PREDICTING SCHOOLS' PERFORMANCE IN THE
STATE EXAMINATIONS: A MODEL FOR
SHABA PROVINCE IN ZAIRE

A Dissertation
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The School of Graduate Studies
Indiana State University
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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
Ngoba E. Maloba
December 1977

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Education

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VITA

Ngoba E. Maloba was born on September 23, 1950 in Kabondo-Dianda in the Northern Katango Province (Shaba) in the Republic of the Congo (Zaire).

He spent all the six years of secondary school at Mulungwishi (1964-71) where he majored in mathematics and physics. While a student there, he held several responsible positions: (1) President of student Body Government (which he revived), (2) Secretary of the Sports Committee, (3) Director of Education in the Youth for Christ Movement, and (4) President of UJERCO (Union de jeunes revolutionaires du Cycle d'Oriention).

At the end of the senior year he successfully passed both the State Examinations and the Maturity Examinations (Examen de Maturité), for which he was awarded (1) a State scholarship to attend the National University in Zaire and (2) a full scholarship by the United States International University with complementary support from the Home Ministry Fellowship in San Diego, California.

His college training included:
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The dissertation of Ngoba E. Maloba, Contribution to the School of Graduate Studies, Indiana State University, Series III, Number 159, under the title Predicting Schools' Performance in the State Examinations: A Model for Shaba Province in Zaire is approved as partial fulfillment of the requirements for the Doctor of Philosophy Degree.

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ABSTRACT

Purposes of the Study

The purposes of this study were (1) to ascertain for Literature major, Mathematics-Physics major, and General Pedagogy major, the significance of the relationship between the schools' performance in each required course and their overall performance in the State Examinations; (2) to investigate for each major the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations; (3) to develop for each major, a prediction equation to be used to predict schools' performance in the State Examinations; and (4) to analyze the degree of concordance, across the three majors, in the ways courses common to them correlated with the State Examinations.

Procedures

A total of 58 rural and urban schools from Shaba Province were used in this study. Twelve offered Literature major and presented 275 candidates, sixteen offered Mathematics-Physics major and had 300 candidates, and twenty-eight offered General-Pedagogy major with 935 candidates. All these schools participated in the State Examinations in June 1976.

A correlation matrix was developed for each major, using the Statistical Package for the Social Sciences (S.P.S.S.). In this matrix each variable was compared singly with the other variables.

Stepwise multiple regression analyses were completed for each major, in order to identify courses contributing significantly to the
schools' performance in the State Examinations. The results of these analyses were used to develop, for each major, an equation to be used to predict schools' performance in the State Examinations.

A multiple correlation coefficient was computed for each major, to test for the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.

A Kendall's coefficient of concordance was computed and its significance tested.

Findings

The following findings were established from the analyses:

1. In each major, certain required courses contributed significantly to schools' performance in the State Examinations.

2. The overall correlation in each major, between the schools' performance in all the required courses and their performance in the State Examinations was significant.

3. A prediction equation was developed for each major.

4. The courses common to the three majors did not contribute to the schools' performance, in the same way, across the three majors.
ACKNOWLEDGEMENTS

The completion of this thesis represents an integrated accomplishment incubated through three years of hard work at Indiana State University. I would like to express my deep and sincere appreciation to those who made my success possible.

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Chapter 1

INTRODUCTION

It is generally recognized by most Zaireans that to be industrialized according to modern standards Zaire would have to make available more education to more people. Because of this fundamental belief, the Zairean government has increased its spending on education from sixteen percent of the total national budget in 1960 to twenty-one and seventenths percent in 1972.¹ Almost every prominent Zairean, and especially those who do not hold hereditary positions, owes to education his rise to prominence. For example, in the experience of the writer, a much higher proportion of education Zaireans hold positions of authority than is the case in many industrialized countries. They therefore see education as the ladder up out of the morass of backwardness, poverty, and misery that plagues much of contemporary Zaireans society. This is true not only for individuals but also for the nation.

The recognition of the need for both vertical and horizontal expansion of education at all levels has been faced with an internal opposition by the elite. The elite that had been trained during the colonial regime replaced the colonial agents in the running of the educational system. The elite has not only succeeded in maintaining itself, but it has also expanded. The planning, implementing, and evaluating of all educational objectives at all levels by this elite is an indication that elitism is there to stay.

The Zairean elite, with power in their hands, are faced with the authority and the responsibility to build a modern, independent nation, to free themselves and all the Zaireans from Western domination by conquering the European technology while maintaining their authentic identity.

History has proven again and again that for a nation to maintain itself and prosper, a common faith is needed to unite the citizens while alternatives are made available to everyone to discuss means and objectives to be reached. The gap between economic, social, and political values of the elite and those of the masses is so great that many attempts at advancement have failed. This has caused the people to be suspicious of any word from the government. This gap needs to be reduced as much as possible if Zaire is to reach the standards of living to which it aspires. This gap is the danger that is to be overcome.

Scipio has this to say about elitism in African independent nations:

... the nature and effects of education in Africa today are mainly due to the selective training of a few Africans in the very different and more advanced techniques and values of the West. Those selected in this way have been individually emancipated and detribalized, and many of them have been educated above the average level in the West itself. But the number of Africans so trained are still far too few to man the multifarious skilled positions in a modern state. As the psychological gulf between them and most of their fellow countrymen is dangerously wide ... it is more education that must help the new governments to deal with the technological gap and achieve the increased production necessary for economic independence, as well as to combat malnutrition and disease. And especially it should help to solve the problem of the elite divorced by its education from the rest of the population, which is in essence the problem of the reintegration of African society.

If education is to be the solution to the dilemma of underdevelopment in Zaire, all Zaireans, as a nation, need to make a firm commitment

to the ideology of education for all; and more importantly, to work very hard with the view of translating this commitment into reality. This cannot be accomplished unless every citizen is provided with the skills that are needed to handle the many problems associated with modernization. Lack of required capital has made it hard, if not impossible, to provide education for every child. While this is true, some of the current practices in the schools have made it impossible for the schools to graduate academically and financially able students. Classes (grades) and courses are repeated for a whole academic year, academically weak students are summarily expelled, there are no alternatives for problem children, and the American-style humane education is frowned upon by both teachers and administrators. Yet those who succeed in this rigorous environment have one final ordeal: the State Examinations. The matriculation requirements of the colleges, getting a government job, and simply having the opportunity to be somebody are based upon successful performance in the State Examinations.

STATEMENT OF THE PROBLEM

The purposes of this study were (1) to ascertain for each of the three majors (literature, mathematics-physics, and general pedagogy) the significance of the relationship between the schools' performance in each required course and their overall performance in the State Examinations; (2) to investigate for each major the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations; (3) to develop, for each major, a prediction equation that would be used to predict schools' performance in the State Examinations; and (4) to analyze the degree of
concordance, across the three majors, of the ways in which courses common to all three majors correlate with the State Examinations.

BACKGROUND TO THE PROBLEM

Since the thrust here is not a comparative study of educational practices, some pertinent historical information is presented with view to enhancing the understanding of the context within which the study is conducted. This rationale accounts for the brief survey of the history of education in Zaire since colonial times.

The Colonial Heritage

The Colonial Period is divided into two separate eras; the first extends from 1885 to 1908 and the second from 1908 to 1960.

During the first era the Congo was known as the Congo Free State and was a private property of King Leopold II of Belgium. Louise Crane crystalized this point when she said that "King Leopold set his superb organizing ability and business skills to develop the Congo Free State into a profitable venture."¹ The main interest of Leopold II in the Congo was business. During this era few attempts were made to build schools, with the exception of missionary efforts. The main objective of this type of education was to teach the children to read so as to be able to read the catechism. On one hand, education for salvation was the philosophical foundation of schools at that time. On the other hand, the missionaries were used by Leopold II and his agents as colonial tools. Disintegrating the natives' culture and weakening their ability to resist foreign domination were vigorously sought in order to establish the philosophy of

"Dominer pour Servir" (Dominate to Serve) which was based on the doctrine of "White Supremacy." As far as education was concerned, no attempt was made by the State to develop an official system of schools. Each missionary unit did what it thought best as long as it contributed to the establishment of a profitable Congo Free State. This meant that the missionaries had to satisfy the King's aspirations if they were to stay.

The neglecting of the people's education by the state officials, the combining of religion and State's affairs with no respect for the local culture, the kidnapping of children to fill the mission schools, the physical abuse of the parents who rejected the Christian religion as well as of those who did not want their children to attend mission schools, and the exploitation of people were atrocities which precipitated abrasive international condemnation of Leopold II's regime. Glen D. Kittler writes:

... African (Congolese) workers had their hands or feet cut off if they did not obey their overseers, and photographic records of these atrocities created international pressures against this cruel regime.

This was the backdrop against which the Congo Reform Association started investigations in 1904 after receiving reports from Protestant missionaries concerning numerous atrocities committed by Leopold II and his agents towards the Congolese people. The final result was that Leopold II was forced to give the Congo to the Belgian government in 1908. This was the end of the Congo Free State; but it also marked the birth of Belgian Congo.

The second period is that of the creation of Belgian Congo under the administration of the Belgian government. The official policy was that the welfare of the Congolese people was to be given first priority.

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Consequently, the mission schools were required to change their philosophy to meet the new challenge. The missionaries extended their programs up to four years post-elementary education. Most of these post-elementary schools offered training in "pédagogie" (education). They were mostly Catholics training the Congolese youths for elementary and secondary teaching positions. Eventually, a few promising students from the newly established Normal Schools went on for higher studies in theological seminaries.

The State established, for the first time, the "Ecoles Officielles" (Public Schools) offering studies up to the secondary level for children in urban areas. During this period, both parochial and public schools gave different diplomas to their graduates upon completion of six years of secondary school. Schools, usually Catholic, whose academic standards were at par with those of the State offered the "Diplôme Homologué" (Officially Confirmed Diploma) to their graduates, qualifying them to enter any institution of higher learning of their choice. The remaining high schools gave the "Diplôme non-Homologué" (Unofficially Confirmed Diploma) to their graduates. With the "Diplôme non-Homologué" the recipient was to either pass a special test or go through a one-year special training program before entering the university.

Two universitites were founded during this period: the University of Lovanium established by the Catholics in 1954, and the Official University of Congo established by the Belgian government in 1956.

The aims of the Belgian Congo regime were far from anticipated outcomes. In spite of the building of scattered hospitals and schools, the Belgian Congo administration generated problems that led to its own demise. Allen Carpenter and Matthew Maginnis write:
... the Congolese received no benefit at all from this industry (New Belgian Colonial administration and industries), except that they were given menial jobs in the processing plants. This was just one reason why the Congolese began to dislike the colonial government. Another reason was that the Colonial authorities had thought that it would take decades of long, slow training for the Congolese to learn to run a country. They had given the Congolese no say at all in their government. Until 1958, fifty years after Belgium took control of the Congo, there was no election in the Congo. The colony was run entirely by the Colonial Ministry in Brussels. Also, people who had completed their studies in missionary schools resented being limited to poorer jobs in business and government. They were especially unhappy at receiving lower pay than Europeans who did the same jobs.\(^1\)

In the early fifties, Congolese graduates from different institutions organized themselves into clubs. One of these clubs (formed by students trained by a missionary group called Scheut Fathers) published a magazine called *Conscience Africaine* (African Awareness) in which they denounced the racial segregation and Europeans who treated Africans as children.\(^2\) This movement, among others, led the total population (at least the Congolese elite) to abruptly force the Belgians to grant them political independence in 1960.

When the country got her political independence in 1960, there were only twenty Congolese with college degrees, three of them in Theology. Only these had any administrative preparation to run a land of fifteen million people living over a vast area of nine hundred thousand square miles.

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\(^2\) Ibid., p. 35.
Early National Era (1950-1965)

Changes that took place in the field of education during this period are summarized by Louise Crane as follows:

... with the end of the Belgian regime there was a tremendous drive for higher education. Offers of scholarships came in from all over the world, and for several years these attracted most of the young Congolese qualified for advanced studies. ... Despite the turmoil of the first years, the old educational system in the country did not break down completely, and now with increasing stability, tremendous advances have been made. ... More Congolese are going to school today—in and out of the country—than ever before. Over half of the nineteen million (19,000,000) inhabitants are under twenty years of age. ... All schools operate today under the Ministry of National Education and consist basically of two types: official and independent. Independent institutions include those run partly by Catholic and Protestant missions, and by Kimbanguists; these also receive government subsidy. All primary schools are free. ... After completing six years of primary school, Congolese children are given orientation of two years toward a field in which they want to specialize, such as teaching, mechanics, or general studies leading to law or medicine. Then after studying in one of these fields for perhaps four years, they have a choice of many post-secondary schools.¹

A third university, Université Libre du Congo (Free University of the Congo), was founded by the Protestants in 1963. A number of "Instituts Supérieurs" (Superior Institutes) were also founded by the State to offer post secondary training in many fields. In spite of these changes, the colonial characteristics—such as the difference between the "Diplôme Homologué" and the "Diplôme non-Homologué," the continuing breakdown of the Congolese culture through religious indoctrination in independent schools, the agitation of college students against the State authorities in relation to foreign influence, and the total domination of the decision-making positions by foreigners—proved to Congolese statesmen and educators that there was need to make the system more Africanized. This realization led to the contemporary educational structure.

¹Crane, p. 87.
Since independence (June 30, 1960), the Republic of Zaire has experienced a series of national fragmentations. The exodus of Belgian technicians and teachers, generated by the internal slaughtering of scholars by rebels, resulted in a shortage of teachers at all levels of educations. Because French was (and still is) the medium of instruction, the Zairean government was obligated to hire mostly French-speaking instructors. The growing suspicion between the Zairean and Belgian governments forced the Zairean Educational System not only to call upon French technical know-how but also to import French educational ideologies. As William M. Rideout Jr. and David N. Wilson put it:

In 1967 a series of disputes between Zaire and Belgium led to the suspension of Belgian technical assistance to education and the withdrawal of some 1,200 Belgian secondary school teachers. Some of these eventually returned but many experienced teachers and principals were lost. The mere listing of this series of crises cannot begin to suggest the extent of the disruption which took place in the educational system while efforts were being made to plan its reorientation and development.¹

While the Belgo-Zairean cooperation in education was collapsing, new treaties for educational and technical assistance between France and Zaire were being signed. In the News From France, the French Embassy Press and Information Division describes the situation thus:

... France's cooperation with French-speaking Africa became a treaty between equal partners (France and French-speaking independent African States). The most important agreements concerned the monetary, economic and financial sphere as well as cultural cooperation and above all technical cooperation. ... Following these treaties with former colonies or territories under French mandate--Togo, Cameroon, agreements were signed with another group of French-speaking states that had formerly been under the Belgian rule--Rwanda, Burundi, and Zaire.²


The introduction of the "Cycle d'Orientations" and the State Examinations System in the early 1960's (which is not in practice in Belgium) are both good examples of the adoption of the French Educational System in Zaire.

**Contemporary National Era (1965- )**

The main force behind the beginning of this era was the new realization of self-image and nationalism among the Congolese people. The people decided to make the educational system completely free of foreign domination, yet maintain high academic standards. President Mobutu Sese Seko has said that

... the value of a country is equivalent to the level of the intellect of her total population. ... We thus have to willingly offer all that is necessary to pull the Nation out of intellectual uncertainty and underdevelopment. ...1 (Translated from French by the writer)

This statement obviously implies quantity and quality education for the citizens. In the "Politique et Objectifs" (Politics and Objectives) the President went on to say:

... the young men and women who will choose programs too high for their aptitudes will be oriented into the institutes to fully develop their faculties to help them become useful to the whole society.2

The implication of this statement is that all young Zaireans can be educated provided that concerned authorities take appropriate steps to counsel them.

In the early 1970's a new philosophy was born: authenticity. The fundamental position of this philosophy was that the Zaireans had nothing

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2Ibid., p. 405.
to envy from other cultures, especially from Europe. "L'homme Zairois" (the Zairean) decided to remove anything that alienated him in the eyes of the West. This permeated all layers of society. It showed in terms of dropping all the Western names by all citizens, the changing of the name of the country to Zaire, the changing of the Congo River to River Zaire, the Africanization of all businesses, and most importantly, the reshaping of the National Educational System.

The purpose of the present study forces the writer to call attention only to relevant changes introduced in secondary schools in an effort to correct earlier mistakes inherited from the Colonial Era.

1. Through the authority of the Ministry of National Education, all the high schools (including private schools) were to be fully funded by the State.

2. All the high schools received their curriculum from the Ministry of National Education.

3. No high school has the authority to deliver any kind of high school diploma. The students receive their high school diploma from the State upon success in the State Examinations only. This diploma is automatically a "Diplôme Homologué."

4. The diploma given by the State is the only way a student gets the honor to be hired or thought of as a high school graduate, and without it, no student is admitted to any college.

Secondary education—which comes after successful completion of six years of elementary school—is organized into two main periods. The first two years cover a period called the "Cycle d'Orientiation" (Cycle of Orientation). The last four years are called "Cycle Supérieur" (Cycle of Specialization).
During the first two years of orientation, the student is exposed to many fields of study. Each semester the student takes the following courses: (1) French; (2) mathematics (including plan geometry, algebra, and arithmetic); (3) history; (4) geography; (5) natural sciences; (6) technology; (7) civics; (8) artistic drawing; (9) religion or moral education; and (10) physical education. Upon successful completion of the Cycle of Orientation, the student makes a choice of the field in which he wishes to specialize. The school counselor helps the student analyze his choice taking into account his performance in all subject areas during the whole Cycle of Orientation. The major the student chooses at this particular time determines the program he may choose later at the college level. The choices include: (1) literature; (2) sciences (either a combination of mathematics and physics or biology and chemistry); (3) pedagogy (education); (4) business administration; and (5) agriculture. Not all schools offer all the majors. After the cycle of orientation, qualifying students may and do transfer from one school to another to get the major in which they are interested.

During the last four years (Cycle of Specialization), the student studies in depth the field of his choice. Along with the selected subjects, he takes several other subjects as part of general education. The following is a typical four-year program for a student who chooses mathematics and physics as his major. Each semester, for four years, the student takes (1) French; (2) mathematics (including algebra, introductory calculus, trigonometry, analytic geometry, and descriptive geometry); (3) physics; (4) chemistry (including general chemistry, organic chemistry and analytical chemistry); (5) biology; (6) history; (7) geography; (8) economics; (9) African sociology; (10) philosophy; (11) English, and (12) physical
education.

The following are the courses required of a Literature major:
(1) Latin or Greek; (2) French; (3) philosophy; (4) mathematics;
(5) biology; history; etc. (6) geography; (7) religion or moral education;
(8) physical education; (9) African sociology; and (10) English.

A general pedagogy student is required to take these courses:
(1) mathematics; (2) French; (3) philosophy; (4) biology; (5) history;
(6) geography; (7) English; (8) psychology; (9) pedagogy; (10) methodology;
(11) physical education; and (12) religion or moral education.¹

At the completion of the Cycle of Specialization, the student takes
the "Examens d'Etat" (State Examinations) which covers some selected (by
the State) courses that were included in the student's program. The
examinations are partly written and partly oral. If the student scores
at least an overall average of fifty percent he receives a "Diplôme d'Etat"
(State Diploma), which is the only high school diploma. This document
pronounces the student academically fit for college admission. If a
student scores below the average fifty percent, he receives the
"Certificat d'Etat" (State Certificate). The State Certificate and the
State Diploma are considered equal only for employment purposes. Still
in hiring practices, most employers will take the State Diploma candidates
first.

Any student who has a State Certificate instead of a State
Diploma, if he wishes to continue by pursuing a college education, has
three options: (1) he may repeat the last year of high school over again
and retake the State Examinations (if he gets a State Diploma then he may

¹These lists were taken from the transcripts granted to graduating students from three majors in 1971.
be admitted into the college program); (2) he may register with the Ministry of National Education as an "Autodidacte" (self-taught) candidate to retake the State Examinations with the plans to receive a diploma this time, or (3) he may go through a one-year special training program call "Etudes Pré-universitaires," after which he is to pass satisfactorily some required examinations, depending on what the student plans to study in college. One is much better off receiving a State Diploma on the first attempt because none of the alternatives gives any guarantee of succeeding on subsequent trials.

SPECIFIC QUESTIONS

This study attempted to raise and answer the following questions concerning the significance of (1) the schools' performance, per major, in each required course and their overall performance in the State Examinations, (2) the schools' performance in all the required courses and their overall performance in the State Examinations, (3) the concordance of the contribution of the courses common to all three majors in the way they correlate with the State Examinations, and (4) the possibility of constructing a prediction equation, for each major, to predict schools' performance in the State Examinations.

Literature Major

1. Is there any significant relationship between the schools' performance in dissertation* and their performance in the State Examinations?

2. Is there any significant relationship between the schools'

*Dissertation is a course in which students in the senior year are taught how to write in a learned manner.
performance in Latin** and their overall performance in the State Examinations?

3. Is there any significant relationship between the schools' performance in Latin and their overall performance in the State Examinations?

4. Is there any significant relationship between the schools' performance in French and their overall performance in the State Examinations?

5. Is there any significant relationship between the schools' performance in philosophy and their overall performance in the State Examinations?

6. Is there any significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations?

7. Is there any significant relationship between the schools' performance in biology and their overall performance in the State Examinations.

8. Is there any significant relationship between the schools' performance in history and their overall performance in the State Examinations?

9. Is there any significant relationship between the schools' performance in geography and their overall performance in the State Examinations?

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**Latin:** Two scores on Latin and Latin were reported (obviously different courses) by the Ministry of National Education. No difference between the two was given. The researcher found the difference insignificant for this study.
10. Is there any significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations?

11. If there is a significant relationship between the schools' performance in all the required courses (literature major) and their overall performance in the State Examinations, what is the prediction equation that would be used to predict the schools' potential performance in the State Examinations?

Mathematics-Physics Major

1. Is there any significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations?

2. Is there any significant relationship between the schools' performance in descriptive geometry and their overall performance in the State Examinations?

3. Is there any significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations?

4. Is there any significant relationship between the schools' performance in physics and their overall performance in the State Examinations?

5. Is there any significant relationship between the schools' performance in French and their overall performance in the State Examinations?

6. Is there any significant relationship between the schools' performance in biology and their overall performance in the State Examinations?
7. Is there any significant relationship between the schools' performance in history and their overall performance in the State Examinations?

8. Is there any significant relationship between the schools' performance in geography and their overall performance in the State Examinations?

9. Is there any significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations?

10. If there is a significant relationship between the schools' performance in all the required courses (mathematics-physics major) and their overall performance in the State Examinations, what is the prediction equation that would be used directly to predict the schools' potential performance in the State Examinations?

General Pedagogy Major

1. Is there any significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations?

2. Is there any significant relationship between the schools' performance in psychology and their overall performance in the State Examinations?

3. Is there any significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations?

4. Is there any significant relationship between the schools' performance in French and their overall performance in the State Examinations?
5. Is there any significant relationship between the schools' performance in philosophy and their overall performance in the State Examinations?

6. Is there any significant relationship between the schools' performance in biology and their overall performance in the State Examinations?

7. Is there any significant relationship between the schools' performance in history and their overall performance in the State Examinations?

8. Is there any significant relationship between the schools' performance in geography and their overall performance in the State Examinations?

9. Is there any significant relationship between the schools' performance in English and their overall performance in the State Examinations?

10. Is there any significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations?

11. If there is a significant relationship between schools' performance in all the required courses (in general pedagogy major) and their overall performance in the State Examinations, what is the prediction equation that would be used directly to predict the schools' potential performance in the State Examinations?

General Question

1. Is there any significant relationship between the ranking of courses according to their relative contribution to schools' performance
in the State Examinations among the three majors under study?

NEED FOR THE STUDY

More and better education to more people is seen by the newly independent African nations as a way to free themselves from Western domination. Zaire is not an exception. While this concept is widely accepted by Zaireans, the failure rate of students in high schools from grade one up to the State Examinations has been so high that concerned students, parents, and educators have raised questions as to what may be the source(s) of students' failure in high schools, especially in the State Examinations.

Privately, some have blamed the failure on the insufficient preparation given to students before the State Examinations. Some have accused the teachers of incompetence and ineffectiveness in preparing students. Others have doubted the ability of the students themselves, while some have questioned the relevance, reliability, and validity of the State Examinations. In short, there is a need to investigate each question mentioned above so as to locate the source(s) of the problem. This study attempts to answer some of the questions related to the State Examinations.

DELIMITATION OF THE STUDY

This study was delimited to fifty-six secondary schools, described as follows:

1. Twelve secondary schools in Shaba Province, which offered the literature major and which participated in the State Examinations in June, 1976. These schools were: Mapinduzi from Likasi, Ima from Kafubu, Kaoze from Moba, Imara from Lubumbashi, Tuendelee I from Lubumbashi, Kitumaini from Lubumbashi, Lualaba from Kiwezi, Mwamba from Kongolo, Kilima from
2. Sixteen secondary schools in Shaba Province which offered the mathematics-physics major and which participated in the State Examinations in June, 1976. These secondary schools were: Kitabataba from Mulungwishi, Kitumaini from Lubumbashi, Imara from Lubumbashi, Kadiva from Kansenia, Lubimbi from Kamina, Luabo from Kamina, Tshonibo from Lubumbashi, Kiwele from Lubumbashi, Mwanba from Kongolo, Elimu from Kolwezi, Lubyie from Kalemie, Tukankamane from Manono, Jua from Lubumbashi, Nday from Kabongo, Cisaniko from Kasenga, and Baka from Kamina-Base.

3. Twenty-eight secondary schools in Shaba Province, which offered the general pedagogy major and which participated in the State Examinations in June, 1976. These schools were: Lubusha from Luisha, Mahidio from Kamina, Kitabataba from Mulungwishi, D.A.P./I.S.P.* from Lubumbashi, Ima from Kafubu, Umoja from Kolwezi, Kenda-Bantu from Kamina, Madimba from Kamina, Lubimbi from Kamina, Amani from Moba, Luabo from Luebo, Mwinya from Manono, Mapinduzi from Likasi, Muungazi from Sandoa, Mashind from Mwanjinda, Kamanyi from Kasaji, Lube from Kilwa, Elimu from Kolwezi, Buniche from Manono, Mwanba from Kongolo, Maadibisho from Lubumbashi, Tukankamane from Manono, Musumba from Kapanga, Afajiri from Kabalo, Chimbambo from Kasenga, Mfumu-a-Bana from Kamina, Tanganika from Kalemie, and Lukuga from Kalemie.

LIMITATIONS OF THE STUDY

Since the schools used in this study were all from Shaba Province offering either the literature major, the mathematics-physics major, or

*The full name of this school was not given.
the general pedagogy major and participating in the State Examinations in June, 1976, any generalization of the findings to other schools, majors, and provinces should be attempted with caution.

Another limitation imposed on this study was that of the difficulties in findings up-to-date information.

The researcher also recognizes these factors beyond his control: (1) the administrative procedures through which the State Examinations were administered, corrected and reported; (2) the sampling of schools that took the State Examinations in June, 1976 in Shaba Province; and (3) the selection of the courses in which these schools were tested. Thus the researcher relied entirely upon the report made public by the Ministry of Education Provincial Office in Lubumbashi.

DEFINITIONS OF TERMS

For purposes of this study, the following terms and expressions are used as indicated below.

Certificat d'Etat (State Certificate)--Certificat d'Etat is a secondary school degree given by the State to a student who passes the State Examinations with less than 50% average. Such candidate is considered close enough to the passing score so as to deserve a degree at that particular level.

Cycle d'Orientation (Cycle of Orientation)--Cycle d'Orientation is the first two years in secondary school. During this time, the student is offered a general education curriculum to help him choose an area of specialization following successful completion of the cycle.

Cycle Supérieur (Cycle of Specialization)--Cycle Supérieur constitutes the last four years of secondary school. During this period, a
student takes the State Examinations in order to receive the State Diploma or State Certificate depending on the level of his performance.

*Diplôme d'Etat* (State Diploma)-- Diplôme d'Etat is a secondary school degree awarded by the State to a student who passes the State Examinations with an overall average of 50% or above.

*Diplôme Homologué* (Officially Confirmed Diploma)--Diplôme Homologué is a secondary school diploma which a school having met the State standards awarded to its graduates during the Colonial and early national education periods.

*Diplôme non-Homologué* (Unofficially Confirmed Diploma)--Diplôme non-Homologué is defined as a secondary school diploma which a school that did not meet the State standards offered to its graduates during the Colonial and early national educational periods.

*Etudes pré-universitaires*--Etudes pré-universitaires is defined as some precollege training given to a secondary school graduate who received a State Certificate instead of a State Diploma.

*Practically significant correlation coefficient*-- Practically significant correlation coefficient referred to a correlation coefficient that explained at least 50% of the variance.

*Secondary School*--Secondary School is defined as those six years of schooling between elementary education and college.

*State Examinations*--State Examinations refer to State-made examinations--administered once each year--the aim of which is to test all graduating secondary school students in order to offer State Diplomas and Certificates to those who succeed.
PROCEDURES

The study focused on a population composed of fifty-six secondary schools in Shaba Province which sent one thousand five hundred ninety students to take the State Examinations in June, 1976. The students were grouped into three majors: literature, mathematics-physics, and general pedagogy.

Data received from the Ministry of Education Provincial Office included: the average in percentage that each school made in each course, by major, and the overall average in percentage that each school was given as the final State's evaluation; this included the scores that the school made on the State Examinations plus the scores from courses in which the school was not tested in the State Examinations. The data received were tabulated as shown in Appendix A.

The following statistical techniques were used to analyze the data:

1. A correlation matrix was completed to analyze the relationship, for each major, between the schools' performance in each required course and their overall performance in the State Examinations.

2. Stepwise multiple regressions were completed to identify, for each major, courses contributing significantly to schools' performance in the State Examinations.

3. These analyses were also used to develop, for each major, a prediction equation that would be used to predict schools' potential performance in the State Examinations.

4. A multiple correlation coefficient was computed, for each major, to analyze the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.
5. The Kendall's coefficient of concordance was computed to analyze the ranking of the courses common to all three majors, across these majors.

ORGANIZATION OF THE STUDY

Chapter 1 contains the introduction, the statement of the problem, the background to the problem, specific questions, the need for the study, the delimitation of the study, the limitation of the study, and definitions of terms. Chapter 2 represents the review of literature related to (a) general writing on the subject of the study and (b) a summary of research done in the area of study.

Chapter 3 provides information about (a) the description of the population used in the study and the procedures used for its selection, (b) the description of methods used in the selection of data, and (c) the treatment of the data and specific statistical procedures that are used.

Chapter 4 includes the report of findings and Chapter 5 offers the summary of the findings, conclusions, and recommendations of the study.
Chapter 2

REVIEW OF RELATED LITERATURE

As already stated in Chapter 1, the purposes of this study were: (1) to ascertain for each of the three majors (literature, mathematics-physics, and general pedagogy) the significance of the relationships between the schools' performance in each required course of the curriculum and their overall performance in the State Examinations; (2) to investigate for each major the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations; (3) to develop, for each major, a prediction equation that would be used to predict schools' performance in the State Examinations; and (4) to analyze the degree of concordance, across the three majors, in the ways those courses common to all three majors, correlate with the State Examinations.

It was anticipated that the review would provide insight into the following questions. What is the origin of the State Examinations, in Zaire? Why are they so important in the Zairean educational system? Who or what determines the contents of the Zairean curriculum? What are the educational aspirations and problems of the country? How does the Zairean system fit in the whole African pattern?

The present chapter, which contains that review, is divided into the following broad areas:

1. Rationales for reviewing the French and African educational systems.

2. The French Educational Experience.

4. The Zairean Educational Experience.

RATIONALE FOR REVIEWING THE FRENCH AND AFRICAN EXPERIENCES

The French Experience

Zaire was formerly a Belgian colony and therefore, as in most colonial experiences, one would expect the Zairean Educational System to be a carbon copy of the Belgian System. For example, Britian ruled the Gambia, Sierra Leone, Ghana, part of the Cameroons, and Nigeria on the West Coast of Africa; and Tanzania, Kenya, and Uganda on the East Coast.\textsuperscript{1} Up to today the educational systems of these countries (several years after independence) are still patterned on the British System. A similar case could be made for the French colonial experience in Francophone African countries and the brief American experience in the West African country of Liberia.\textsuperscript{2}

Contrary to the expectations, however, the Zairean educational system is a carbon copy of the French system. In addition to the fact that Belgium, Zaire, and France share a common national/official language, several socio-political events (especially between Zaire and Belgium) helped put the French stamp on the Zairean educational system.

If the rationale for the State Examinations in Zaire is to be studied and understood, it is necessary to first examine the French system because of the intimate relationship between Zaire and France during the


\textsuperscript{2}J.D. Fage, An Introduction to the History of West Africa (London: Oxford University Press, 1961), pp. 94-98.
formulation stage of the Zairean educational system.

It is not the writer's contention that whatever happened to France will happen to Zaire. It is not even suggested that the Zairean government has no national educational goals, and that Zairean education is only a carbon copy of the French system. What is contended is that style and substance are different sides of the same coin and that to be able to accurately describe the coin, both its sides should be closely examined. (The French and Zairean Educational Systems could be different sides of the same coin.)

**Beginning of the French National Educational System**

Before the French Revolution of 1789, education was entirely in ecclesiastical hands. Many institutions of higher learning had been created centuries before the Revolution. These institutions as well as those added after the Revolution were open only to an elite minority. Claire Huchet Bishop reports that in 1789 half the men and three-quarters of the women in France were illiterate.¹

Napoleon, who wanted to have everything under his control, centralized the universities. The centralization brought about by Napoleon meant, and still means, that teachers and programs depended entirely on the government in Paris. All teachers were appointed, after passing all the required examinations, through a hierarchical system headed by the Secretary of the Ministry of National Education. Curricula were established at the top, and like examinations, they were the same throughout the nation.² Arthur Henry Moehlman describes Napoleon's innovation as


²Ibid., p. 145.
follows:

In the nineteenth century Napoleon set the pattern for modern French Education. He was the man of the people who had risen to supreme command through the competitive disciplined training of the army. Above all, he wanted a competently trained elite of leaders, administrators, and officers in civilian and military life. In 1808 he issued the decrees setting up the basic structure of French education. He concentrated upon advancement of the secondary school system and the university and in the main he left the elementary education to the clerical orders. As a good military man, he wished to make sure that all of his elite were equally well trained by uniform methods under a strict discipline which selected and advanced students on the basis of merit. He set up the modern lycée [high school] which had a strict regime very similar to that of military barracks. Vestiges of that discipline persist to this day.¹

While many attempts were made to make the educational system more flexible and open to a larger portion of the population, it was only in 1882 that a momentous and decisive step was taken: elementary education became entirely free, neutral in religious matters, but compulsory. In 1933 secondary education became free, too. Consequently, no tuition is charged from the first grade up to the doctoral degree from French citizens who successfully pass all the examinations. Before 1904 the free state education and the parochial education with fees existed side by side. The confrontation between Church and State brought about the enactment of a law--Combes Law--which forbade the religious orders from teaching. This continued until 1959, when another law--Debré Law--reinstated the teaching orders and made it possible for the denominational schools to receive State subsidies provided that they met State standards.

This centralized, competitive, and examinations-oriented education has been said to have two obvious advantages: (1) uniform academic accomplishments of high standards, and (2) a greater amount of freedom from

incompetent interference (for the teachers).

Since World War II, the French realized that the system no longer met the nation's needs. Again Bishop describes the situation in these words:

By 1968, one-fourth of the nation was under twenty-five years of age. We were short of school and university buildings. The government resorted to classes in shifts, but there were not enough teachers. Many a six-year-old could not enter school, while University students piled up, literally, on top of each other and crowded tight at the amphitheaters entrances, trying to catch what was being said [taught], or waited for those coming out to lend them their notes. The plans made by successive governments to meet the school population increase were wholly inadequate, the financial appropriation too small, the timing too slow. All along the line we were hampered by excessive centralization manned through endless bureaucratic channels. And meanwhile the unrest grew. ¹

The atmosphere within the schools themselves made the situation even more severe. For centuries French scholars have been known as an autocracy of the intellect. They are knowledgeable in abstract thinking, life-long appointed, and frequently remote from students. Demographic explosion and technical advances in 1960's made these scholars obsolete. The need for more buildings, more teachers, and modernization of the educational system was too obvious to be requested by both teachers and students. Their priority was focused on the "democratization and humanization" of the system. In spite of the fact that education was free, Bishop maintains, only nine percent of the student body was from the industrial workers' class and three percent from peasant stock.² The whole school environment seemed to reflect the elite class's home background. The success of a bourgeois child was thus made unlikely if not irrelevant.

¹Bishop, p. 146.
²Ibid., p. 147.
control. The teaching methods were to be reviewed. Participation (including activity and involvement) became the slogan in the educational arena. The "teacher" and the "taught" were brought closer by loosening the foreboding and hierarchical character of the system.

While many changes have been made, the French secondary school curriculum still needs modifications to meet the many growing expectations. This is reflected even more in the differences between the traditional curriculum and the new curriculum. The characteristics of these two curricula are indicated below.

The Traditional French Secondary School Curriculum

When French children reach age ten or eleven, they start their secondary education in either a "lycée" or a "collège." Their first two years of secondary school give their teachers and counselors a chance to evaluate each student's abilities and potentials. The teachers then advise the students as to what courses they should take. Usually the end product is that the students, after the first two years of secondary school, are divided into two categories: (1) those who will prepare for jobs in farming and industry and (2) those who will take subjects preparing them for college or university education. Usually students in the first group are those found unfit for higher education. In case of disagreement between the schools' recommendations and the parents' expectation, a child is to take a special examination to prove he is fit for university education. This grouping system has been referred to as "the Two-Track System of Universal Selective Secondary Education."¹ After

¹Moehlman, p. 23.
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¹Moehlman, p. 23.
the first two years of secondary school, two types of curricula become available: (1) secondary courses preparing students for jobs, and (2) secondary courses preparing students for universities.

**Secondary Courses Which Prepare Students for Jobs**

About one-third of all French secondary school students take courses that will provide them with skills that they plan to use after they leave school. These skills include training in fields such as typing and shorthand, industrial manual arts, on-the-job training at apprenticeship centers to prepare them for work in the world of business and industry, and agriculture. In addition to skills training, the students take other subjects such as history, geography, mathematics, French, and science.

After three years of study in occupational (vocational) training, the students take a final examination. Those who pass receive a certificate qualifying them to work in their particular occupation. Usually a student receives this certificate at age sixteen. Sometimes students remain at the "lycée" or "collège" for another two years for more technical training.

**Secondary Courses Which Prepare Students for Universities**

Students who plan to get higher education remain at a "lycée" or a "collège" for seven years, taking courses that will prepare them for that end. Each year they take French and some other modern language. Some students take Latin or Greek. Students also take history, geography, science, and mathematics. Virginia Creed makes the point explicit as she writes: "Every afternoon after school they [students] hurry home to begin
their homework. Often they must study an hour and a half before supper and from one to three hours more after supper.\footnote{Virginia Creed, \textit{Life in Europe: France} (Grand Rapids: Fidelier, 1964), p. 102.}

Armand and Louise Bégué, in their illustration of the daily work of a "lycée" student, put it this way:

On the average, during the seven years spent at a "lycée" or a "collège," the student attends every day (except Thursday, which is put aside for religious education) four to five one-hour-long classes; and, at home, he needs from four up to six hours daily to do homework and prepare for his classes. For an eleven-year-old "lycée" student this is his typical timetable: Twenty-four hours class sessions every week (two hours of physical education included) and if the homework hours are included, one talks of about fifty hours of work per week for an eleven-year-old student.\footnote{Armand and Louise Bégué, \textit{La France Moderne} (Boston: Heath, 1964), p. 145.} (Translated from French by the author)

At the end of the seventh year, the students are to take a very difficult examination (State Examinations) called "Baccalauréat." This examination is given in mathematics, science, and history. Each lasts from three to four hours. Oral tests are given in foreign languages.

The Baccalauréat is so involved and so difficult that, every year, only a little more than half the students who take it are able to pass. Students, who prepare for the baccalauréat, and their families suffer a great deal of pressure and anxiety. Only students who successfully pass the baccalauréat are allowed to enter a French university or a professional school of higher learning.

\textbf{Rationale for the Competition- and Examination-Oriented Traditional French Secondary School Curriculum}

While American educators have accepted the balancing of quality
and quantity education, French educators have traditionally agreed upon the philosophy that selective education is the only way if quality education (which is the reason for the existence of schools in the first place) is to be achieved. While the pursuit of excellence has been the goal of the French educational system, many other factors have been mentioned as forces behind the shaping of the French schools. Among others, the following are the factors involved in the molding of the French traditional schools as pointed out by Armand and Louise Bégué:

The reasons for which the studies (schools) are taken so seriously are both economical and cultural. The average standards of living are lower [in France] than in the U.S.A. With a population of 47 million over a country smaller than Texas, where agricultural and industrial resources are only average, France cannot offer a high percentage of very good positions in all fields. So there is a strong competition for the available positions. . . . The selections for higher positions are based on the quality and possession of diplomas by the candidates. Only later, after one has proven himself professionally sound, can one advance on the basis of his performance. This is why French education is oriented toward examinations which will finally decide which candidates are best for which trades, professions, or careers. . . . The pressure from families and neighbors on the students is also generated, mostly, by the universal intellectual and cultural value that the Frenchmen attach to education. They prize intelligence, creativity, general culture, specialization, and research.2 (Translated from French by author.)

This system of education molded by both cultural and economical factors could not remain unchanged while the culture and the economy of the country evolved. Even the French themselves, in the earlier 1960's, realized that there was a need for deep-rooted changes in the educational system in order to meet the new social, economic, religious, technological, and above all, the intellectual needs of the people. They blamed and

1 Creed, p. 103.
2 Bégué and Bégué, p. 138.
accused the educational system of having: (1) too much emphasis on easily recognizable intellectual qualities; (2) a savage competitiveness through examinations (the baccalaureat and the examinations for the Grandes Ecoles) leaving too many boys and girls exhausted, discouraged, and (if they failed) perhaps thwarted in their choice of an eventual career; and (3) emphasis on the traditional French culture which was not wholly relevant to the modern world. ¹

Since the early 1960's, many changes and innovations have taken place. The secondary school structure and curriculum have taken place. The secondary school structure and curriculum have also followed the trends reflected by the changes in society and the economy of France. These changes and innovations led to what the researcher will refer to as the "New French Secondary School Curriculum."

The New French Secondary School Curriculum

As described by a release of the French Embassy Press and Information Division, the New French Secondary School System is divided into two main stages, as follows:

First Cycle: The child enters into the secondary school as early as ten years old or as late as thirteen. Since the main goal of the first cycle is to reinforce knowledge acquired at the primary level, a modern language is the only new subject introduced at this level. Each teacher is a specialist in the subject he teachers. The First Cycle is divided into two stages: the General Cycle: (seventh and eight grades) and the Orientation Cycle: (eight and ninth grades). The two stages related to each other as follows:

The General Cycle: During this stage the student is introduced to many subjects such as French, and second language, mathematics, economics, humanities, physics and natural sciences, manual and technical training, arts and music, and physical education in order to receive a sound basic training for all aspects of life. Extra classes are provided for those students falling behind and those in accelerated classes.

The Orientation Cycle: The General Cycle meets the minimum education requirement. Students are not obligated to continue to the Orientation Cycle level. At the orientation level, those who continue take (1) a second modern language, or Latin or Greek; and (2) prevocational training courses with practical training offered in either a technical high school, or apprenticeship centers, or firms. At this time they also continue to take general education courses as offered in the general cycle.

After the First Cycle, students have three options: (1) further education in a "lycée d'enseignement général et technologique" to prepare them for the baccalauréat or the "brevet de technicien" (higher professional certificate); (2) further study in a "lycée d'enseignement professionnel" (school of professional studies) for one of three technical certificates: C.E.T. (Certificat d'Etudes Technologiques--Certificate of Technological Studies) which takes one year, or a C.A.P. (Certificat d'Aptitude Professionnelle--Certificate of Professional Aptitude), or a B.E.P. (Brevet d'Etudes Professionelles--Brevet of Professional Studies), either of which takes two years; or (3) at age sixteen the students may begin an apprenticeship in a training firm.

Second Cycle: (Lycée--High School). There are two kinds of Lycée: (1) Lycée d'Enseignement Professionel (L.E.P.--Professional High School)
and (2) Lycée d'Enseignement Général et Technologique (L.E.G.T.—School of General and Technical Studies). Each responds to different needs as described in the following terms:

Lycée d'Enseignement Professionel: These two-year schools prepare pupils for a trade (C.A.P. Certificate) or several related trades (B.E.P. Certificate). The L.E.P.'s also provide further training for people who are already employed but want professional advancement.

Like the certificat d'Etudes Professionelles, the Certificat d'Aptitude Professionelle and Brevet d'Etudes Professionelles are awarded on the basis of grades received on tests given throughout the year. Students failing to maintain a satisfactory average are given certificates of attendance which help them enter their chosen field for further training.

Lycée d'Enseignement General Technologique: These schools are grouped together under one roof and consist of the classical, modern, and technical lycées. Their main role is to provide general instruction in French civilization; during the junior and senior years, the curriculum is designed to give every student a knowledge of general culture: French, philosophy, mathematics, science and technology, economics and social studies, plus one modern language.

In addition to the courses mentioned above, there are many other electives, from which students select those most suitable to help reach their goals. At the end of the stage a final examination is given. A certificate is awarded to those who pass this final examination as well as maintain a certain daily work average. This certificate is of great value only to those who wish to leave the school at this stage.
The final year of the lycée education is optional. All the courses taken in the last year are selected by the student to meet his own immediate or future needs. Then at the end comes the baccalauréat, which is intended to measure (1) the level of general education acquired in the programs of the first two years of lycée, and (2) the specialized knowledge acquired in the third year. Separate tests are given for each of these aspects.

Among all the changes made in the early 1970's the most important was the involvement of the community as a source of curriculum. In *News From France*, the phenomenon is described thus:

... close ties should exist between all members of the school community, administrative staff, teachers, pupils and parents. Measures have been taken to encourage consultation between them and to allow the schools more autonomy. In elementary schools, families are invited to a yearly meeting chaired by the principal. They elect representatives, who meet at least three times a year to examine the running of the school. In the junior and senior high schools, the Conseil d'Administration is replaced by a Conseil d'Establissement, composed of representatives of the administration, teachers, parents, students, local elected bodies, and representatives of economic circles. ... This council votes on the budget, decides upon internal regulations and offers advice and suggestions as regards scholarships, school buses, books and other supplies. It may also have a voice in teaching methods.¹

Even more extensive was the realization of the importance of a closer relation between parents and teachers in the evaluation of students' progress. Each class is to choose three representatives in the first month of the school year. The election is accomplished through secret ballot and is compulsory. The representatives are the classes' spokesmen with respect to the administration and teachers and have to attend all the yearly meetings. The weekly meeting of each class helps the representatives to know what is the students' opinion on any school

issue. If requested by at least one-third of the classes' delegates, the principal will call a meeting to discuss with the students whatever problem they may have. The purpose of this is to get students to love the art of improving the society in which they live by direct involvement. New school buildings were to be erected, using innovative forms of provide a stimulating and attractive learning environment.

The Rationale for the New French Secondary School Curriculum

On June 30, 1975, the French Parliament adopted a bill to reform the French educational system. The bill as introduced by the Minister of National Education pointed out the following main objectives:

1. To adapt the school to the child; to enable children to pass to higher grades on basis of maturity rather than age.
2. To offer general education to all children through the end of high school in both intellectual and practical areas.
3. To bring schools into more direct contact with the contemporary world.
4. To overhaul curriculums: to introduce new subjects (basic economics, sociology, and technological studies).
5. To develop a new approach to school life.¹

THE AFRICAN EDUCATIONAL EXPERIENCE

Most African countries share problems that are typically African. They were colonized by foreign powers, their cultures have vestiges of foreignness. They have realized that the exigencies of modernization make their erstwhile traditional forms of education inadequate, and they

¹News From France, p. 6.
want to use the European type of education, adapted to their cultures, as a vehicle for individual and national development.

The countries have shortages in trained personnel, material resources, and perhaps know-how. But they desire instant change and development. The belief in this hurried pace of development is enunciated as follows:

It is time we said good-bye to the sluggish pace of the era of colonialism. Nothing less than a radical and revolutionary transformation of our society will serve our purposes in the last quarter of the twentieth century. The pace of development must match the requirements of a people in a hurry...If we are then a new educational policy must mirror this.¹

Zaire is not different from Nigeria, Sierra Leone, or any other independent African country in terms of her problems and aspirations. This forms the basis for the inclusion of the African experience in the review of literature.

The Beginnings

Africa, according to European accounts, was for a long time impenetrable, dark, and uncivilized. What these early Europeans did was to judge Africa according to European standards. If they did not know much about Africa, it was impenetrable and dark, and the peoples were uncivilized if and when they behaved differently. But the European did finally "learn," and the continent soon became a huge supplier of cheap labor. This happened after the founding of "New World" and the inception of the Atlantic Slave Trade.

European Missionaries were once again propagating Christianity and establishing schools and colleges in West Africa...The Abolitionists and Humanitarians were convinced that the trade was a crime against humanity and a sin before God; and that it

¹Legun, p. C175.
should not be merely abolished, but it should also be atoned for by bringing civilization, education, and Christianity to Africa.¹

The concerns of education at that time were not the same concerns expressed in African countries today. Miller makes the point vivid when he writes:

The dominant concerns of elementary school were literary and religious. This meant that people were taught reading, writing, and often some elements of arithmetic. The materials of instruction were likely to be simple and usually religious in nature. These usually consisted simply of the alphabet...the Lord's Prayer, some hymns and Bible stories...Methods of instruction emphasized memory work.²

As Miller continues, practices at the secondary level were no different. He says that "throughout most of the colonial period, the dominant type of secondary instruction was carried on in Latin Grammar Schools in which the focus of attention was upon the study of Latin...looked upon as providing the necessary preparation for college education."³

Thus early African education was exclusively religious in nature: the instruction imparted, the reading and writing done were wholly out of the Bible.⁴

Some writers, among them Owuka, have maintained that the missionaries were narrow-minded. He strongly argues:


³Ibid., p. 992.

This narrow-mindedness tends to make them [missionaries] intolerant of, or even hostile to any manifestation of beauty in art. Too often, Art, like secular knowledge, is regarded either as diametrically opposed to Christianity, or in some cases positively hostile to it.¹

In some cases, a foreign code of behavior was imposed on the converts. As Sheridan states:

Although there are exceptions it is undoubtedly the fact that in many cases the effect of missionary influence and missionary education has been to break down the traditional native ideas, and their modes of expression, without putting anything in their place. . .²

The Examinations-Centered African Education

The British traditions of London and Cambridge were transported wholesale to African countries. At the center of that tradition were the Examinations.

At the elementary and secondary levels, the school year was divided into three terms or quarters. Examinations were administered at the end of each quarter, but grades were not cumulative. The final examinations given at the end of the school year were most rigorous. The student was required to know and remember all the materials taught him throughout the year.

Those students who passed the examinations given at the end of the year were promoted to a higher grade. Those who failed either repeated the year or found another school. Children from poor families (because school was not free) usually dropped out with no marketable skills.


For matriculation to universities, the students' classroom performance did not count. The British set up the West African Examinations Council on the West Coast, and the East African Examinations Council in the East. These two bodies conducted the General Certificate of Education (G.C.E.) examinations for all senior year secondary school students. To gain admission to any college a student must pass in at least five subjects, including English Language.

Whether the examinations (which still go on today) are valid, reliable, or even necessary is a subject of some concern in some circles. What is not debatable, however, is the stress on the students and teachers, who must gear their learning and teaching respectively, in the final two years of secondary school, towards the syllabus set by the examinations council. The students must memorize facts which they immediately forget after the tests.

The Post-Independence Era

Political independence did not automatically improve the educational conditions for Africa. Most independent African countries found themselves saddled with foreign educational systems which could not be easily thrown overboard. As David E. Gardinier has aptly stated:

Since self-government in 1957, the leaders of Equatorial African countries have faced strong popular pressures to expand educational opportunities. By the time of independence in 1960, they recognized that the education systems of the colonial era ill suited the needs of new nations seeking to promote development and unity. Yet under the circumstances they had no option but to extend the existing system while at the same time trying to adapt or reform it.¹

The Complaints Against the African Educational Systems

There is a deluge of criticism against schools in Africa today. The positive aspects of the traditional way of learning have been lost; most of the negative aspects of the colonial system have been retained; few countries have introduced African languages into their systems; manual labor is abhorred; and African leaders rely more on foreign advisors--these are only a few of the most frequently heard criticisms. Succinctly stated,

the formal system of education to which the hopes of so many have been pinned has failed the great majority of the people. At each stage, fewer pupils are retained, with a minority completing primary school, and a very small minority only at secondary level. . . . The content of education is that it does not prepare people to participate in economic life. It does not give them an understanding of their societies. . . . But the children have acquired distaste for manual work and skills. The methods of education have encouraged passivity and dependent attitude, and discouraged creative thinking and initiative."

The Students

In late 1960's and early 1970's students in most African schools and universities demonstrated against their various governments, giving an index to their disaffection with the existing educational systems. The Francophone African countries violently complained against French cultural assimilation, the irrelevance and inadequacy of much of their studies, the overcrowded classes and ill-prepared teachers, the high rates of failure, repeating, and dropout at the primary school level.

The various university structures and administrations were criticized, and the political leaders were openly challenged in some countries.¹

**THE ZAIREAN EDUCATION EXPERIENCE**

The French educational system emphasizes centralization, uniformity, selectivity, specialization, memorization, examinations, and the French culture. The African educational system is foreign (mainly British and French), intensely religious in bias, ill-equipped, understaffed, classical in orientation, selective, examinations-centered, irrelevant in most cases, expensive, and counterproductive. The Zairean educational system is a composite of both the French and the African systems.

During the early history of Zaire (Congo Free State), King Leopold II was only interested in self-aggrandisement. The missionaries wanted converts, but then they had to operate within the King’s guidelines. When the country became the Belgian Congo, things did not change overnight even though education received comparatively more attention.

As the *Canadian Journal of African Studies* has rightly indicated, there is a difference between formal independence and real independence in Africa, where most nations—including Zaire—were not ready for and did not fully understand what independence meant.² For the Congo, relationships with the Belgian government deteriorated to a dangerous low; internal factions, loyalties, external interference, and personal ambitions plunged the newly independent country into one of the bloodiest


civil wars in Africa; and achieving peace and stability were the immediate goals of then-Colonel Mobutu, who emerged as the leader of the Congo.¹

Zairean educational experience cannot be separated from the doctrine of Mobutism. This creed meant continued pressures to turn the country into a fully secular state. Mobutu was also nationalistic, had intense anti-Belgian feelings, and, above all, believed in and worked for the consolidation of political power. His relations with Belgium were very sensitive. The Belgians pulled out en masse, but the French came in.² Mobutu, like many African leaders, stressed that the State cannot relinquish or renounce the obligation to train and educate all her people. Consequently, he made moves to give complete control of the educational system to the government.³

Since most of the Zairean educational history was discussed in Chapter 1, the remainder of the review focuses on the State Examinations.

Secondary Education and the State Examinations

Secondary education in Zaire is deceptively free. The deception lies in the fact that there are not enough schools for every qualified student, especially in the remote villages. The shortage of schools has caused a heavy exodus of students from villages to the towns and cities. Once in the cities, the students would either have to stay in the boarding

³Profil du Zaire, p. 432.
schools, where they would pay for their room and board, or stay with relatives if they were available. Meanwhile, failing the State Examinations which mark the end of secondary education generates so much anxiety that, in the writer's experience, failing students have sometimes considered suicide.

The State Examinations and the Family

At the family level, it often takes the cooperation of all members of the (extended) family to send one child to secondary school. For six years the family's expectations build up so high that if the child fails the State Examinations he may endanger the educational chances of other children from the family.

Even where one child succeeds from one branch of that family unit and another child from another branch fails, the whole family unit is in jeopardy because psychologically the whole family fails when one of its members fails.

Because the high school diploma is the only way to enter college or get hired as a high school graduate, failing the State Examinations tells the family what social and economic status the child is to expect for the rest of his life.

In a close Zairean society, when one fails the State Examinations everybody is likely to know about it because the results are published in the newspapers all over the country. Failing academically coincides with failing socially.

The State Examinations and the Nation

When people fail, the nation fails too. Colin Legun has stated:

Since independence in 1960, the number of pupils attending primary
schools increased from 1.7 millions to 3.4 millions; secondary schools from 22,000 to 220,000; higher education from 500 to 15,000; and university graduates from 20 to 10,000. Expressed in percentages these figures represent increases of 1,000%, 3,000% and 50,000% respectively. 1

While these statistics show some degree of success in terms of enrollment, failure of the students at all levels within the National School System has made Zaire even more dependent on imported skilled manpower. This is what Colin Legun says about failure in Zairean education:

A problem that had bedevilled Congolese (Zairean) education since independence was the high rate of failure in examinations. Sixty percent of all the students entering universities between 1960 and 1969 had failed to get degrees, while at Lubumbashi the medical school failed seventy-five percent of its students between 1961 and 1968. Educationalists blamed the examination system, which ruled that a student failing two of up to sixteen set papers at the end of the year had to take all sixteen again. 2

Failure is not limited to college students. For example, the results of the State Examinations for the academic year 1973-74 show a failure rate of thirty-one percent among Catholic school students who took the examinations. Out of 6,226 candidates, 1,930 failed to receive both the State Diploma and the State Certificate. 3

While some improvements have been made, even newer statistics have proven that failure is still a part of the existing educational system. In a survey carried out for the University of Kinshasa, it was calculated that only a quarter of secondary school leavers would qualify for higher education; the rest will have no diploma enabling them to


enter a profession or a trade. President Mobutu realizes the magnitude of the problem when he says:

Our educational system is still bad. It is still on the colonial pattern, and we should without delay adopt a new system which takes our priorities into consideration. We have to find ways to train our young people outside school. . . .

After six years of school attendance in big cities, young people who have failed the State Examinations often refuse to return to their native villages. Others come from remote villages just to taste the luxury of the modern cities. Both groups, failing to find meaningful work, become a social burden. Crime and vandalism escalate. It is assumed that most of the problems generated by the rate of failure can be solved only by making an objective evaluation of every practice that is introduced in the educational system, especially the State Examinations. As far as this writer can ascertain, no study dealing with the relationship between schools' performance in the required secondary school academic subjects and the schools' performance in the State Examinations has been conducted. Thus, there is a dire need for research (a) to investigate this unexplored area, and (b) to investigate and analyze the degree of concordance in the way those courses common to all three majors correlate with the State Examinations across the three majors.

SUMMARY

This chapter established rationales for reviewing the French and African educational systems. It was maintained that the Zairean educational system is a modified French system in addition to the fact that


2 Ibid., p. B615.
there are problems common to all African countries. The French education system was shown as very centralized and selective and it emphasized the state examinations. It was demonstrated that the history of education in Zaire is closely related to its political fortunes. The state examinations with their high failure rate, waste, stress, and anxiety were also described.
Chapter 3

PROCEDURES

This chapter, dealing with the procedures used in this study, is divided into four sections. The first section gives the description of the sample. The second section presents the variables used in the study. The third section describes the conditions under which the State Examinations are administered. The fourth and final section presents the statistical procedures used to answer the questions raised in this study.

THE SAMPLE

The sample used in this study was composed of fifty-six secondary schools, in Shaba Province, which participated in the State Examinations in June, 1976. They were grouped in three categories corresponding to the majors that they offered. Twelve offered literature major, sixteen offered mathematics-physics major, and twenty-eight offered general pedagogy major. These three majors were selected from a list of fourteen majors (as reported by the Director of the National Education Provincial Office, Bondo Lotika Bonganda) because they were the ones that had a population large enough for meaningful statistical inferences. The academic year 1976-77 was used because it was the most recent.

Among the schools used in this study were private and public schools. They were a mixture of both urban and rural schools. They all followed the curriculum designed and recommended by the National Ministry of Education, and they were all tested by the State in June, 1976.

The twelve schools that offered literature majors presented two
hundred and seventy-five students for the State Examinations that year. Two hundred and thirty-nine (87%) of them were successful. The sixteen schools that offered mathematics-physics majors had three hundred and eighty candidates taking the State Examinations that year. One hundred and ninety-four (51%) passed. The twenty-eight schools that offered general pedagogy majors were represented in the State Examinations by nine hundred and thirty-five students, of whom six hundred and forty-five (69%) passed.

VARIABLES USED

The Criterion Variable

The criterion variable used in the multiple correlation coefficient analysis was the average score that each school, in each major, got as a result of the overall evaluation of the State Examinations. This score was composed of the average that each school made in the subjects included in the State Examinations and other subjects that were excluded, such as the practical teaching examinations that are given to pedagogy major students by the State inspectors, in each school, prior to the State Examinations.

Independent Variables

Each major was tested, in the State Examinations, in selected courses indicated below:

Literature Major: All twelve schools that offered literature major and were included in this study were tested in the State Examinations in the following courses:

1. Dissertation
2. Latin
3. Latin
4. French
5. Philosophy
6. Mathematics
7. Biology
8. History
9. Geography

The average scores (in percentage) that each school made in each course were used as the independent variables.

Mathematics-Physics Major: All sixteen schools that offered mathematics-physics major and were included in this study were tested in the State Examinations in the following courses:

1. Dissertation
2. Descriptive Geometry
3. Mathematics
4. Physics
5. French
6. Biology
7. History
8. Geography

The average scores (in percentage) that each school made in each course were used as the independent variables.

General Pedagogy Major: All twenty-eight schools that offered general pedagogy major and were used in this study were tested in the State Examinations in the following courses:
1. Dissertation  
2. Psychology  
3. Mathematics  
4. French  
5. Philosophy  
6. Biology  
7. History  
8. Geography  
9. English

The average scores (in percentage) that each school made in each course were used as the independent variables.

Courses Common to All Three Majors

Although each major was tested as a group separate from the two other, all three were tested in dissertation, French, biology, history and geography. These courses were common to all three majors.

STATE EXAMINATIONS ADMINISTRATION PROCEDURES

The Ministry of National Education is the institution that develops the curriculum that is then passed on down to the provincial offices. Each school is required to strictly adhere to the guidelines and curricular activities as specified by the Ministry of Education.

The educators teaching courses in the senior year are requested to send to the Ministry of Education questions and problems in their fields of specialization which they think are appropriate for the State Examinations. The Ministry of National Education collects these questions, makes some modifications, if needed, and then administers the State Examinations all over the nation. In the experience of the researcher no school
has ever recognized any question in the State Examinations to be one it had submitted.

The State Examinations are administered once a year, in June. The examination takes place in many centers chosen by the State throughout the whole country. Schools around each center of examination send their candidates to the city selected as their center of examination. The students spend from one and a half to two weeks taking the examinations.

Each center of examination has a State-appointed president whose responsibility is to distribute the examinations to the students with the help of selected supervisors (chosen from teachers whose schools are represented in that center). He also makes sure that no cheating takes place. In case of cheating on any examination, the president replaces the test by another one.

The test in a particular course is administered nationwide on the same day, at a specific time, to all students of the same major. When students enter the testing halls, they are inspected by the supervisors so as to be certain that they have nothing on them except pens and pencils. In the testing room the president is supposed to open the test package in the presence of the supervisors and students as proof that it had not been opened by anyone before. Nobody is allowed to ask or to answer any questions related to the contents of the test in the testing hall. If a student needs to go out for any reason, he is escorted by a supervisor.

Students are not allowed to write their names on their answer sheets. Instead, each student is given an identification number which remains a secret between him and the State authorities. Each test lasts from one to four hours. Each day all the tests are collected and
sent to a center of correction by the presidents of the correcting centers. Each student's paper is corrected by three judges, who do not leave any mark on the paper. They count the mistakes on a separate paper and then assign a score to each paper. The paper, after being scored by the first judge, is then passed on to the second without any discussion between the two, and so on to the third. The average of the three scores given by the three judges is the final score given to the student. If the range between the scores given by the three judges is very wide, a fourth judge from the Ministry of National Education makes up the last and final correction.

All the scores are finally sent to the Ministry of National Education in the nation's capital, where final decisions are made. Students do not see their papers once the examinations are over. The results are made public in the newspaper as well as over the National Broadcasting system.

TREATMENT OF DATA

As previously stated, the purposes of this study were:

1. To ascertain, for each major, the significance of the relationship between the schools' performance in each required course and their overall performance in the State Examinations.

2. To investigate, for each major, the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.

3. To develop, for each major, a prediction equation that would be used directly to predict schools' potential performance in the State Examinations.
4. To analyze the concordance, across different majors, in the ways in which the scores for those subjects common to all three majors correlated with scores on the State Examinations.

To answer the questions raised in this study the following statistical techniques were used:

1. A correlation matrix was developed for each major, using the Statistical Package for the Social Sciences (S.P.S.S.) at Indiana State University. In this matrix each variable was compared singly with all variables.

2. Stepwise multiple regression analyses were completed (using the S.P.S.S.) for each major, in order to identify courses contributing significantly to the schools' performance in the State Examinations.

3. These analyses were also used to develop a prediction equation for each major, to be used to predict the schools' performance in the State Examinations from their performance (within the school) in the required courses.

4. A multiple Correlation Coefficient was computed (using the S.P.S.S.) for each major, to test for the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.

5. After ranking the correlation coefficients between those courses common to all three majors and the State Examinations, Kendall's coefficient of concordance was computed to determine if there was any significant difference
in the way courses common to all three majors correlated with the State Examinations.

6. Although a five percent level of significance was used to test for the statistically significance in all the tests conducted in this study, only correlation coefficients equal to or greater than .708 were considered to have a practically significant correlation coefficient, which is a relationship from which at least fifty percent of the variance is explained.

This chapter has described the sample, the variables used, the courses common to all three majors, the administrative procedures of the State Examinations, and the statistical treatment of the data. The findings are next reported in Chapter 4.
Chapter 4

REPORT OF FINDINGS

The findings of the analyses of data collected for this study are presented in this chapter, which is divided into four sections. The first section presents findings specifically related to the literature major. The second section gives findings pertaining to the mathematics-physics major. The third section presents findings related to the general pedagogy major. The fourth and last section presents the findings related to the question common to all three majors.

In each section each research question (except the last) was re-stated and changed into a null hypothesis for statistical analysis, and then answered. The last question in each section was not changed into a null hypothesis, but was, however, answered.

LITERATURE MAJOR

The following are the eleven questions raised and answered in this section:

1. Is there any significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations?

   Hypothesis 1: There is no significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations.

   The Pearson Product Moment Correlation Coefficient between the schools' performance in dissertation and their performance in the State Examinations was .477 (r = .477) and was found to be statistically
insignificant when tested at the 5% level. Consequently, the null hypothesis was supported. Dissertation, therefore, failed to show any practically significant relationship with the State Examinations.

2. Is there any significant relationship between the schools' performance in Latin and their overall performance in the State Examinations?

Hypothesis 2: There is no significant relationship between the schools' performance in Latin and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in Latin and their performance in the State Examinations was .758 \((r = .758)\) and was found to be statistically significant when tested at the 5% level. It also met the criterion for a practically significant correlation coefficient. The null hypothesis was therefore rejected.

3. Is there any significant relationship between the schools' performance in Latin and their overall performance in the State Examinations?

Hypothesis 3: There is no significant relationship between the schools' performance in Latin and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in Latin and their overall performance in the State Examinations was .796 \((r = .796)\) and was found to be both practically and statistically significant when tested at the 5% level. The null hypothesis was therefore rejected.
4. Is there any significant relationship between the schools' performance in French and their overall performance in the State Examinations?

   **Hypothesis 4:** There is no significant relationship between the schools' performance in French and their overall performance in the State Examinations.

   The Pearson Product Moment Correlation Coefficient between the schools' performance in French and their overall performance in the State Examinations was .708 \((r = .708)\) and was found both practically and statistically significant when tested at the 5% level. The null hypothesis was thus rejected.

5. Is there any significant relationship between the schools' performance in philosophy and their overall performance in the State Examinations?

   **Hypothesis 5:** There is no significant relationship between the schools' performance in philosophy and their overall performance in the State Examinations.

   The Pearson Product Moment Correlation Coefficient between the schools' performance in philosophy and their overall performance in the State Examination was .529 \((r = .529)\). Although this relationship did not satisfy the practically significant correlation coefficient criterion, statistically, it was significant enough at the 5% level and the null hypothesis was therefore rejected.

6. Is there any significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations?
Hypothesis 6: There is no significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in mathematics and their overall performance in the State Examinations was .211 (r = .211). This correlation coefficient was insignificant both practically and statistically when tested at the 5% level. Consequently, the null hypothesis was accepted.

7. Is there any significant relationship between the schools' performance in biology and their overall performance in the State Examinations?

Hypothesis 7: There is no significant relationship between the schools' performance in biology and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in biology and their overall performance in the State Examinations was .396 (r = .396). This relationship was statistically insignificant at the 5% level and failed to satisfy the practical significance criterion. The null hypothesis was accepted.

8. Is there any significant relationship between the schools' performance in history and their overall performance in the State Examinations?

Hypothesis 8: There is no significant relationship between the schools' performance in history and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in history and their overall performance in the
State Examinations was .730 \(r = .730\) and was both practically and statistically significant at the 5% level. The null hypothesis was consequently rejected.

9. Is there any significant relationship between the schools' performance in geography and their overall performance in the State Examinations?

**Hypothesis 9:** There is no significant relationship between the schools' performance in geography and the State Examination.

The Correlation Coefficient between the schools' performance in geography and their performance in the State Examinations was .760 \(r = .760\) and was statistically significant at the 5% level. It was also practically significant. The null hypothesis was thus rejected.

10. Is there any significant relationship between the schools' performance in all the required courses and their performance in the State Examinations?

**Hypothesis 10:** There is no significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.

The Multiple Correlation Coefficient between the schools' performance in all the required courses and their overall performance in the State Examinations was .999 \(R = .999\) and was both statistically and practically significant at the 5% level. The hypothesis was rejected.

11. If there is a significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations, what is the prediction equation that would be used to predict the schools' potential performance in the State Examinations?
As previously stated, the Multiple Correlation Coefficient between the schools' performance in all the required courses and their overall performance in the State Examinations was .999 (R = .999). Such a highly significant relationship formed the rationale for the following prediction equation:

\[ \hat{Y} = -2.525 + .141 \text{ (Latin)} - .001 \text{ (French)} + .100 \text{ (philosophy)} \\
+ .359 \text{ (dissertation)} + .177 \text{ (mathematics)} + .068 \text{ (history)} \\
+ .147 \text{ (geography)} + .126 \text{ (biology)} - .053 \text{ (Latin)} \]

This prediction equation would be used directly to predict potential performance of a school as a whole. For example, a school which has the following scores (in %): 50.7 in Latin, 68.8 in French, 60.1 in philosophy, 58.3 in dissertation, 71.0 in mathematics, 62.4 in history, 60.5 in geography, 53.4 in biology, and 67.7 in Latin will have a predicted score (in the State Examinations) equal to:

\[ \hat{Y} = -2.523 + .141 (50.7) - .001 (68.8) + .100 (60.1) + .359 (58.3) \\
+ .177 (71.0) + .068 (62.4) + .147 (60.5) + .126 (53.4) \\
- .053 (67.7) = 60.341 \]

Summary of Correlation Coefficients (See Tables 1 and 2)

The following courses were found to have both a practically and a statistically significant relationship with the State Examinations when tested at the 5% level:

1. Latin \( (r = .796) \)
2. Geography \( (r = .760) \)
3. Latin \( (r = .758) \)
4. History \( (r = .730) \)
5. French \( (r = .708) \)
Table 1. Pearson Correlation Coefficients Showing the Relationships Between the Independent Variables and the Criterion Variable: Literature Major

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<th>x1</th>
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<th>x3</th>
<th>x4</th>
<th>x5</th>
<th>x6</th>
<th>x7</th>
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<th>x9</th>
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<td>.921</td>
<td>.098</td>
<td>.528</td>
<td>-.132</td>
<td>-367</td>
<td>-.288</td>
<td>.012</td>
<td>-.010</td>
<td>.4771</td>
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<tr>
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<td>S</td>
<td>s</td>
<td>s</td>
<td>i</td>
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<td>i</td>
<td>i</td>
<td>s</td>
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<tr>
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<td>s</td>
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<td>French = x4</td>
<td>S</td>
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<td>Philosophy = x5</td>
<td>S</td>
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<tr>
<td>Mathematics = x6</td>
<td>S</td>
<td>i</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
</tr>
<tr>
<td>Biology = x7</td>
<td>S</td>
<td>i</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
<td>s</td>
</tr>
<tr>
<td>History = x8</td>
<td>S</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>Geography = x9</td>
<td>S</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>State Examinations = Y</td>
<td>R = .999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

S = Significant Statistically and Practically
i = Insignificant
s = Significant Only Statistically
R = Multiple Correlation Coefficient
Table 2. Multiple Regression Analysis Summary Showing the Independent Variables Ranked According to Their Goodness in Predictiveness and Their Relative Weight in the Prediction Equation: Literature Major

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Multiple R</th>
<th>Simple R</th>
<th>Weight (b)</th>
<th>Partial Regression Coefficients</th>
<th>Constant (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin ( = x_1 )</td>
<td>.796</td>
<td>.796</td>
<td>.141</td>
<td>.257</td>
<td></td>
</tr>
<tr>
<td>French ( = x_2 )</td>
<td>.921</td>
<td>.708</td>
<td>-.001</td>
<td>-.001</td>
<td></td>
</tr>
<tr>
<td>Philosophy ( = x_3 )</td>
<td>.958</td>
<td>.529</td>
<td>.100</td>
<td>.276</td>
<td></td>
</tr>
<tr>
<td>Dissertation ( = x_4 )</td>
<td>.981</td>
<td>.477</td>
<td>.359</td>
<td>.620</td>
<td></td>
</tr>
<tr>
<td>Mathematics ( = x_5 )</td>
<td>.992</td>
<td>.211</td>
<td>.177</td>
<td>.145</td>
<td></td>
</tr>
<tr>
<td>History ( = x_6 )</td>
<td>.995</td>
<td>.730</td>
<td>.068</td>
<td>.162</td>
<td></td>
</tr>
<tr>
<td>Geography ( = x_7 )</td>
<td>.996</td>
<td>.760</td>
<td>.147</td>
<td>.276</td>
<td></td>
</tr>
<tr>
<td>Biology ( = x_8 )</td>
<td>.998</td>
<td>.396</td>
<td>.126</td>
<td>.129</td>
<td></td>
</tr>
<tr>
<td>Latin ( = x_9 )</td>
<td>.999</td>
<td>.757</td>
<td>-.053</td>
<td>-.076</td>
<td>-2.525</td>
</tr>
</tbody>
</table>

\[
\hat{Y} = -2.525 + .141 (x_1) - .001 (x_2) + .100 (x_3) + .359 (x_4) + .177 (x_5) + .068 (x_6) + .147 (x_7) + .126 (x_8) - .053 (x_9)
\]
Only one course—philosophy ($r = .529$)—was found to have just the statistically significant relationship with the State Examinations: The following courses had no statistically nor practically significant relationship with the State Examinations.

1. Dissertation ($r = .477$)
2. Biology ($r = .396$)
3. Mathematics ($r = .211$)

The overall relationship between the schools' performance in all the required courses and their performance in the State Examinations was .999 and had both a statistically and a practically significant relationship with the State Examinations.

**MATHEMATICS-PHYSICS MAJOR**

The following are the ten questions raised and answered in this second section:

1. Is there any significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations?

   **Hypothesis 1**: There is no significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations.

   The Correlation Coefficient between dissertation and the State Examinations was .456 ($r = .456$) and was found to be statistically significant at the 5% level, but practically insignificant. The null hypothesis was rejected.

2. Is there any significant relationship between the schools' performance in descriptive geometry and their overall performance in the State Examinations?
Hypothesis 2: There is no significant relationship between the schools' performance in descriptive geometry and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in descriptive geometry and their overall performance in the State Examinations was .734 \( (r = .734) \). This relationship was both practically and statistically significant at the 5% level. The null hypothesis was thus rejected.

3. Is there any significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations?

Hypothesis 3: There is no significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in mathematics and their overall performance in the State Examinations was .863 \( (r = .863) \). It was both practically and statistically significant at the 5% level. Thus the null hypothesis was rejected.

4. Is there any significant relationship between the schools' performance in physics and their overall performance in the State Examinations?

Hypothesis 4: There is no significant relationship between the schools' performance in physics and their overall performance in the State Examinations.

The Pearson Product Moment Correlation Coefficient between the schools' performance in physics and their overall performance in the State Examinations was .770 \( (r = .770) \). It was both statistically and
practically significant at the 5% level. The null hypothesis was rejected.

5. Is there any significant relationship between the schools' performance in French and their overall performance in the State Examinations?

_Hypothesis 5:_ There is no significant relationship between the schools' performance in French and their overall performance in the State Examinations.

A correlation coefficient of .874 (r = .874) was found between the schools' performance in French and their overall performance in the State Examinations. The correlation was found to be significant both statistically and practically at the 5% level. The null hypothesis was rejected.

6. Is there any significant relationship between the schools' performance in biology and their overall performance in the State Examinations?

_Hypothesis 6:_ There is no significant relationship between the schools' performance in biology and their overall performance in the State Examinations.

A statistically significant correlation (at the 5% level) of .700 (r = .700) was found between the schools' performance in biology and their overall performance in the State Examinations. Although this correlation failed to be practically significant, the null hypothesis was rejected statistically.

7. Is there any significant relationship between the schools' performance in history and their overall performance in the State Examinations?
Hypothesis 7: There is no significant relationship between the schools' performance in history and their overall performance in the State Examinations.

A correlation coefficient of .410 (r = .410) was found between the schools' performance in history and their overall performance in the State Examinations. Tested at the 5% level, this correlation was both statistically and practically insignificant. The null hypothesis was thus accepted.

8. Is there any significant relationship between the schools' performance in geography and their overall performance in the State Examinations?

Hypothesis 8: There is no significant relationship between the schools' performance in geography and their overall performance in the State Examinations.

A correlation coefficient of .748 (r = .748) was established between the schools' performance in geography and their overall performance in the State Examinations. This correlation was both practically and statistically significant at the 5% level. The null hypothesis was rejected.

9. Is there any significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations?

Hypothesis 9: There is no significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.

A correlation coefficient of .999 (R = .999) was found between the schools' performance in all the required courses, and their
Summary of Correlation Coefficients  
(See Table 3 and 4)  
The following courses had both the statistically (at the 5% level) and the practically significant relationships with the State Examinations:  
1. French \( (r = .874) \)  
2. Mathematics \( (r = .863) \)  
3. Physics \( (r = .770) \)  
4. Geography \( (r = .748) \)  
5. Descriptive geometry \( (r = .734) \)  
The following courses had a statistically significant but practically insignificant relationship with the State Examinations:  
1. Biology \( (r = .700) \)  
2. Dissertation \( (r = .456) \)  

Only one course, history \( (r = .410) \), failed to have either a statistically or a practically significant relationship with the State Examinations.
Table 3. Pearson Correlation Coefficients Showing the Relationships Between the Independent Variables and the Criterion Variable: Mathematics-Physics Major

<table>
<thead>
<tr>
<th></th>
<th>x₁</th>
<th>x₂</th>
<th>x₃</th>
<th>x₄</th>
<th>x₅</th>
<th>x₆</th>
<th>x₇</th>
<th>x₈</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissertation = x₁</td>
<td>1.000</td>
<td>.308</td>
<td>.547</td>
<td>.043</td>
<td>.275</td>
<td>.356</td>
<td>-.245</td>
<td>-.052</td>
<td>.456s</td>
</tr>
<tr>
<td>Descriptive</td>
<td>S</td>
<td></td>
<td>s</td>
<td>i</td>
<td>s</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td></td>
</tr>
<tr>
<td>Geometry = x₂</td>
<td></td>
<td>S</td>
<td>s</td>
<td>i</td>
<td>i</td>
<td>s</td>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics = x₃</td>
<td></td>
<td></td>
<td>S</td>
<td>s</td>
<td>s</td>
<td>i</td>
<td>i</td>
<td>s</td>
<td></td>
</tr>
<tr>
<td>Physics = x₄</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>S</td>
<td>s</td>
<td>s</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>French = x₅</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>s</td>
<td>s</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Biology = x₆</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>s</td>
<td>s</td>
<td></td>
</tr>
<tr>
<td>History = x₇</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>s</td>
<td></td>
</tr>
<tr>
<td>Geography = x₈</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>State Examinations = Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

R = .999

S = Significant Both Statistically and Practically
s = Significant Only Statistically
i = Insignificant

R = Multiple Correlation Coefficient
Table 4. Multiple Regression Analysis Summary Showing the Independent Variables Ranked According to Their Goodness in Predictiveness and Their Relative Weight in the Prediction Equation: Mathematics-Physics Major

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Multiple R</th>
<th>Simple R</th>
<th>Weights (b)</th>
<th>Partial Regression Coefficients (Beta)</th>
<th>Constant (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>French = $x_1$</td>
<td>.874</td>
<td>.874</td>
<td>.175</td>
<td>.167</td>
<td></td>
</tr>
<tr>
<td>Mathematics = $x_2$</td>
<td>.964</td>
<td>.863</td>
<td>.289</td>
<td>.449</td>
<td></td>
</tr>
<tr>
<td>Physics = $x_3$</td>
<td>.988</td>
<td>.770</td>
<td>.195</td>
<td>.249</td>
<td></td>
</tr>
<tr>
<td>Dess. Geometry = $x_4$</td>
<td>.996</td>
<td>.734</td>
<td>.079</td>
<td>.173</td>
<td></td>
</tr>
<tr>
<td>Biology = $x_5$</td>
<td>.997</td>
<td>.700</td>
<td>.049</td>
<td>.053</td>
<td></td>
</tr>
<tr>
<td>Dissertation = $x_6$</td>
<td>.998</td>
<td>.456</td>
<td>.078</td>
<td>.076</td>
<td></td>
</tr>
<tr>
<td>Geography = $x_7$</td>
<td>.999</td>
<td>.748</td>
<td>.069</td>
<td>.094</td>
<td></td>
</tr>
<tr>
<td>History = $x_8$</td>
<td>.999</td>
<td>.409</td>
<td>.013</td>
<td>.008</td>
<td>2.821</td>
</tr>
</tbody>
</table>

\[ \hat{Y} = s.821 + .175 (x_1) + .289 (x_2) + .195 (x_3) + .079 (x_4) + .049 (x_5) + .078 (x_6) + .069 (x_7) + .013 (x_8) \]
GENERAL PEDAGOGY MAJOR

The following are the eleven questions raised and answered in this third section:

1. Is there any significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations?

Hypothesis 1: There is no significant relationship between the schools' performance in dissertation and their overall performance in the State Examinations.

A correlation coefficient of .609 (r = .609) was found between the schools' performance in dissertation and their overall performance in the State Examinations. This relationship was not practically significant. Statistically, at the 5% level, this correlation was significant and therefore the null hypothesis was rejected.

2. Is there any significant relationship between the schools' performance in psychology and their overall performance in the State Examinations?

Hypothesis 2: There is no significant relationship between the schools' performance in psychology and their overall performance in the State Examinations.

The correlation between the schools' performance in psychology and their overall performance in the State Examinations was .860 (r = .860). This relationship was significant both statistically and practically at the 5% level. Consequently, the null hypothesis was rejected.

3. Is there any significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations?
Hypothesis 3: There is no significant relationship between the schools' performance in mathematics and their overall performance in the State Examinations.

A correlation coefficient equal to .432 (r = .432) was found between the schools' performance in mathematics and their overall performance in the State Examinations. This correlation was practically insignificant but was statistically significant at the 5% level. The null hypothesis was, therefore, rejected.

4. Is there any significant relationship between the schools' performance in French and their overall performance in the State Examinations?

Hypothesis 4: There is no significant relationship between the schools' performance in French and their overall performance in the State Examinations.

There was a correlation of .875 (r = .975) between the schools' performance in French and their overall performance in the State Examinations. The relationship was found to be significant practically and statistically at the 5% level. Thus, the null hypothesis was rejected.

5. Is there any significant relationship between the schools' performance in philosophy and their overall performance in the State Examinations?

Hypothesis 5: There is no significant relationship between the schools' performance in philosophy and their overall performance in the State Examinations.

There was a correlation of .662 (r = .662) between the schools' performance in philosophy and their overall performance in the State Examinations. Although this relationship was found to be insignificant
practically, it was statistically significant at the 5% level. Thus, the null hypothesis was rejected.

6. Is there any significant relationship between the schools' performance in biology and their overall performance in the State Examinations?

**Hypothesis 6:** There is no significant relationship between the schools' performance in biology and their overall performance in the State Examinations.

A statistically significant correlation (at the 5% level) of .683 \((r = .683)\) was found between the schools' performance in biology and the schools' overall performance in the State Examinations. Although this relationship was practically insignificant, the null hypothesis was rejected.

7. Is there any significant relationship between the schools' performance in history and their overall performance in the State Examinations?

**Hypothesis 7:** There is no significant relationship between the schools' performance in history and their overall performance in the State Examinations.

A correlation of .818 \((r = .818)\) was found between the schools' performance in history and their overall performance in the State Examinations. This relationship was both statistically and practically significant at the 5% level. The null hypothesis was thus rejected.

8. Is there any significant relationship between the schools' performance in geography and their overall performance in the State Examinations?

**Hypothesis 8:** There is no significant relationship between the
school's performance in geography and their overall performance in the State Examinations.

A correlation of \( r = .758 \) was established between the schools' performance in geography and their overall performance in the State Examinations. This correlation was significant both practically and statistically at the 5% level. Thus, the null hypothesis was rejected.

9. Is there any significant relationship between the schools' performance in English and their overall performance in the State Examinations?

**Hypothesis 9:** There is no significant relationship between the schools' performance in English and their overall performance in the State Examinations.

A correlation coefficient of \( r = .451 \) was found between the schools' performance in English and their overall performance in the State Examinations. Although this correlation was insignificant practically, it was statistically significant at the 5% level. The null hypothesis was thus rejected.

10. Is there any significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations?

**Hypothesis 10:** There is no significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations.

A correlation coefficient of \( R = .998 \) was found between the schools' performance in all the required courses and their overall performance in the State Examinations. This relationship was both
statistically and practically significant (at 5% level). Thus, the null hypothesis was rejected.

11. If there is a significant relationship between the schools' performance in all the required courses and their overall performance in the State Examinations, what is the prediction equation that would be used to predict the schools' potential performance in the State Examinations?

As stated before, the Multiple Correlation Coefficient of .997 was found between the schools' performance in all the required courses and their performance in the State Examinations. This relationship was both statistically and practically significant at the 5% level. It was therefore shown that the prediction was possible. The following prediction equation was thus developed:

\[ \hat{Y} = -1.001 + .183 \text{ (dissertation)} + .186 \text{ (psychology)} + .146 \text{ (mathematics)} + .156 \text{ (French)} + .081 \text{ (philosophy)} + .004 \text{ (biology)} + .102 \text{ (history)} + .069 \text{ (geography)} + .069 \text{ (English)} \]

This prediction equation would be used directly to predict potential performance of school as a whole. For example, a school which has, the following average scores (in %): 49.0 dissertation, 63.0 in psychology, 51.1 in mathematics, 54.3 in French, 80.0 in philosophy, 45.0 in biology, 66.0 in history, 65.0 in geography and 44.0 in English will get on the State Examinations, a predicted score of:

\[ \hat{Y} = -1.001 + .183 (49.0) + .186 (63.0) + .146 (51.1) + .156 (54.3) + .081 (80.0) + .004 (45.0) + .102 (66.0) + .069 (65.0) + .069 (44.0) = 56.528 \]
Summary of Correlation Coefficients
(See Tables 5 and 6)

The following courses had both statistically and practically significant relationships with the State Examinations:

1. French  \( (r = .875) \)
2. Psychology  \( (r = .860) \)
3. History  \( (r = .818) \)
4. Geography  \( (r = .758) \)

The following courses had a statistically significant relationship with the State Examinations but failed to be practically significant:

1. Biology  \( (r = .683) \)
2. Philosophy  \( (r = .662) \)
3. Dissertation  \( (r = .609) \)
4. English  \( (r = .451) \)
Table 5. Pearson Correlation Coefficients Showing the Relationship Between the Independent Variables and the Criterion Variable: General Pedagogy Major.

<table>
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<th></th>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
<th>x5</th>
<th>x6</th>
<th>x7</th>
<th>x8</th>
<th>x9</th>
<th>Y</th>
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</thead>
<tbody>
<tr>
<td>S</td>
<td>S</td>
<td>i</td>
<td>s</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>s</td>
<td>i</td>
<td>s</td>
</tr>
<tr>
<td>x1</td>
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<td>.278</td>
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<td>.307</td>
<td>.155</td>
<td>.610s</td>
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<td>s</td>
<td>s</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
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<td>.612</td>
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<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>Mathematics</td>
<td>x3</td>
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<td>.180</td>
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<td>.099</td>
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<td>.432s</td>
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</tr>
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<td>.637</td>
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<td>.837</td>
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<td>i</td>
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<td>i</td>
<td>s</td>
<td>s</td>
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<td>i</td>
<td>i</td>
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<td>.668</td>
<td>.582</td>
<td>.465</td>
<td>.328</td>
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<tr>
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<td>.564</td>
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<td>.683s</td>
<td>.683s</td>
<td>.683s</td>
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<td>i</td>
<td>i</td>
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<td>s</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>History</td>
<td>x7</td>
<td>1.000</td>
<td>.855</td>
<td>.437</td>
<td>.818s</td>
<td>.818s</td>
<td>.818s</td>
<td>.818s</td>
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<tr>
<td>s</td>
<td>s</td>
<td>s</td>
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<td>s</td>
<td>s</td>
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<tr>
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<td>x8</td>
<td>1.000</td>
<td>.407</td>
<td>.758s</td>
<td>S</td>
<td>1.000</td>
<td>.451s</td>
<td>.451s</td>
<td>.451s</td>
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<tr>
<td>i</td>
<td>i</td>
<td>s</td>
<td>s</td>
<td>S</td>
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<td>State Examinations</td>
<td>Y</td>
<td>R = .998</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
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<td>1.000</td>
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S = Significant Both Statistically and Practically
s = Significant Only Statistically
i = Insignificant
R = Multiple Regression Coefficient
Table 6. Multiple Regression Analysis Summary Showing the Independent Variables Ranked According to Their Goodness in Predictiveness and Their Relatives Weight in the Prediction Equation: General Pedagogy Major

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Multiple R</th>
<th>Simple R</th>
<th>Weights (b)</th>
<th>Partial Regression Coefficients (Beta)</th>
<th>Constant (a)</th>
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<tbody>
<tr>
<td>French = $x_1$</td>
<td>.875</td>
<td>.875</td>
<td>.156</td>
<td>.157</td>
<td></td>
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<tr>
<td>Psychology = $x_2$</td>
<td>.932</td>
<td>.860</td>
<td>.186</td>
<td>.215</td>
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<tr>
<td>Mathematics = $x_3$</td>
<td>.953</td>
<td>.432</td>
<td>.146</td>
<td>.224</td>
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</tr>
<tr>
<td>English = $x_4$</td>
<td>.970</td>
<td>.451</td>
<td>.069</td>
<td>.160</td>
<td></td>
</tr>
<tr>
<td>Dissertation = $x_5$</td>
<td>.977</td>
<td>.600</td>
<td>.183</td>
<td>.257</td>
<td></td>
</tr>
<tr>
<td>Philosophy = $x_6$</td>
<td>.993</td>
<td>.662</td>
<td>.081</td>
<td>.207</td>
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<tr>
<td>History = $x_7$</td>
<td>.996</td>
<td>.818</td>
<td>.102</td>
<td>.141</td>
<td></td>
</tr>
<tr>
<td>Geography = $x_8$</td>
<td>.997</td>
<td>.758</td>
<td>.069</td>
<td>.106</td>
<td></td>
</tr>
<tr>
<td>Biology = $x_9$</td>
<td>.997</td>
<td>.888</td>
<td>.004</td>
<td>.005</td>
<td></td>
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</tbody>
</table>

$\hat{Y} = -1.001 + .156 (x_1) + .186 (x_2) + .146 (x_3) + .069 (x_4) + .183 (x_5) + .081 (x_6) + .102 (x_7) + .069 (x_8) + .004 (x_9)$
COMMON QUESTION

All three majors--Literature, Mathematics-Physics, and General Pedagogy--were tested in five courses that were required of all three. There were: 1. dissertation, 2. French, 3. biology, 4. history, and 5. geography (See Table 7).

Table 7. Ranks and Correlation Coefficients of Courses Common to all three majors.

<table>
<thead>
<tr>
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<th>Literature Major</th>
<th>Math-Physics Major</th>
<th>Pedagogy Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissertation</td>
<td>4 (.477)</td>
<td>4 (.456)</td>
<td>5 (.609)</td>
</tr>
<tr>
<td>French</td>
<td>3 (.707)</td>
<td>1 (.874)</td>
<td>1 (.875)</td>
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<tr>
<td>Biology</td>
<td>5 (.396)</td>
<td>3 (.700)</td>
<td>4 (.683)</td>
</tr>
<tr>
<td>History</td>
<td>2 (.730)</td>
<td>5 (.410)</td>
<td>2 (.818)</td>
</tr>
<tr>
<td>Geography</td>
<td>1 (.760)</td>
<td>2 (.748)</td>
<td>3 (.758)</td>
</tr>
</tbody>
</table>

The question raised and answered concerning these five courses was:

1. Is there any significant difference in the way these courses correlated with the State Examinations, across the three majors, when ranked according to the way they related to the State Examinations?

**Hypothesis 1:** There is no significant difference in the way dissertation, French, biology, history, and geography correlate with the State Examinations, across the three majors, when ranked according to the way they correlate with the State Examinations.
The Kendall's Coefficient of Concordance was computed to answer the question raised in this section. The coefficient of concordance was .555 ($W = .555$) and was found to be statistically insignificant at the 5% level. Thus, the null hypothesis was accepted.
Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purposes of this study were: (1) to ascertain for each major the significance of the relationship between the schools' performance in each required course and their overall performance in the State Examinations; (2) to investigate for each major the significance of the relationship between the schools' performance in all the required courses and their overall performance in the State Examinations; (3) to develop a prediction equation, for each major, that would be used to predict schools' performance in the State Examinations; and (4) to analyze the degree of concordance, across the three majors, in the ways those courses common to all three majors correlate with the State Examinations.

PROCEDURES

For each major, stepwise multiple linear regression analyses were conducted to identify those courses contributing significantly to the schools' performance in the State Examinations and to develop a prediction equation (for each major) to be used to predict the schools' potential performance in the State Examinations. The Kendall's coefficient of concordance was computed to test for the significance of concordance in the ways those courses common to all three majors correlated with the State Examinations.

SUMMARY OF FINDINGS

The summary of findings is presented in four sections. The first section presents the findings related to Literature major. The second section summarizes findings pertaining to Mathematics-Physics major. The
third section summarizes the results related to General Pedagogy major. The fourth and last section gives findings related to the general question common to all three majors.

**Literature Major**

One regression analysis was completed to identify courses contributing significantly (above the 95% level of confidence) to the schools' performance in the State Examinations. Only courses correlating with the State Examinations ($r < .708$) in such a way that at least fifty percent of the variances are explained ($r < .708$) were considered to have a practically significant relationship with the State Examinations. The results of the regression analysis were also used to develop a prediction equation to predict schools' performance in the State Examinations. The following courses had both a statistically and a practically significant relationship with the State Examinations:

1. Latin $(r = .796)$
2. Geography $(r = .760)$
3. Latin $(r = .758)$
4. History $(r = .730)$
5. French $(r = .708)$

One course (philosophy: $r = .529$) had a statistically significant relationship with the State Examinations but did not have any practically significant relationship with the State Examinations.

Three courses failed to have either a statistically or a practically significant relationship with the State Examinations:

1. Dissertation $(r = .477)$
2. Biology $(r = .396)$
3. Mathematics $(r = .211)$
The overall relationship between the schools' performance in all the courses mentioned above and their performance in the State Examinations had both a statistically and a practically significant relationship with the State Examinations \((R = .999)\). An equation to predict the schools' performance in the State Examinations was thus constructed including all the independent variables:

\[
\hat{y} = -2.523 + .141 \text{ (Latin)} - .001 \text{ (French)} + .100 \text{ (philosophy)} \\
+ .359 \text{ (dissertation)} + .177 \text{ (mathematics)} + .068 \text{ (history)} \\
+ .147 \text{ (geography)} + .126 \text{ (biology)} - .053 \text{ (Latin)}
\]

**Mathematics-Physics Major**

One regression analysis was completed to identify courses contributing significantly (above the 95 percent level of confidence) to the schools' performance in the State Examinations. Courses having a correlation coefficient with the State Examination equal to or greater than .708 were considered to be practically significant. These were courses whose relationship with the State Examinations could explain at least fifty percent of the variance. The results of the regression analysis were also used to assess the overall relationship between the schools' performance in all the required courses and their performance in the State Examinations and to develop a prediction equation to predict the schools' performance in the State Examinations.

The following are courses whose relationship with the State Examinations was both statistically and practically significant:

1. French \((r = .974)\)
2. Mathematics \((r = .863)\)
3. Physics \((r = .770)\)
4. Geography $(r = .748)$

5. Descriptive geometry $(r = .734)$

The following are courses whose relationship with the State Examinations was only statistically significant:

1. Biology $(r = .700)$

2. Dissertation $(r = .456)$

One course failed to yield either a statistically or a practically significant relationship with the State Examinations:

1. History $(r = .410)$

The relationship between the schools' performance in all the required courses and the State Examinations yielded a multiple correlation coefficient of .999. This relationship was both statistically and practically significant. Such a highly significant relationship formed the rationale for the development of the following prediction equation:

$$\hat{Y} = 2.821 + .175 \text{ (French)} + .289 \text{ (mathematics)} + .195 \text{ (physics)}$$
$$+ .079 \text{ (descriptive geometry)} + .049 \text{ (biology)} + .078 \text{ (dissertation)}$$
$$+ .069 \text{ (geography)} + .013 \text{ (history)}.$$

**General Pedagogy Major**

One regression analysis was completed to identify courses contributing significantly (above 95 percent level of confidence) to the schools' performance in the State Examinations. Courses whose relationship with the State Examinations $(r < .708)$ explained at least fifty percent of the variance were considered to be practically significant. The results of the regression analysis were used to assess the relationship between the schools' performance in all required courses and their performance in the State Examinations. They were also used to develop and equation to be
used to predict schools' performance in the State Examinations.

The following are courses whose relationship with the State Examinations was both statistically and practically significant:

1. French \( (r = .875) \)
2. Psychology \( (r = .860) \)
3. History \( (r = .818) \)
4. Geography \( (r = .758) \)

The following are courses whose relationships with the State Examinations were statistically significant but practically insignificant:

1. Biology \( (r = .683) \)
2. Philosophy \( (r = .662) \)
3. Dissertation \( (r = .609) \)
4. English \( (r = .451) \)
5. Mathematics \( (r = .432) \)

The relationship between the schools' performance in all the required courses and their performance in the State Examinations \( (R = .997) \) was statistically and practically significant. Such a highly significant relationship formed the rationale for which the following prediction equation was developed:

\[
\hat{Y} = -1.001 + 0.183 \text{ (dissertation)} + 0.186 \text{ (psychology)} + 0.146 \text{ (mathematics)} + 0.156 \text{ (French)} + 0.081 \text{ (philosophy)} + 0.004 \text{ (biology)} + 0.102 \text{ (history)} + 0.069 \text{ (English)}
\]

**Common Question**

The courses that were common to all three majors (French, dissertation, biology, history, and geography) did not contribute in the same
ways to the schools' performance in the State Examinations within
different majors.

CONCLUSIONS

The following conclusions were derived from this study.
1. There were, in each major, certain required courses that contrib-
uted significantly to the schools' performance in the State Examinations.
2. The overall correlation, in each major, between the schools' perfor-
manence in all the required courses and their performance in the State
Examinations was significant.
3. A prediction equation was developed for each year.
4. The five courses common to all three majors did not contribute to
the schools' performance in the State Examinations in the same way across
the three majors.

RECOMMENDATIONS FROM THE STUDY

The following recommendations were made to educational authorities
in charge of the State Examinations and educators who prepare students to
take the State Examinations. The recommendations were made to enhance
maximum school success in the State Examinations. It was recommended
that:

1. Educators in high schools be provided with inservice training
so that their ability to screen students during the cycle of speciali-
ization would be based on the findings of this study.

2. Senior students in each major, after the first semester, use
the prediction equation constructed in this study to detect weaknesses
early so as to effectively correct them for a better performance in the
State Examinations.
3. Principals of high schools and educators of senior classes, after the first semester, use the prediction equations constructed in this study, per major, in order to predict their schools' performance so as to take appropriate corrective steps.

4. Students who fail only within the school—in the courses which showed no practically significant relationship with the State Examinations—be allowed, per major, (1) to pass from one grade level to another and (2) to take the State Examinations.

5. The prediction equations be validated to obtain an estimate on their degree of accuracy.

6. The testing of students in the courses which showed no practically predictive significance be dropped from the State Examinations and given to the individual schools' authorities.

RECOMMENDATIONS FOR FURTHER STUDY

The following recommendations were made for further study of the State Examinations System. It was recommended that:

1. A study similar to the present one be done for each major, in each school, in each province, using scores from the schools as independent variables and those from the State Examinations as the criterion variable in order to specifically detect potential succeeding students.

2. A study be carried out in which students failing the State Examinations and those passing be admitted to a university to ascertain the college performance of the two groups.

3. A study be conducted to analyze characteristics of the schools that usually have large numbers of students passing the State Examinations and those with higher failure rates in order to correct the shortcomings of the latter.
Literature Major

In the stepwise multiple regression analysis, as summarized in Table 2, it was found that when only Latin, French, philosophy, dissertation, and mathematics were included in the analysis, it was possible to explain 98.4% of the variance. The researcher raised the following questions:

Why are students not allowed to pass from one grade level to another (during the cycle of specialization) just because they fail either in history, geography, biology or Latin, which are courses shown to have little predictability with the State Examinations for the Literature Major?

Why are history, geography, biology, and Latin required courses rather than electives in the cycle of specialization?

Why are students required to be tested in history, geography, biology and Latin in the State Examinations?

Mathematics-Physics Major

In the stepwise multiple regression analysis as summarized in Table 4 it was found that when only French, physics, mathematics, and descriptive geometry were used, it was possible to explain 99.2% of the variance. The researcher raised the following questions concerning the practices:

Why are the students not allowed to pass from one grade to another during the cycle of specialization just because they fail in either biology, dissertation, geography, or history, which are shown to have little predictability with the State Examinations for the Mathematics-Physics Major?

Why are biology, dissertation, geography, and history required
courses rather than electives in the cycle of specialization?

Why are students required to be tested in biology, dissertation, geography, and history in the State Examinations?

General Pedagogy Major

In the stepwise multiple regression analysis summarized in Table 6, it was found that when only French, psychology, mathematics, English, dissertation, and philosophy were used it was possible to explain 98.2% of the variance. The researcher raised the following questions:

1. Why are students not allowed to pass from one grade level to another during the cycle of specialization, just because they fail in either history, geography, or biology?

2. Why are history, geography, and biology required courses rather than electives in the cycle of specialization?

3. Why are students required to be tested in history, geography, and biology in the State Examinations?
BIBLIOGRAPHY
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Kiros, Fassil G. Educational Outcome Measurement in Developing Countries. Georgetown University, Washington, D.C., Public Services Laboratory and Haile Sellassie I University, Addis Ababa, Ethiopia, 1975.


APPENDIXES
# APPENDIX A: MAIN DATA SHEET: LITERATURE MAJOR

<table>
<thead>
<tr>
<th></th>
<th>Dissertation</th>
<th>Latin</th>
<th>Latin</th>
<th>French</th>
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<th>Mathematics</th>
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Final average scores in % per school.
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Final average scores in % per school.
## APPENDIX C: MAIN DATA SHEET: GENERAL PEDAGOGY MAJOR

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Final average scores in % per school.