

EVALUATION OF THE DELIVERY OF A UNIVERSITY FOUNDATION COURSE IN A THIRD WORLD COUNTRY SCIENCE, MEDICINE, AND TECHNOLOGY IN SOCIETY

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This article investigates the implementation of a science foundation course for non-science students at a Caribbean university. The course covers the philosophy and history of science and its impact on society, but does not require technical knowledge of science. It was introduced as a reading course to some 700 students in the Faculties of Social Sciences and Humanities. Students met with lecturers in tutorial/seminar groups. There were many difficulties and students, faculty, and administration were quite dissatisfied. This study attempted to identify the main problems and what could be done to improve the delivery of the course. Interviews with lecturers and students revealed that although the aims of the course were very worthwhile, the introduction was rushed, the administration appeared to be muddled, and students were resentful. Seminar sessions were too few to cover all the material and time for discussion was limited. The textbook was not perceived as reader-friendly and did not aid the understanding of many students. One positive feature was the method of assessment, which produced a pass rate of 91%. However, questions are raised about whether the aims were achieved. Suggestions are given for improving administration, mode of delivery, student motivation, and the text.

Introduction

Objective of Study

This study seeks to investigate the extent to which the aims, content, instructional strategies, and method of assessment of a foundation course impact upon the attitudes and performance of non science university students in a Third World country.

Background

Students at this university suffer from not having a broad-based education. There is usually little provision or encouragement for pursuing courses outside of their faculty or unrelated to their major. With a view to ameliorating this deficiency in the area of science, FD12A, a course in Science, Medicine, and Technology was made compulsory for students in the Faculties of Humanities and Social Sciences. The Faculty of Agriculture and Natural Sciences was given the responsibility for developing and delivering the course.

FD12A was supposed to be offered as a reading course. It was first offered in the 1999-2000 academic year. Many problems were experienced, including finding appropriately qualified people to volunteer to teach the course. A draft booklet of one module (Philosophy) was used as a text. However, many topics had not been adequately explained and there was widespread rebellion against the book. Faculty, students, and administrators were all dissatisfied with the way the course was delivered.

The text was rewritten for the next academic year and, with a late start in the second semester, FD12A was offered for a second time. Though obviously an improvement over the first year, the introduction of the course was hurried and difficult and many students and lecturers were still discontented. The course coordinator therefore requested an evaluation of the course. What were the main problems with the text, teaching/mode of delivery, and assessment? Were the aims of the course achieved? What mechanisms should be put in place to improve the course for the next year? These concerns provided the basis for this investigation.

Course organization

A distance mode was employed--print driven (textbook) with tutorial support.

Content

The course was divided into three modules: Module 1 - History, Module 2 - Philosophy, and Module 3 - Society (most often referred to as Technology). The modules were separately compiled by a team of university lecturers. The students were expected to read the text in preparation for the classes (see Appendix A for a description of the contents).

Seminars

The 720 students were divided into 12 groups depending on their schedules. The 12 groups met at different times, with different lecturers. Predominantly, there was one lecturer per group but some lecturers were assigned to two groups while others had only one on two sessions depending on their level of comfort with specific topics. Lecturers were mainly from the Faculty of Natural Sciences; three were retired. Each group contained about 60 students, and each student was expected to attend six 1-hour classes/seminars during the semester, two classes for each module. Lecturers were not supposed to lecture but to discuss the material/questions with the students subsequent to their reading the text.

Assessment

Each student had to write two coursework assignments. Assignments 1 and 2 on Modules 1 and 2, respectively, each carried 25% of the total mark. Students were informed of the question at the beginning of the module. They were given three weeks to prepare for the writing, which took place under examination conditions for a period of one hour. The final examination was unseen and consisted of two questions; one was a choice of three questions from Module 3, and the other was a compulsory question covering all the material and intended to bring

together arguments and information from all three modules. Each question was worth 25%.

Research questions

The study seeks to answer the following questions as perceived by lecturers and students:

1. What are the aims of the course, how worthwhile are these aims, and to what extent were these aims achieved?
2. How appropriate was the text in facilitating study?
3. How effective were the lecture/seminar sessions?
4. How suitable was the mode of assessment in promoting student learning?
5. What structures/amendments should be put in place in order to improve the running/delivery of the course?

The study addresses these questions mainly in light of student and faculty perceptions.

Significance of the study

It is anticipated that the findings from this investigation will provide suggestions/recommendations for improving future delivery of the course. The research can also be of value to other universities wanting to run similar foundation courses or in the planning of other foundation courses.

Methodology

The following procedures were undertaken in the order presented. However, the order does not indicate importance to the study.

Reading of the text

In order to evaluate the course, the researcher (a lecturer in the Faculty of Natural Sciences, who did not participate in the teaching of FD12A) first read the text to get acquainted with the course and its contents.

Observation of the seminars

Each lecturer was observed once during one of his/her seminar sessions. Observations were conducted over the three modules. Four lecturers were observed for each module. Of course, the observed class may not have been the lecturer's best but the concern was not with evaluation of the performance of individual lecturers. Rather, the researcher wanted to see how the sessions were conducted, what the student response was like, and to get a feel for what was happening in the classroom. Observation of the seminars was used to verify students/lecturers' views and was not a major part of the study.

Interviews with the lecturers

All 13 lecturers were then interviewed individually, face to face, to get their opinions of the course. The interview style was informal and semi-structured. Opinions were sought on the aims of the course; whether these aims were achieved; problems with the text, seminars, and assessment; and overall running of the course. The interview guide is presented in Appendix B. The questions raised here addressed criteria that the researcher found relevant to assessing the course. Shears (1996) provided some guidelines and lecturers also added their views.

Interviews with the students

Based on the results of exams 1 and 2, 30 students were chosen at random from Groups 1-6. Stratified random sampling was used, with exam performance forming the basis of the selection. Ten students were chosen from those who performed very well on the exam (Grade A), 10 from those who had average performance, and 10 from those who performed badly (failing grade). In each case, the 10 students were chosen across the six groups, with about two from each group depending on student availability. The students were contacted by notice or telephone and asked to participate in the survey. The interviews were conducted after the final exam. Some students were interviewed face to face in my office, while some who lived far away and had already returned home for the vacation period were interviewed on the

telephone. While still ethnographic in nature, the interview style was a bit more structured than with the lecturers and included some closed-type questions for data analysis. Students were asked their opinions on various aspects of the aims of the course, the text, the seminars, course delivery, the examinations, and other problems encountered. The interview guide is presented in Appendix C.

Reading of examination scripts

Samples of scripts from these students, as well as scripts from other students on the final examination, were read to confirm whether or not, in the researcher's opinion, the students had achieved the aims of the course.

Analysis of examination results

A statistical analysis of the final examination results, showing performance (grades) by faculty, has been included in the analysis section.

Analysis of results

An analysis of the information collected from the interviews was carried out and a comparison was made of the views of lecturers and students. Examination scores were also correlated with scores measuring students' science background to determine if there was a significant relationship between the two.

Based on the results of the procedures outlined above, overall conclusions were made and recommendations given for improving the delivery of the course.

Presentation of Results

Reading of the text

On reading the text, I found it was very understandable, stimulating, and worthwhile for non-science majors. The philosophy module was

particularly enlightening, but the society/technology module was somewhat disconnected and tedious in parts.

Observation of the seminars

Seminars were typical university classes: 20-70 students gathered in a large room. The lecturers entered and made pertinent announcements related to exams, and so on. They then proceeded to discuss the material, with some using overheads, handouts, and blackboard. They outlined the main points and some used the questions as a guide, others the text. They stuck closely to the text, without parroting it, explaining the issues in their own words with some of their own examples. At appropriate points, questions were introduced to stimulate discussion. Some presented the material then discussed the examination questions; others started directly answering the questions. Most used their notes while others spoke "off the cuff."

Individual lecturers had their own teaching styles. Some were humorous, some were lively, and others more businesslike. Some encouraged and got more participation while others mostly lectured. Some went quickly trying to get through all the material; others took a slower pace. Those who tried to cover a lot were rushed in their presentation, as one hour was not sufficient to cover all the material in the text. Some lecturers were indeed better/more interesting than others, but all the lecturers were very clear in their presentation and almost all were of an appropriate standard. All dealt with the concepts rather than technical details requiring scientific background.

The students were very quiet. Most listened attentively and took notes while others followed in the text. When asked a question most did not offer any response and were satisfied with being anonymous in the crowd. A few interested students did participate and ask their own questions. Some lecturers got more response than others, and some topics sparked more interest. A few students slept during the class, a few worked on their own projects, while some occasionally whispered to the person sitting next to them. After the class, some students approached the lecturer to ask a question or clarify an issue. Student attendance dropped off towards the end of the semester.

Interviews with the lecturers and students

Since in many instances the same questions were put to both lecturers and students, the results are presented together for ease of comparison. Thirteen lecturers were interviewed, all from the Faculty of Agriculture and Natural Sciences. All shared their views willingly. Twenty-seven students were interviewed. They also participated well and were eager to discuss matters. There were 15 students from Social Sciences and 12 from Humanities, and were of diverse majors. Twenty were female and seven male.

The researcher acknowledges that the small sample size imposes a limitation with respect to generalization of the findings.

Aims

Question: What do you consider to be the main aims of the course?

All the lecturers agreed on what the aims should be. Responses included:

- "To help students in non-science gain an appreciation of the role of science and technology and its impact on everyday life."
- "To get students to think and to whet their appetite for scientific thought."
- "To broaden their background."

All agreed that these aims had not been clearly expressed, either to the lecturers or the students, or in the text.

Two students interviewed had "no idea" what the aims were. However, others understood the aims, namely:

- "To provide knowledge of science and technology to non-science students."
- "To understand how science evolved."
- "To understand how science affects everyday life and its importance to everyday life."
- "To create a well-rounded student."

All agreed that these were worthwhile aims. Students were also asked if they would do the course if it were not compulsory. The answer was a resounding "no" from 20 of the 27 students, and the following reasons were given:

- "Not related to major" (7)
- "Didn't like science" (4)
- "Irrelevant" (3)
- "Poor structure, administration, and content" (3)
- "Too heavy and scientific" (3).

However, three students said that they would do it because it was a worthwhile course and relatively easy. Four students said "maybe" because "they learnt a lot."

The text

Questions: *How appropriate was the text in facilitating study? Was the text too difficult for the students?*

Lecturers commented in more detail on the text. Half of the lecturers thought that Module 2 (Philosophy) was too difficult. Their comments suggested that there was "too much to cover;" it was "far too incomprehensible and deep for students;" and that it was too heavy for an introductory course." The rest of the lecturers were generally happy with the text and thought that the material was good. However, there was overlap with Module 1 (History). Some comments on Module 1 suggested that it was "interesting," "fair," and "appropriate," while others suggested that it was "not well written," "disjointed," "with severe gaps," and that "many topics were introduced and not fully developed," "some topics were biased," and "the material was too technical." However, most people enjoyed presenting this module, as it was more interesting for the students. Lecturers agreed that Module 3 (Society/Technology) was not too difficult but that it was not lucid enough for a distance course. It had been compiled by individual lecturers and put together without overall coherence, and the relationship to the rest of the course was lost. All the lecturers agreed

that the text should be rewritten and gave their ideas on how the text could be improved. These are included in the recommendations section.

None of the students interviewed had read the text before class. Of the 27 students, 9 had read all the text in preparation for the final, 13 had read most of the text; the parts required to answer the questions, and 5 students admitted to reading only "some" of the text. With respect to level of difficulty, 2 students found the text too difficult, 13 difficult, 11 moderate, and 1 found it easy. Most said that the language was too scientific and hard. It was confusing for those without previous science background; some concepts needed more development. Comments on Module 2 included "very difficult," "intimidating," "deep," and "a lot of material to cover." History was easier. Students found it "reasonable" and even "enjoyable." Module 3 was easier to follow because "students could relate to the technology." Many students reacted negatively to the text and had to supplement the material by using other texts. Some even wanted the text to focus more on the exam questions given. Students' comments for improving the text were taken into account in making recommendations.

The lectures/seminars

Lecturers were asked about their method of teaching and the degree of student preparation. Responses coincided with my observation of the seminars, as reported earlier, and will not be repeated here for the sake of brevity. Lecturers were very aware of what was happening in the classroom and indicated that they lectured "out of necessity," as there was not enough time for discussion nor were the students prepared for it. Large class size also prohibited discussion; students came prepared for a lecture and had not read the text. Many came with a lot of built-in resentment towards the course. There was little interaction.

Question: *Were the number of sessions sufficient?*

Both lecturers and students were asked this question. All the lecturers agreed that they were "definitely not." Most lecturers would prefer three or four sessions per module; everything was rushed. While 21 of the 27 students agreed that the sessions were too few, 6 said that the number

was sufficient; they did not need more because everything was in the book or handouts, and in any case they would not have had time for more classes.

Question: *Were the classes helpful to student understanding of the material?*

This question was posed to the students: 13 said "unhelpful," 4 said "somewhat," and 10 said "useful" Among those who said that the seminars were unhelpful, reasons included:

- "lecturers repeated what was in the text without explaining further"
- "could not understand the lecturer"
- "delivery was poor"
- "there was no interaction between lecturers and students"
- "tutors went too quickly, having too much material to cover in too little time"
- "some lecturers needed to be more familiar with the material."

Those who found that the seminars were useful said that the lecturers helped them "clear up things," "outlined the answers to the questions," and "helped them prepare for the exams." Some lecturers were even "inspiring."

Question: *How can the seminars be improved?*

Students suggested that lecturers should:

- "be more organized and try to make the course more understandable"
- "be more enthusiastic"
- "be more accessible"
- "use slides"
- "have more discussion"
- "give more feedback and guidance"
- "give references to research literature."

Lecturers' suggestions were not targetted at the lecturer and will be incorporated in the recommendation section.

The method of assessment

Question: *Were the exam questions difficult/easy?*

All the lecturers agreed that the assignments were not too difficult and most were pleased with the way the course was assessed. All agreed that some questions did not coincide with the emphasis in the text, for example, whole questions may be asked on material discussed in two pages and none on whole chapters. Other comments included:

- "Students needed more time than 3 weeks to assimilate the material before writing the exam."
- "A list of suggested reading material should be included as students needed to read other material to answer the whole question."
- "A more detailed marking scheme is needed for uniformity across the markers."
- "Tutors should be employed to help with the marking."

Most of the students found that the exam questions were interesting and adequately related to the text. Twenty said that the exam questions were not difficult and even those who got low marks admitted that it was because they had misinterpreted the question and needed guidance. However, four said that the questions were difficult. Reasons included:

- "Questions were vague, not straight from one area of the text."
- "The modules gave the information but you had to come up with your own ideas and opinions."
- "They were not sure what they were being asked or how they wanted the questions answered."

Question: *Was the method of assessment appropriate?*

All the lecturers agreed that it was good to be given the questions in advance. This gave the students focus and it was the only solution given the constraints of the course.

Twenty-one students agreed that the method of assessment was appropriate, while six did not agree because of the final examination (described earlier). Students admitted that having the question in

advance was the "saving grace" of the course; it helped them to focus. They would have failed otherwise. Some would have preferred to write the answer and hand it in; "that would be better than cramming off the answer and writing it in the exam." The time was too short. Most did not mind the final. It was "okay," and "interesting." Some, however, did not know what to expect and found it difficult to prepare for the unseen exam. Some found question 1 (compulsory question on all three modules) a shock. They had to make up their own question! It was "inappropriate," "difficult," "unfair," "messed up," "weird," and "tricky." Others merely used the questions they had been given before as a guide to make up their own question on the exam.

Question: *What were the major problems experienced in this course?*

Students' main problems were "limited time to study" and "grasp the material," "too much material," and "a difficult module 2." For some, the text was the main problem, while for others it was the lecturer. Lecturers were too rushed. Students had no science background to compensate for poor teaching and did not understand the material. Other comments included:

- "the marking was unfair, not uniform"
- "the course is an appendage, not part of their everyday learning, an obstacle"
- "not a good experience."

However, some said that although they "worried in the beginning, everything came together in the end." "It was okay after all," they were "glad to do it," and "enjoyed the course;" "it was a good experience," and they had "no regrets." "Students needed to stick with it until they got it." One student admitted that if she had to do it over again she would read more and ask more questions.

Question: *Did students' views of science change in any way as a result of taking the course?*

Though all the lecturers found it a very valuable course, most felt that only a few students were affected and were anxious to see the exam performance.

Six students said that their views did not change, their only aim was to pass the course and they got nothing from it. However, others said that they learnt a lot and improved their knowledge of science; they learnt its history and their eyes were opened up to things like gene therapy. Some saw evolution in a different light. The course broadened their views, motivated them, and made them think. It helped them to appreciate science, how useful it is, and they respect scientists more. One even saw how the social and natural sciences were related. It did not change their views on religion. All these things the course did for the students!

Reading of examination scripts

A preliminary reading of a sample of the scripts revealed a wide range of standards in performance. In my opinion, there was general consistency across the markers and I was in close agreement with the marks awarded. Judging from their responses, some students seemed indeed to have achieved the aims of the course while others were barely affected. There is need for follow up detailed analysis.

Analysis of examination results, FD12A - 2001

These statistics are incomplete since they refer to the results of 718 out of 783 candidates registered for the course.

Table 1. Faculty of Social Sciences: Student Performance, 2000-2001

Grade	A	A-	B+	B	B-	C+	C	C-	E	Total	Pass
Frequency	11	24	134	80	63	32	30	27	32	433	93%

This is an improvement over the previous year's results where 85% of 257 candidates passed.

Table 2: Humanities: Student Performance, 2000-2001

Grade	A	A-	B+	B	B-	C+	C	C-	E	Total	Pass
Frequency	10	34	97	40	37	14	13	10	30	285	89%

This is also an improvement over the previous year's results where 50% of 155 candidates passed.

Table 3. Overall Performance, 2000-2001

Grade	A	A-	B+	B	B-	C+	C	C-	E	Total	Pass
Frequency	21	58	231	120	100	46	43	37	62	718	91%

Each student interviewed was also given a score measuring his/her science background (i.e., science exposure before entering university) as follows:

	Score
No science taken at high school	0
Science taken to third form only	1
One science subject gained at O Level	2
2-3 science subjects gained at O Level	3
One science subject taken at A Level	4

These students were also given scores based on their examination grades as follows:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	E
Rating	10	9	8	7	6	5	4	3	2	1

The following data were obtained:

Table 4. Relationship Between Examination Grades and Students' Science Background

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Grade	7	7	5	3	5	5	7	1	3	9	3	1	6	6	8
Science Back-Ground	3	3	1	1	4	3	2	3	2	3	2	3	1	4	3

Student	16	17	18	19	20	21	22	23	24	25	26	27
Grade	6	6	1	7	5	7	7	6	9	7	5	1
Science Back-Ground	3	3	3	3	2	5	4	3	3	3	4	2

The sample correlation coefficient was computed to be 0.21. To accommodate for the small sample size, a *t* test of significance was performed. The correlation was not significant at level .05. It can be concluded that there was no significant relationship between science background and grade.

Discussion and Recommendations

The findings can now be discussed in relation to the research questions. The focus here is on lecturer and student perceptions. The following are the researchers' conclusions.

What are the aims of the course and how worthwhile are these aims?

Both students and lecturers expressed similar aims for the course and both groups thought them worthwhile. It is how these aims were achieved, or failed to be achieved, that caused the problem. Whereas most students said that the aims are important, they are not very relevant to their major and, therefore, they would not opt to do the course if it were not compulsory. Lecturers, on the other hand, seeing the importance, but not very urgent, benefits of the course, would like to develop the course properly and even offer it to science students as well. Further discussion on the aims is presented later.

How appropriate was the text in facilitating study?

Both lecturers and students agreed that the philosophy module was too difficult. Both groups enjoyed the history module. Students appreciated technology, while lecturers saw the need to update the material and relate it more to the rest of the course. More recent applications, for example, the methanol industry, should be discussed. The textbook definitely needs to be rewritten, especially if the course is to be offered in distance mode. An expert in the field should be hired to do so.

The following are the researchers' recommendations based on analysis of the data collected:

- Write one integrated text, developed with the course objective in mind. These objectives should be stated. Each chapter must relate to the overall aims and have its specific objectives. The text must flow from topic to topic.
- Employ distance-writing skills, make the text student friendly through the use of pictures, and so on.
- Simplify the sentence structure in Module 2.
- Eliminate duplication and expand where required.
- Eliminate grammatical, conceptual, and typographical errors.
- Discuss more controversial issues and be more critical of the sciences.
- Provide authors' names, a glossary, and a bibliography

How effective were the lectures/seminar sessions?

All agreed that the seminars were a failure. However, seminars were perceived differently by lecturers and students. Both wanted interaction yet it didn't happen. Students read for the tests and not for the seminars. Lecturers asked questions and tried to provoke discussion, but students did not respond because they did not appear to understand what was expected of them. This may have been because the text was too difficult for them to read on their own, or perhaps they were unaware of their obligation to do so in a reading course. This failure of the organization of the seminars to induce interaction could also be due to the size of the

groups or the fact that the topics to be discussed were not sufficiently delimited, and required reading of the whole module. A lecture style was therefore enforced and students then complained about lecturers' performance.

Note that this tension between lecturers and students is not unique to this course. "Building a successful teaching environment depends on both the teacher and the student" (Shears, 1996, p. 4). The initial responsibility falls on the teacher but students must do their part. The course needs to be better prepared and students need to better understand their role in achieving a successful class. Students need to be persistent and have a more positive attitude. Statistical tests showed no significant relationship between science background and grades. Students apparently accommodated for this, but a suspected relationship with student attitude needs to be investigated further.

Both lecturers and students agreed that course delivery needs to be improved. The following are suggestions for improving the seminars:

- There should be a joint introductory lecture/visual presentation where the aims are discussed and administrative matters dealt with. This should be made stimulating and interesting and designed by an expert in the field.
- Students should read the text, then break into groups for discussion.
- The group size should be halved to facilitate discussion.
- There should be three or four sessions per module with one or two introductory lectures for explanation and two sessions for discussions.
- Lecturers should not teach specifically to answer the exam question.
- More collaboration is needed among tutors to present a unified approach, independent of which group a student belongs to.
- The course should not start unless all is fully prepared.

How suitable was the mode of assessment in promoting student learning?

The method of assessment was good and satisfied both lecturers and students. Having the questions in advance was extremely facilitating. However, the problem of uniformity in marking and getting help with marking must be addressed.

What structures must be put in place in order to improve running/delivery?

Both lecturers and students agreed that the course suffered from poor administration, while the administration described the course as a "nightmare." The course is a great burden on the faculty. Manpower, time, and resources need to be allocated. Start early and be prepared so that a student-friendly approach can be maintained throughout. A post should be established for a course coordinator/professor with expertise in the history and philosophy of science. The needs expressed by the majority of students raise doubts as to the feasibility of a distance approach. There is need to decide whether or not the course is to be delivered in distance mode. If so, course writers, tutors, and students need to be trained in distance learning techniques.

To what extent were the aims of the course achieved?

The aims of the course are very worthwhile but many students from the non-sciences are not interested in achieving these aims as they do not see the relevance to their studies. The reasons why students have such negative views of science, how their experience at high school impact on their views, and their failure to make the connection with their majors is a matter for further investigation. Many students, however, admitted that they had learnt a lot and were able to appreciate more the impact of science on their lives.

The pass rate should be an indication of the success of the course. The pass rate of 91% appears to indicate that all turned out well after all. This is indeed a comparatively high pass rate in relation to other university courses. It raises a question as to whether lecturers marked easy in order to appease everyone, or whether the students were able to make up for the deficiencies? Surely high standards must be maintained and cannot be compromised to accommodate shortcomings.

In conclusion, then, the aims of the course are very noble. The course should be properly developed so that students can appreciate its relevance to their majors and have these aims reasonably achieved in a comfortable learning environment.

Acknowledgements

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Reference

- Shears, A. E. (Ed.). (1996). *University teaching and learning – An instructional resource guide for teaching face to face or at a distance*. St. Augustine: Distance Education Centre and Instructional Development Unit, UWI.

Appendix A Contents of Modules 1, 2, & 3

Module 1

1. Matter
2. Cosmology
3. Technology
4. Evolutionism

Module 2

1. Introduction
2. The Self-Moving Universe of the Greeks
3. The Monotheists' Creator Gods
4. Putting Questions to a Machine
5. The Narrative Sciences
6. Science and its Implications
7. Uncertain Science

Module 3

1. Sugar
2. Bauxite and Aluminium
3. Sustainable Land Development
4. Computer Science and Information Technology
5. Food and Nutrition in the Caribbean
6. Genes and our Well-being
7. Science and Ethical Issues

Appendix B Interview Guide – Lecturers

1. Aims

- a. What do you consider to be the aims of the course?
- b. What do you consider to be the aims of modules 1/2/3?
- c. Do you think they should be changed/improved?
- d. Should they be more clearly expressed?

2. Text Module 1/2/3

- a. Too difficult for students/too easy?
- b. Appropriate topics, sequence of topics?
- c. Module 2: Too historical? How were individual topics discussed? How useful were examples? Were questions in text useful? How well related to religion and other cognitive practices?
- d. Module 1: How well were the topics treated: Matter, Evolution, Cosmology, Technology?
- e. Module 3: Adequate presentation or sketchy? Notable gaps? What did you add in? Technology: Bauxite, sugar presentation - related to aims?
- f. Comment on text for other modules taught. Adequate, well written/discussion biased, too favourable of sciences, evolution, relation to religion?
- g. How can text be improved?
- h. Did students find it helpful?

3. Lectures /Seminars

- a. What method did you use lecture/discussion?
- b. What was the student response? Interested, indifferent, bored?
- c. How well prepared were students? Able to ask questions? Sitting silent? Had they read text?
- d. How should the seminar arrangements be changed?
- e. Did you have enough time? How did you choose what to do?
- f. More collaboration with tutors needed?

4. Assignments

- a. Too easy/difficult?
- b. Better not to be given question in advance?
- c. Better to have more time to answer?
- d. Different format preferred, i.e., short answer, full essay, etc.?

5. Suggestion for improving way course is delivered/assessed?

6. Overall, valuable course or should it be scrapped?

Appendix C
Student Interview Guide

1. Department _____ 2. Major _____ 3. FD 12A
Lecturer _____

4. Sex _____ 5. Religion/denomination _____

6. Science subjects previously taken

A'level Science Subject
Results

Date

CXC/O'level Science Subject

7. What do you consider to be the main aims of FD12A course?

8. If this course was not compulsory would you have chosen to follow it and why?

9. How much of the material in the text did you read?

1. None

2. Some

3. Most

4. All

10. The material in the text was

1. Easy

2. Moderate

3. Difficult

4. Too difficult

