Institute for Christian Teaching
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DEVELOPING TEXTBOOKS IN THE NATURAL SCIENCES THAT INTEGRATE FAITH AND LEARNING:

An experience in Brazil

by

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1. INTRODUCTION

According to the highly regarded Brazilian newspaper O Estado de Sao Paulo, (The State of São Paulo), about 88.3% of the elementary students in Brazil attend public schools.(1)

The remaining 11.7% attend private schools. The Adventist educational system in Brazil is the second largest network of such private schools. Its schools are mostly at the elementary level with eight grades.

According to the Bulletin of the Education Department of the South America Division the profile of Adventist education in Brazil is as follows:(2)

Level	N. of students	N. of Schools
Elementary	95,768	426
Secondary	4,490	28
Undergraduate	1,009	2
TOTAL	101,267	456

According to the above mentioned bulletin, SDA schools in Brazil enroll a larger number of students than SDA schools anywhere else in the world. For each level, the position of Brazilian SDA schools as compared to other SDA Divisions, is as follows:

Elementary - First place
Secondary - Ninth place
Undergraduate - Seventh place.

Considering the sizable difference in the number of elementary as compared to secondary students, the SDA Church decided to increase the number of secondary schools, both day and boarding, in order to offer opportunity for a larger number of secondary students. This action will also increase the number of student candidates for the future Adventist University of Brazil.

The Casa Publicadora Brasileira (Adventist Brazilian Publishing House - CPB), through its educational department, is responsible for the publication of textbooks for the elementary level of the SDA school system. Though a significant number are used by SDA schools, some non-SDA public and private schools make use of them as well.

The publication of textbooks has contributed greatly to the Adventist educational system -- unifying philosophy, content, and even procedures. Through regional and national meetings it has also stimulated interaction among teachers and authors.

Even among non-Adventist teachers there has been a special interest in using SDA textbooks. In their opinion, the books represent a good option for their teaching. As a result, they have asked the presence of Adventist representatives in their educational meetings. This interaction has resulted in conversions to the Adventist church. Thus, the

textbooks have been an open door for evangelism not only among teachers but also among students and parents.

The SDA textbook publication program in Brazil, though small in its beginnings, has advanced steadily in spite of Brazil's financial difficulties. Presently, it represents 20% of the total production of the CPB.

The present paper explains the development of the Adventist Textbook Program in Natural Sciences in Brazil, analyzes the present situation, and gives some suggestions for continuation and refinement. We hope that it may serve as a model for other Divisions that wish to develop a textbook program.

2. REASONS FOR DEVELOPING TEXTBOOKS IN NATURAL SCIENCES INTEGRATING FAITH AND LEARNING

Brazil, though a large country, has only one language spoken in its vast territory, namely Portuguese. This factor favors the production of textbooks, particularly taking into consideration the market potential. However, regional differences and peculiarities should be taken into consideration for the planning and production of textbooks.

Another relevant factor is the number of students in the Adventist schools, mainly in the elementary level. This population in itself could justify the production of textbooks, constituting an exclusive market. It is true, however, that some SDA Schools, do not make use of the textbooks available, contradicting the South American Division's decision.

Another factor to be emphasized is the possibility for non-SDA schools to use Adventist textbooks. This significantly increases the market and evangelistic potential. There is also the possibility for other Portuguese speaking countries to adopt the SDA textbooks printed by the CPB.

Although in Brazil there are some curriculum guidelines provided by the Federal Department of Education, there is also relative freedom for the teacher to select course content and make adaptations according to regional needs and peculiarities. This benefits authors and the publisher in the production of textbooks and their use in schools.

Above all other reasons mentioned above, the most important one for the development of textbooks integrating faith and learning is the philosophical aspect, which presents truth, principles, and values from the word of God. Ellen White wrote extensively about integration the teaching of sciences with the study of the Word of God. She states:

"Books should have been prepared to place in the hands of students that would educate them to have a sincere, reverent love for truth and steadfast integrity. The class of studies which are positively essential in the formation of character to give them a preparation for the future life should be kept ever before them." (3)

Talking more specifically about the importance of the teaching of sciences in harmony with the Bible, she says:

"The study of sciences is not to be neglected. Books must be used for this purpose; but they should be in harmony with the Bible, for that is the standard. Books of this

character should take the place of many of those now in the hands of students".(4)

On the other hand, in various occasions she points out the danger of teaching sciences mixed with men's theories.

"In the study of sciences, as generally pursued, there are dangers equally great. Evolution and its kindred error are taught in schools of every grade, from the kindergarten to the college. Thus the study of sciences which should impart a knowledge of God, is so mingled with the speculations and theories of men that it tends to infidelity." (5)

3. STEPS IN THE DEVELOPMENT OF TEXTBOOKS IN THE SOUTH-AMERICAN DIVISION.

Some time ago, when teachers needed to adopt textbooks in the Adventist schools, they did not have any material available for their teaching from the word of God. They faced not only the philosophical problem, but also the problem of content, language, methodology, illustrations, presentation, etc. Every time SDA teachers had a meeting, and often in the education department board meetings, this was the main topic of concern.

3.1 Votes of South American Division (SDA)

In 1976, the South America Division (SAD) passed the first action about textbooks. It reads as follows:

(vote 76-326) - Adventist Textbook - Education Department

Considering the great problem faced by our schools regarding the use of textbooks published by non-Adventist writers which often contain teachings and ideas that are contrary to our faith;

Considering the possibility for Adventist authors to write textbooks with Adventist characteristics;

Considering also the possibility for selling these books to non-adventist schools and students;

It is voted to form a committee to study the issue regarding textbooks in Portuguese. The members of the committee are to include: South America Division Education Director - President, South Brazil Union Education Director, East Brazil Union Director, North Brazil Union Director, Pedro Apolinário, Edmir de Oliveira, Hélio I. Serafino.

This committee should concentrate on the following matters: a) Viability of the plan and its accomplishment; b) General policies to be put into practice; c) Subjects, grades, and levels the textbooks should be prepared for; d) A list of possible writers for the preparation of such books; e) Financial plan for the production; f) Marketing planning; g) Copyright.

In the following year the SAD, through action number 77-431, approved the

report of the textbook committee as follows:

(Vote 77-431) - Adventist Portuguese Textbook Committee-Education Department:

Voted to approve the report of the committee elected to study the possibility of the publication of textbooks for Adventist schools in Brazil, as such:

Considering that the Spirit of Prophecy recommends that the textbooks used in our schools should call attention to the Word of God (2 Testimonies, p. 462);

Considering that this is not the case for the majority of the textbooks presently used;

Considering the teachers' concern about the need of having our own textbooks;

It was voted:

1. To pursue the studies aiming to have appropriate textbooks according to our educational philosophy.

2. To consider areas of priorities: a) Natural Sciences and Health Programs; b) Communication and Expression; c) Social Sciences, Moral and Civic Matters and d) Domestic Arts - Home Education

3. To form specific editorial committees concerned with each specific area of priority in order to do preliminary studies on suggestions of programs, possible writers, etc.

a) Communication and Expression areas: Pedro Apolinario, Gerusa Martins, José Iran Miguel, Edna de Oliveira and Elias Mendes

b) Natural Sciences and Health Programs area: Roberto Cezar Azevedo, Maria Kudzielicz, Nair Elias dos Santos, Rui Schwantes, Oly F. Pinto and Orlando R. Ritter

c) Social Sciences, Moral and Civic Matters area: Edmir de Oliveira, João M. Rabelo, Rosangela Almeida, Júlio C. Azevedo and Iracema Santos

Approximately four years later, i.e. in 1981, the SAD authorized the beginning of the textbooks program, according to the following vote:

(Vote 81-217) Textbooks Publication in Brazil - Education Department.

Considering the necessity of producing as a church our own textbooks for subject areas that favor the dissemination of theories that lead to unbelief;

Considering the recommendations of the Education board from Region I and the Council of Education Directors,

It was voted to approve and recommend to entities involved the following plan of procedure:

1. The Adventist Brazilian Publishing House in agreement with the South America Division Education Department will name a person to act as a coordinator for the production and publication of the Adventist textbooks in Portuguese.

2. The institutions or individuals that have produced any books and that wish to publish them for use in SDA schools must send them to the coordinator of the Publishing House for appropriate evaluation.

3. After receiving the material to be published the coordinator will obtain the opinions of at least five teachers in the corresponding discipline, as well as from the Division and Brazilian Union's education directors, stating definite times for the pronouncement.

4. Having heard the above mentioned people, the material will be sent to the Adventist Education Faculty, from the "Instituto Adventista de Ensino", so that the department of methodology may give its evaluation on the methodology employed, the author being consulted in case of any alterations.

5. Taking the previous steps, the publication of the books will be approved by the Division Board and will be of obligatory use by SDA schools where the subjects are taught.

6. Publication will done using the following criteria: a) Elementary level books will be published and marketed by the Adventist Brazilian Publishing House. b) Secondary level and undergraduate books will be published and marketed by the "Instituto Adventista de Ensino". c) Theology books for graduate level use by both the Seminary and Division cultural club could be published by the SDA Brazilian Publishing House. d) These procedures do not preclude the possibility of our schools preparing syllabi for their own use, but in the case of the publications of the material it should be sent to the coordinator.

7. The books sent by private institutions or individuals that happen to be published will be granted the same copyright paid by the SDA Publishing House or "Instituto Adventista de Ensino" according to the established rules in practice.

8. The coordinator will consider with the schools the most convenient manner of marketing the existing material and how it can be used by other schools.

9. The textbooks will be marketed directly with the schools.

We want to make clear that at the moment the denominational rules about the program of production of the textbooks are included in Article 191 of the regulations of the Education Department valid since January 1, 1990, approved by the Division Board, Vote number 89-739.

3.2 Implementation of votes of South American Division

After some meetings of the editorial committee concerned with Natural Sciences and Health a general program for 5th, 6th, 7th and 8th grades was suggested and authors were chosen, Admir J. Arrais de Matos and Nair Elias dos Santos.

At the end of 1983 the authors presented to the coordinator of CPB the draft copies of textbooks for the 5th grade. These materials were sent to conference education directors, the methodological department of Faculdade Adventista de Educacao-IAE, and to 5 teachers of science of SDA-Schools. After analyses and suggestions, the Division Board approved the publication.

In 1985, the textbook for the 5th grade were ready for schools. The same procedure occurred in 1986, 1988, and 1993 for textbooks of 6th, 7th and 8th grades, respectively.

4. PHILOSOPHY, METHODOLOGY, CONTENTS AND FORM OF THE NATURAL SCIENCES TEXTBOOKS

A good textbook can be evaluated by its philosophy, its methodology or contents, as well by its appearance and language.(6) In the case of the SDA textbooks these factors were all considered.

4.1 Philosophy

In the textbooks developed for the Natural Sciences, it was made clear that God is the Creator; that He created man to keep and maintain the world that He had created; that evil was the cause for the degradation of the environment; that His word is His revelation in written form; that humanity was created in His image and possesses individuality; that the human body is the temple of the Holy Spirit and should be maintained in a healthy condition; that natural laws are God's laws, an evidence of His intelligence and the power that maintains the universe; and that each person is of an inestimable value before God.

It was attempted to show that human knowledge is limited; that one should respect people and the environment; that through the study of nature one is able to find evidences of God's existence; that one should use one's knowledge and abilities for the glory of God and benefit of humanity, and develop responsible attitudes towards natural resources and the environment.

There was also a central concern for helping students to develop attitudes and values such as: respect for life, creativity, curiosity, honesty, order, responsibility, industry, cooperation, faith, and independent thinking.(See reference 7)

Summing up, it was attempted, as much as possible, to integrate the content, methodology and faith, including attitudes, knowledge, behavior and abilities.

4.2 Methodology

The basic methodology for the teaching of the sciences seeks to acquire knowledge through the "conventional steps": observation, knowledge of the problem, hypothesis, experiment, conclusion and generalization. It was sought, however, not to overemphasize the importance of formal research, with a rigid working itinerary and strongly established rules, in order to allow the development of the student's creativity and his abilities to recognize the problem and look for possible solutions. For the teaching of Sciences, the following steps were used: debate, show and tell, experiments, field work, project development, simulations, conferences, environment observation, and the promotion of events such as Science Week and Science Fairs.

One of the concerns was to consider scientific knowledge not as a ready product, a finished and unquestionable reality. Rather, it was agreed to consider E.G. White's quotation: " Every human being, created in the image of God, is endowed with a power akin to that of the Creator - individuality, power to think and to do. The men in whom

this power is developed are the men who bear responsibilities, who are leaders in enterprise, and who influence character. It is the work of true education to develop this power, to train the youth to be thinkers, and not mere reflectors of other men's thought. Instead of confining their study to that which men have said or written, let students be directed to the sources of truth, to the vast fields opened for research in nature and revelation. Let them contemplate the great facts of duty and destiny, and the mind will expand and strengthen. Instead of educated weaklings, institutions of learning may send forth men strong to think and to act, men who are masters and not slaves of circumstances, men who possess breadth of mind, clearness of thought and the courage of their convictions."(8)

For each grade there is a textbook with development of the subject matter, another one for activities, and a third one for teachers, containing suggestions for content, strategies, the bibliography and general guidance.

The subject matter is presented in a pleasant way, with clear and attractive language.(9) The proposed activities can be developed in the classroom, in a lab or at home. The questions in general do not require ready-made answers, but are open enough to accommodate the level of observation of each student, thus promoting an atmosphere of interest and interaction.

The art work, such as layout and illustration, is very appropriate, carefully chosen according to a highly educational objective.(10)

4.3 Contents

The content of the Natural Sciences textbooks was developed taking into consideration the distribution suggested by the Brazilian Government's Curricular Guide of 1973 for the following topics: 5th grade - Air, Water, Soil and Universe; 6th grade - Zoology and Botany ; 7th grade - The Human Body; and 8th grade - Physics and Chemistry.

Even though the SDA textbooks followed the distribution suggested by the Curricular Guide of 1973, they emphasized the topics related to environmental problems, health, scientific knowledge and technology as applied to individual and social life. It was also attempted, when the subject matter was chosen, to take into consideration the intellectual development of the student, leaving for more advanced grades the topics considered more abstract.

In 1986 a new curricular plan was proposed for the elementary level in the Sciences and Health Programs. In summary, this new plan has a new interdisciplinary approach, treating contents under different disciplines without separating them formally as Physics, Chemistry, Biology and the Geosciences. This is done with the intention of organizing content in a less compartmentalized way, giving a chance to explore natural phenomena more widely and to study the interrelationship between living beings and the physical environment.(11)

The adopted strategy was suggested for each grade, unifying themes whose characteristics could go beyond the narrow limits of the classical fields of the physical and

natural sciences. The themes were: 5th grade -Changing the Environment; 6th grade - Using Chemical Substances Appropriately; 7th grade - Using Energy Appropriately; 8th grade - Looking into the Future of the Human Species.(12)

4.4 Format

The textbooks of 5th, 6th, 7th and 8th, have 141, 204, 158 and 165 pages respectively. The paper and book binding are of good durable quality. The textbooks are reusable by family members and others pupils in following years. The photographs in the appendix are attractive in appearance.

5. PRODUCTION AND MARKETING OF THE TEXTBOOKS

Vote Nb. 81-217 of the SAD established that books for the elementary level would be published and marketed by the CPB. Those for the secondary and college levels would be marketed by the Instituto Adventista de Ensino (IAE).

According to this vote, the CPB was equipped both technically and in human resources for the development of the Textbook Program. Since 1983 the first textbooks were published and sold initially only within the SDA system. A year later they were also sold in non-SDA schools, to the point that within the last 3 years the total sale for non-SDA schools reached 2/3 of the total sale.

The marketing of the textbooks between CPB and the SDA schools is direct, with no intermediaries. This makes the price lower and more accessible for the students.

The marketing between the CPB and the Public Schools is done in general through the Fundação de Assistência ao Estudante (FAE -- Foundation for Student Assistance). Most of the Public schools take part in the Programa Nacional do Livro Didático (National Program of Textbooks - PNLD), a program maintained with Federal Government funds and managed by FAE.

Between 1986 and 1991, the PNLD acquired a total of 220 million copies of textbooks from several publishers with the purpose of gratuitously distributing both to students and teachers of public schools throughout the country. It became the largest program ever, a landmark in the history of Brazilian education.(13)

The FAE sends a Manual and a Form requesting each teacher to indicate what textbook he/she would like to adopt. In this form the teacher marks his/her first and second option. Based on the indication of the teachers the FAE negotiates with the publishers. The CPB has, during the last six years, kept seven titles included in the FAE's form, and has sold more than 620,000 copies of which 70,200 were in the area of Natural Sciences.

Private schools and some other public schools are helped by SDA autonomous regional book dealers. They promote their books in the local schools. The marketing can be done either directly with the school, through the dealer, or by means of a bookstore. The dealers receive a percentage of the sales.

As of December 1992 the SDA Textbook Program in Brazil has published and marketed 5,797,500 copies, of which 342,000 are in the area of Natural Sciences. The marketing of textbooks represents more than 20% of the total annual sales of the CPB, i.e., more than US$ 2 million.

6. RESULTS OF THE SURVEY AMONG TEACHERS, PARENTS AND STUDENTS ABOUT THE USE OF THE TEXTBOOKS OF NATURAL SCIENCES.

A survey was sent to 175 SDA schools, chosen at random, covering the entire country. The forms requested the opinion of teachers, parents and students about the teaching of Natural Sciences in the SDA schools. The results, generally presented in percentages, represent the opinion of 20 teachers of Natural Sciences, 81 parents and 153 students of the 5th, 6th and 7th grades.

6.1. Results of the survey administered to teachers.

The forms sent to teachers had twelve questions. The questions and answers were as follows:

1) How long have you been a Natural Sciences teacher?
average: 6.9 years

2) Extent of use of SDA textbooks:
never used: 5% used in the past: 5% are using: 90%

3) Level of contribution of the SDA textbooks for teaching creationism in Brazil:
irrelevant: 0% reasonable: 15% good: 25% very good: 60%

4) Level of contribution of SDA textbooks in the formation of values in the students:
irrelevant: 0% reasonable: 0% good: 50% very good: 50%

5) Integration of faith and learning in the SDA textbooks should be:
eliminated: 0% changed: 20% amplified: 35% maintained: 45%

6) The methodology used in the SDA textbooks is:
inadequate: 0% reasonable:30% good: 45% very good: 25%

7) The sequence of themes of the SDA textbooks should be:
changed: 50% maintained: 50%

8) The contents of the SDA textbooks should be:
changed: 20% maintained: 20% updated: 60%

9) Elementary SDA schools should teach:
only creation: 45%
both creation and evolution: 55%

10) Secondary SDA schools should teach:
only creation: 20%
both creation and evolution: 80%

11) There should be SDA textbooks for:
only elementary SDA schools: 0%
only secondary SDA schools: 0%
elementary and secondary SDA schools: 35%
elementary, secondary, and undergraduate SDA schools: 65%

12) Suggestions offered for the SDA textbooks:
amplify the contents: 20%
update the 5th grade book: 15%
acquire equipment for the lab: 15%
publish, as soon as possible, the textbook for the 8th grade: 10%
form an association of teachers of sciences for more interaction: 5%
adapt the textbooks to the Brazilian reality: 5%
decrease the number of experiments in the textbooks: 5%
had no suggestions: 25%

6.2. Results of the survey administered to parents of students.

The forms sent to the students' parents had eight questions. The answers and opinions were as follows:

1) Quality of teaching of sciences in their children's classroom:

	5th	6th	7th	mean
deficient	0%	0%	0%	0%
average	11.7%	5.2%	15.4%	10.7%
good	23.7%	31.6%	2.3%	32.3%
very good	52.9%	44.7%	23.0%	40.2%
excellent	11.7%	18.5%	19.3%	16.5%

2) Use of SDA textbooks by their children:

	5th	6th	7th	mean
deficient	0%	0%	0%	0%
average	1.7%	13.1%	15.4%	13.4%
good	29.4%	34.2%	46.2%	36.6%
very good	47.2%	34.2%	15.4%	32.3%
excellent	11.7%	18.5%	23.0%	17.7%

3) Who should decide on what is to be taught in the school?

	5th	6th	7th	mean
Government	0%	0%	3.8%	1.3%
Teachers	23.7%	31.6%	19.3%	24.9%
Parents	0%	0%	0%	0%
Parents and Teachers	70.6%	42.1%	46.2%	53.0%
Parents, Teachers and Government	5.7%	26.3%	30.7%	20.8%

4) For the elementary level what should be taught about origins?

	5th	6th	7th	mean
only creation	35.3%	36.8%	26.9%	33.0%
only evolution	0%	0%	3.8%	3.3%
both creation and evolution	47.2%	47.4%	61.7%	52.1%
other philosophies too	17.5%	15.8%	3.8%	12.3%
no philosophies at all	0%	0%	3.8%	3.3%

5) For the secondary level what should be taught about origins?

	5th	6th	7th	mean
only creation	29.4%	15.8%	19.3%	21.5%
only evolution	0%	0%	0%	0%
both creation and evolution	29.4%	42.1%	57.6%	43.0%
other philosophies too	41.2%	42.1%	19.3%	34.2%
no philosophies at all	0%	0%	3,8%	1.3%

6) The school should be involved in the moral and spiritual development of the students:

	5th	6th	7th	mean
yes	100%	100%	88.5%	96.2%
no	0%	0%	11.5%	3.8%

7) Teaching should be theoretical or should also include experiments:

	5th	6th	7th	mean
only theoretical	0%	0%	0%	0%
also include experiments	100%	97.4%	100%	99.1%
had no suggestions	0%	2.6%	0%	0.9%

8) Suggestions about the teaching of Sciences:
conduct more experiments: 24.2%
build and acquire equipment for labs: 13.6%
have more open-air classes, excursions and visits to cultural centers: 10.6%
other suggestions: 6,1%
had no suggestions: 45,5%

6.3. Results of the survey administered to students

The forms sent to the students had five questions. The answers and opinions were as follows:

1) Appreciation of the sciences discipline:

	5th	6th	7th	mean
yes	94.6%	83.3%	74.4%	84.1%
no	5.4%	16.7%	25.6%	15.9%

2) The most appreciated section of the textbook:

	5th	6th	7th
Universe	32.1%		
Water	19.6%		
Vertebrate		53.7%	
Invertebrate		22.2%	
Reproduction			55.8%
Health			20.9%

3) The least appreciated section of the textbook:

	5th	6th	7th
Air	28.6%		
Water	12.5%		
Invertebrate		25.9%	
Vertebrate		20.4%	
Body Structure			41.9%
Body Command			23.3%

4) Experiments described in the textbook are done:

	5th	6th	7th	mean
in the classroom	11.9%	9.3%	4.7%	8.6%
in the lab	3.4%	3.7%	2.3%	3.1%
at home	17.0%	40.7%	23.2%	27.0%
both in class and at home	61.0%	7.4%	4.7%	24.4%
not done	6.7%	38.9%	65.1%	36.9%

5) Suggestions to make classes more interesting:

	5th	6th	7th	mean
have classes in the lab	50.0%	56.7%	80.6%	62.4%
have classes in the open-air and visits to cultural centers	26.8%	30.0%	11.6%	22.8%
more frequent use of computers and visual aids	7.0%	3.7%	2.3%	4.3%
other suggestions	6.1%	2.7%	3.9%	4.3%
had no suggestions	10.1%	6.9%	1.6%	6.2%

7. ANALYSIS OF THE RESULTS OF THE SURVEY AMONG TEACHERS, PARENTS AND STUDENTS ABOUT THE USE OF THE TEXTBOOKS IN NATURAL SCIENCES

The teaching team working in the elementary schools in Brazil seems to be relatively young on the average. Perhaps, as they acquire more experience, they will also work in the secondary schools, or in administrative roles, even though some follow an elementary level teaching career.

About 90% of the teachers stated that they make use of the SDA Natural Sciences textbooks. Though there are no actual figures it is supposed that the percentage representing the total group of SDA teachers in Brazil who use SDA textbooks is lower.

Among the possible reasons for not using the textbooks are (a) the influence of the supervisors and directors of the schools, (b) the lack of support of the conference education directors, and (c) personal choice. It is a paradoxical situation, considering the fact that, whereas some non-SDA schools choose to use SDA textbooks because they contain the creation theory, some SDA schools use textbooks containing the evolution theory.

According to the teacher's opinion, the contribution of the SDA Natural Science textbooks was favorable in relation to teaching creationism in Brazil. It helped students to strengthen their faith in God as a creator and to respect and appreciate nature. It also helped teachers to deepen their knowledge in the creationist model, influencing positively their teaching and witnessing.

The interest showed by the teachers prompted regional meetings with the authors, and two national meetings with the presence of distinguished creationists, including representatives of the Geoscience Research Institute.

The publication of the SDA textbooks started a polemic involving the media about the teaching of creationism in schools, particularly in the public schools. (14,15) The magazine Ciência e Cultura (Science and Culture) published by the Brazilian Society for the Progress of Sciences, issued an editorial entitled "De Volta a Um Velho Tema: Ciência X Fundamentalismo" ("Back to an Old Theme: Science Versus Fundamentalism").(16)

The SDA textbooks have been considered 'good' and even 'very good' by teachers. However, as science is very dynamic and the methods of teaching improve continuously, it is understandable that the SDA textbooks need to be updated.

It is exciting to know that almost all teachers and parents agreed that the most important thing in a school is the moral and spiritual development of the students.

The methodology used in the SDA Natural Sciences textbooks differs from the traditional course of studies received by most of the teachers at the university. Besides, there is a lack of material resources such as laboratories and equipment, which explains the scarce use of experimentation, a fact that was observed and lamented, by the parents and students. The survey data shows decreasing interest of the students toward the subject as they go from one grade to the next. These results are in accordance with others surveys and generally are related to attitude, motivation, and achievement ability among life science students. The decrease of interest in science among adolescents is more

accentuated during the ages 13-17, in grades six and seven, and more evident among girls than in boys. (17-26)

The parents' opinion about who should decide on what should be taught in the school revealed that they themselves and the teachers should decide it together. These data do not totally agree with another survey done by Data Folha in the city of Sao Paulo. When the question on "Who should decide about the content of teaching" was asked, 29% responded parents only, 19% teachers only, 19% teachers, parents and government, 16% government only, and 9% parents and teachers. (27) In practice, teachers in Brazil have already acquired the prerogative of deciding about the textbooks to be used, as well as the contents.(13,28) In the case of confessional schools that decision should be subordinated to the philosophy of the governing body.

Regarding the theory to be taught, most parents and teachers revealed in the survey the opinion that both creation and evolution should be taught. Expressing the reason for their answer, parents expected both subjects to be taught in an honest and balanced manner, considering the students' level of maturity. This survey agrees with other surveys and opinions such as: ICR Midwest Center Newsletter of 1976; Troost, 1966; Christensen and Cannon, 1978 and Bliss, 1978 as presented for Bergman, 1979 (29,30); Christensen (31), Feder (32), Fuerst (33), Zimmerman (34-38) and Zindler (39). The Data Folha's survey done in Sao Paulo, revealed that 58% of the population think that only creation should be taught in schools, and 18% think that both creation and evolution should be taught. (27) It's widely known that this is not the current practice. The teaching of evolution prevails (40-44) even though there are some voices crying for the balance of the teaching of both.(45-50)

Finally, in the survey most teachers agreed that the SDA Natural Sciences textbooks should be broadened, including the teaching of the secondary and undergraduate levels.

8. CONCLUSION

Considering the fact that the teachers working in SDA elementary schools are relatively young, and that most of them attended secular schools, it would be wise to implement a program of training to strengthen their understanding of creationism, especially its philosophical basis. This program would help them to better know the philosophy and mission of the church. It should also broaden their professional qualifications, familiarizing them with the methodology and the contents of SDA Natural Sciences textbooks.

Another important aspect to consider is the necessity to support the authors, giving them more time for personal study, for writing and sharing with colleagues in professional meetings.

As an ideal, the following steps to continue the SDA Natural Science textbooks Program are suggested:

1. Complete the 8th grade textbooks (elementary level);

2. Revise and update progressively the textbooks for the 5th, 6th and 7th grades (elementary level);

3. Prepare textbooks, from 1st to 4th grade (elementary level);

4. Prepare textbooks for the secondary level

5. Prepare textbooks for the undergraduate level

The justification of these steps is to give first priority to the series already started (5th - 8th), then to supply the lack of Natural Sciences textbooks from lst to 4th grades of the elementary level, where the market is large. The final steps will be to supply the levels that still are in expansion, namely, the secondary and undergraduate. In these last levels it would be useful to prepare syllabi that, after an experimental period, could be converted into textbooks.

Finally, it is suggested that study be given to the possibility of producing Natural Sciences textbooks which contain only scientific creationism, with no biblical creationism, more specifically aiming at non-SDA schools (51,52). These books should also present the contrary viewpoints. (53)

9. NOTES AND REFERENCES

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