPINIONNAIRE

Instructions: *We are attempting to determine community opinion about how our public school system should handle the subject of origins (the origin of plants, animals, man, etc.). Please circle the number by the response which most closely represents your opinion.*

1. Circle the statement which you agree most with:
 - a. Only the evolution model should be taught as the explanation of how things began.
 - b. Only the creation model should be taught.
 - c. Both the evolution model and the creation model should be taught as alternative explanations of origins.
2. Which of the following describes your present position?
 - a. Atheistic evolution (there is no God — the origin of all things is natural evolution).
 - b. Theistic evolution (God used evolution to bring about man and all things).
 - c. Theistic creationism (God created in some way man and the basic forms of animals).
 - d. Other — please elucidate.

It is commonly assumed that the vast majority of teachers would opt for teaching only evolution. This assumption is constantly presented in articles discussing the creation-evolution issue. It is this assumption we are testing.

Teachers in teacher-training programs were utilized as opposed to using teachers in the field because of the availability of the sample and because a wide variety of teachers would be polled, i.e., special education, high school, elementary, speech and hearing, and other areas. There were not enough biology majors (5 out of 516 students) to make meaningful comparisons; therefore, the total sample was used. Further research should include a larger sample of biology majors and contrast their attitudes with other teachers. We were able to assess graduate students taking biological classes (mostly biology majors or minors) and presumably graduate students taking classes in biology would reflect the attitudes of biology majors.

THE BACKGROUND OF THE SCHOOL

Bowling Green State University (BGSU) is a state-supported university which was established in 1910 in Bowling Green, Ohio, a lower middle-class suburb of Toledo, Ohio. Bowling Green is 23 miles south of Toledo proper. The University has about 16,000 students in undergraduate, master's and doctoral programs in a wide variety of areas. Originally the school was founded to train teachers and thus was called Bowling Green Normal School. It later expanded its program offerings but is still well known as a teacher-training institution. A high percentage of the faculty have Ph.D.'s, and, although teaching tends to be stressed, a number of faculty have published extensively in scholarly journals. The University has a reputation of being conservative and tends to attract students from the middle and upper-middle classes.

RESULTS

The results of the survey found that the clear majority of both undergraduate students and graduate students taking biology classes favored the teaching of both theories of origins in the schools (see Table 2).

Of the undergraduate students, a total of 91% *felt that both the evolution and creation models should be taught in the schools*. Of the graduate students, 71.8% *felt that both models should be taught in the schools*. Of the graduate sample, 21.1% felt that only evolution should be taught, compared to 6.1% of the undergraduate sample. This is a difference of almost 3.5 times. On the other hand, a small number of both samples felt that *only* creation should be taught; 2.9% of the undergraduate sample, compared to 7.0% of the graduate sample.

TABLE 2
Results of Evolution-Creation Attitude Survey

	Males				Females				Total			
	U. Grad. No.	Grad. %	No.	%	U. Grad. No.	Grad. %	No.	%	U. Grad. No.	Grad. %	No.	%
Only the evolution model should be taught	10	11.0	11	33.3	17	4.8	4	9.8	27	6.1	15	21.1
Only the creation model should be taught	4	4.4	22	6.1	9	2.6	3	7.3	13	2.9	5	7.0
Both the evolution and creation models should be taught	77	84.6	17	51.5	325	92.6	34	82.9	402	91.0	51	71.8
TOTAL	91	17.6	33	6.4	351	68.0	41	7.9	442	86.8	74	14.3

Which of the following describes your present position?

	Males				Females				Total			
	U. Grad. No.	Grad. %	No.	%	U. Grad. No.	Grad. %	No.	%	U. Grad. No.	Grad. %	No.	%
Atheistic evolution	13	14.3	4	12.1	22	6.3	6	14.6	35	7.9	10	13.5
Theistic evolution	36	39.6	17	51.5	169	48.2	17	41.5	205	46.4	34	45.9
Theistic creation	39	39.6	11	33.3	154	43.9	16	39.0	190	43.0	27	36.5
Other	6	6.6	1	3.0	6	1.7	2	4.9	12	2.7	3	4.1
TOTAL	91	17.6	33	6.4	351	68.0	41	7.9	442	86.8	74	14.3

According to most studies, females are more “religious” than males. If religiosity is an indication of one’s orientation towards the acceptance of evolution or creation, our sample likewise indicates that females are more religious than males. The undergraduate males were 2.5 times *more likely* to feel that only evolution should be taught, compared to females (11.0%, compared to 4.8%). On the other hand, interestingly, the undergraduate males were slightly *more likely* to want only creation to be taught: 4.4%, compared to 2.6%. As to wanting both models taught, again the percentage of females was higher (92.6%, compared to 85.6% for males).

Relative to the respondents' belief structure, 7.9% of the undergraduates classified themselves as "atheistic evolutionists," compared to 13.5% of the graduate students. This seems to indicate that the more education one has in a secular school, the more likely one is to reject the concept of God, a relationship which is commonly believed to be true (see Hites 1965; Pilkington, Poppleton & Robertshaw 1965). On the other hand, approximately half of both the graduate and undergraduate students (there was only 0.6% difference) classified themselves as theistic evolutionists. In addition, 43.0% of the undergraduates classified themselves as either theistic creationists or pure creationists, compared to 35.2% of the graduate students. Thus, according to this survey, 89.4% of the undergraduates believed some form of creation, compared to 79.9% of the graduate students. Essentially, 80% of both the graduate and undergraduate students could be classified as "creationists"; the only difference would be in their understanding of how much of the present order is attributed to chance, and how much is explained by the activity of an outside agent. The beliefs of most of the students who selected either theistic evolution or theistic creation likely ranged from the view that an outside force did "nothing more than begin the process of evolution which continues today," to the idea, as several students stated, that "God created Adam and Eve and all living things within a literal seven day week, just as the Bible says He did."

COMMENTS BY STUDENTS

Several students mentioned the belief that God had "unlimited knowledge and wisdom, but [He was] not...the one who created heaven and earth." Others stated the opposite, i.e., "someone created the heavens and the earth, but not necessarily God." Others felt there is "some creator," but felt it could be a God, Gods or someone else, but that *someone* created the world.

Nineteen students who checked "other" said that they were not convinced either way — the evolutionary explanation did not convince them, but neither did the creationist view. Several students said they believed in "both" evolution and creation. One student stated, "Sometimes one comforts me more than the other and thus I believe it when it does."

Several of the students indicated a belief in the existence of a God, but they felt that the *origin* of all things is natural. Another common response is that man evolved from the basics that God put here. A variation of this as stated by several students is that they believed in both "Adam and Eve and evolution." A number of students mentioned that their science courses caused them to believe in evolution, whereas before they were creationists.

Students who circled "other," but gave reasons such as belief that "God created the heavens and the earth within a literal six day, 24 hour

period,” or “Adam and Eve were the first man and woman directly created by God,” were coded as theistic creationists instead of “other.” The fact that several answered this way indicates that choice “c” was not as clear as it could have been.

One student commented, “I haven’t decided yet on how man evolved. Maybe it was by atheistic evolution.” Another student selected “other” and stated, “God created everything the way He said He did and not ‘in some way.’” And, lastly, several students circled “other” and expressed thoughts similar to the student who said, “Maybe man came about through evolution, maybe God did it, maybe it was natural laws; how am I supposed to know? Let me know when you find out.”

Other comments written on the opinionnaire are as follows:

1. There was a God or superior being at one time (there still may be), but the earth and all in it came about through evolution.
2. There was something yet unexplained that controls and causes us to evolve. I believe there must be something to both creation and evolution. Everything must have started somewhere. Science has only shown evolution to be true after a certain point.
3. Man may have evolved, but God had to start everything in the beginning.
4. I believe in both as there is no proof one way or the other. Thus I must hold them as simply alternate theories.
5. There may be a God, but whether there is, is for each individual to decide.
6. I doubt the existence of a God (it has yet to be proven) yet it is unknown and may be possible. Evolution is a proven *fact* and I accept only those theories that can be proven, and employ them until a contradiction is found.
7. Man created himself; and God is in man.
8. God brought about the conditions to bring life into being.

DISCUSSION

This research raises several important questions. Foremost is: Why is there so much opposition in some professional journals (e.g., see the index of the *American Biology Teacher*) to teaching both theories of origins, when according to the above surveys, a clear majority of both parents and teachers are in favor of the two-model approach to origins? A second concern is, why, when most parents and teachers are evidently in favor of a dual-model approach, does a single-model approach tend to predominate in the schools? Further research should include exact determination of the extent to which the single model does predominate, and the manner

and extent to which biology teachers cover the creationist or other positions. Once this can be determined, there is the need to assess the reasons for the discrepancy, if indeed such is the case.

Informal surveys by the writer found that the vast majority of students were not exposed, in their biology classes, to any model other than the evolutionary one. The writer's experience in both his graduate and undergraduate biology courses was that when creation was brought up, it was generally ridiculed and held as untenable and accepted by very few scientists. Such examples as ontogeny recapitulates phylogeny, the gill slits, the peppered moth in Britain, the os coccygis (coccy's), adenoids, tonsils, appendix and wisdom teeth were generally used as examples to support the evolutionary position.

Possibly, evolution predominates because in most textbooks, evolution is the only position which is discussed. In those rare instances where the creationist position is mentioned, it is usually accompanied with counter-arguments in very much of an apologetic fashion.

As the writer has discussed elsewhere (Bergman 1979), from both an educational and pedagogical standpoint, a two-model position is much more tenable, regardless of the validity of each position. Teaching by contrasts and understanding the source of knowledge and ideas aids in understanding almost any information.

In the past few years there has been an increasing pressure from a wide variety of groups to present a less one-sided view in teaching the subject of origins in the schools. Unfortunately, there has been a great deal of intolerance and emotionality on both sides, making it difficult to accurately understand the real world. No matter which side one opts for, it still tends to be an emotional issue bound up with one's basic belief structure concerning the purpose of man and subsequent questions of right and wrong. Resolving this question requires not only objective, empirical research on the theories of origins, but research relative to the opinions and attitudes of both parents and teachers. In view of the above research, it would seem that some type of dual approach to the teaching of origins should be explored. In addition, there should be concern that each view be accurately and appropriately presented, and it would seem appropriate that other theories such as the exobiological theory proposed by Carl Sagan be discussed in an intellectually acceptable manner.

LIMITATIONS OF THE SURVEY

In a survey such as this there is always the difficulty that some of the terms used (i.e., the trichotomy of "atheistic evolution, theistic evolution, and theistic creation") were not clear. Even with the definitions printed on the form, probably the meaning was not clear for every student. Although

this problem was likely minor, some evidence for the validity of this assumption can be found in the comments written by the students on the opinionnaire. From our total of graduate students, a much larger number than we would expect classified themselves as theistic creationists. Quite possibly the respondents did not fully understand the creationist position in contrast to the theistic evolutionist position. Ideally, more than three categories could be used, including acceptance of microevolution and macroevolution.

A limitation of our sample is that it was administered at BGSU which has traditionally been labeled a “conservative” school. Possibly a large number of students come from religious backgrounds as compared to, for example, Ohio State or other Ohio universities. If a student body is more conservative, it will probably be less oriented towards choosing a response which indicates evolution. Possibly this skewed our sample somewhat, at least in comparison to the general college student population.

Another handicap of this study is that, unfortunately, only 20.6% of the undergraduate respondents were males. Most of the respondents (79.4%) were females. Most of the classes in which this survey was administered were part of teacher-training programs which typically consist of primarily female students. In spite of this, though, there were 91 males, which is a fairly good sample and should accurately assess the position of males, at least for schools comparable to BGSU.

FUTURE RESEARCH

Future research should probably correlate hours in biology, hours in evolution, and hours in the natural sciences (such as physics and chemistry) with one’s position on origins. Presumably, as the number of hours in biology increases, a person would be more disposed to hold an evolutionary position.

Another important area for further research is a comparative evaluation of the attitude of active biology teachers, active teachers in other sciences, and the opinions reported here.

CONCLUSIONS

This study has shown that the majority of both graduate and undergraduate students favor the two-model approach for the teaching of origins. It would seem that some direction should be taken by educators to implement a two-model approach which can be agreed upon by most individuals involved in the educational process. A serious concern in any implementation of the two-model approach would relate to the problems of “indoctrinating” students in a particular belief that is based primarily on tradition as opposed to empirical data.

Obviously the students should be exposed to a wide variety of beliefs regarding the theories of origins, including even the myths of Babylon, Sumeria, and other ancient civilizations. Which theory the student accepts will likely depend upon his/her own value-belief structure, which is more a function of the home and church than the school. The school's objective, most people believe, is to provide information to help students be better aware of various alternatives available to them. If the school is able to stimulate discussion in this manner, regardless of the view the child or the child's parents hold, the school will, to some degree, have served its function.

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