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ABSTRACT

A set of studies done for the Washington State Superintendent of Public Instruction (WSPI) constituted a case study testing the conjecture that management consulting is potentially cost effective in some areas of educational evaluation. The case study involved first interviewing 22 respondents from four WSPI constituencies (educators, employers, the legislature, and parents) to identify their major concerns, then deriving analyses of data related to the concerns from a WSPI data bank, and finally producing draft reports on the analyses. The data bank comprises data from the national "High School and Beyond" study augmented by additional Washington information and includes results of surveys of 3,645 10th and 12th graders in 65 Washington high schools. The test resulted in six draft reports on student plans for work and college, employment-related coursework, special students, extracurricular activities, knowledge of post-high school funding programs, and family influences. The researcher concludes that the case study did not show whether management consulting was more or less cost effective than normal evaluation in WSPI, because of a lack of controls for comparison. A postscript by WSPI's director of testing and evaluation, Dr. Alfred Rasp, is attached. Also provided in appendices are the six draft reports. (RW)

No. 74 MANAGEMENT CONSULTING CASE STUDY

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PREFACE

The Research on Evaluation Program is a Northwest Regional Educational Laboratory project of research, development, testing, and training designed to create new evaluation methodologies for use in education. This document is one of a series of papers and reports produced by program staff, visiting scholars, adjunct scholars, and project collaborators--all members of a cooperative network of colleagues working on the development of new methodologies.

Can management consulting techniques provide cost effective alternatives to standard evaluation approaches? What is the cost effectiveness of using management consulting techniques in SEA evaluation unit settings? This field study addresses these questions and concludes that management consulting is a competitive approach, but due to the limited applicability of management consulting to the study exercises selected and the lack of controls for comparison, it is not possible to show conclusively that management consulting is either superior or inferior to standard evaluation approaches.

Nick L. Smith, Editor
Paper and Report Series

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MANAGEMENT CONSULTING CASE STUDY

SUMMARY

This case study explores the conjecture that management consulting is a potentially cost effective approach in some areas of evaluation.

The Washington State Superintendent of Public Instruction has augmented the national longitudinal survey: High School and Beyond with additional schools in order to develop a data bank that is statistically valid for the state. With the assistance of the state evaluation unit, the case study has been aimed at utilizing this state data bank to address educational issues of current concern to various constituencies in the state, e.g., government, educators, employers, and parents. Six brief draft papers have been prepared for subsequent revision and issue by the state evaluation unit, addressed to the topics: Plans for work and college, Future, Non-standard students, Extra-curricular activities, Finances, and Family.

The study concludes that management consulting is shown to be a competitive approach in the case setting. However, due to the limited applicability of management consulting to the case study exercise selected, and the lack of controls for comparison, it is not possible to show conclusively that management consulting is either superior or inferior to evaluation for a particular class of evaluation activities.

1. INTRODUCTION

This is the final report on the study: Management Consulting Case Study, carried out by the consultant for the Northwest Regional Educational Laboratory (NWREL), under the direction of Dr Nick Smith, Director, Research on Evaluation Program.

In this study the Program has funded the consultant to give certain specific assistance to an evaluation unit within a state education agency (SEA), in this case Washington, where the SEA is known as the Superintendent of Public Instruction (WSPI). The director of the evaluation unit is Dr Al Rasp, whose assistance in the study is very much appreciated.

The primary goal of the study was to test the cost effectiveness of management consulting techniques in a SEA evaluation unit setting. However, this goal has not been fully achieved, and reasons for this are discussed later. Nevertheless, useful results have been obtained.

The next section describes the selection and conduct of the SEA evaluation exercise, which, in fact, has to do with the exploitation of the state data bank gained from the recent national survey: High School and Beyond. This is followed by a discussion of the results, with particular emphasis upon what can be learned from the exercise. Finally there is a postscript written by Dr Rasp, in which he comments on the exercise from the point of view of a SEA evaluation unit director.

Appendices give the results of the exercise for WSPI, in the form of a set of mini papers derived from an analysis of the survey data bank.

The consultant would like to thank Drs Smith and Rasp for their helpful comments on a draft of this report. Nevertheless, the views expressed are those of the consultant (and Dr Rasp in section 4), and are not necessarily those of the Program, nor of WSPI.

2. CONDUCT OF THE STUDY

This section describes how the overall study was carried out, and, in particular, the SEA evaluation unit exercise.

The original goal of the Program was a near experimental design, in which management consulting would be applied to a task that had been previously carried out by traditional methods, e.g., the annual evaluation of a particular program. It should then be possible to get direct comparisons between the time, costs, and effectiveness of the two methods, i.e., management consulting and traditional evaluation. However, it appears that to locate an appropriate setting from the point of view of experimental design that is also hospitable to the notion of an outsider, a non-evaluator, working on real tasks is probably more difficult than was first realized.

The first approach was for the consultant to visit Dr Rasp of WSPI and discuss possible tasks to work on. Dr Rasp has worked with the Program over a period of years and was hospitable to the idea of the case study. On the other hand, going directly to WSPI eliminated the possible consideration of other SEAs as environments for the study, and meant that what was inherently difficult to locate (an ideal case study setting) had to be discovered within WSPI. Following a consideration of the magnitude of task that could be attempted, given the Program funding, and the requirement that it be available within the time scale of the study, it became clear that there were only a few candidate tasks.

The two leading candidates were an evaluation of a program for neglected and delinquent students, and the exploitation of the state data bank gained from the recent national survey: High School and Beyond. On balance, Dr Rasp felt that the latter offered more advantage to WSPI, and a greater likelihood that the results would be readily usable, since results from "unorthodox" methods such as management consulting might not be acceptable to some of the clients of the program evaluation, who have grown used to established methods and reporting formats. While it was appreciated that the survey exploitation task was not an ideal subject for the study, it was nevertheless felt worthwhile to proceed, with a view to learning as much as possible from the exercise. (Results are discussed in the next section.)

In 1980 WSPI, with the assistance of the Association of Washington School Principals, Washington Association of Secondary School Principals, and the University of Washington, completed the first phase of the Washington High School and Beyond Study. This project supplements a national longitudinal study by James Coleman of the National Opinion Research Center on behalf of the National Center for Education Statistics. The study generated a substantial data bank of information about the opinions of high school sophomores and seniors, their family backgrounds, schooling, expectations and aspirations, achievement scores and their schools' characteristics.

To create the Washington sample, Coleman scientifically added 50 schools to the 15 originally selected for the study in Washington State. Tenth and twelfth grade

students in these 65 schools were randomly selected to participate, and a total of 3,645 responded to the questionnaire and tests. Two-person teams of professional educators visited each of the schools at least twice to orient the school coordinators and students, to administer the questionnaires and tests, and to pick up the principals' School Questionnaire.

This survey has created a huge body of data. There are two distinct approaches to exploiting it, which may be thought of as supply-oriented on the one hand, and demand-oriented on the other. (Another distinction might be between data-driven and issue-driven analysis.) In the first case we look to the data as containing certain significances wich we seek out by extensive computer analyses. This leads to a set of results which we interpret and apply. In the second case we first of all approach the various constituencies concerned with high school education in the state, find out what their major concerns are, and then see how these are addressed by the data.

This study has followed the second approach. There are a number of advantages to this in the present case. These include:

- reduction in computer analyses, through discrete analyses focused on issues of interest, rather than global exploration;

- the prior identification of interests of constituencies, so that results can be addressed to issues known to be of current concern; and

- the fact that the coverage or scope of the survey can be tested against the range of interests expressed.

The study identified four constituencies with concerns and interests in the general area addressed by the survey. For the case study attention was limited to the senior students in the sample. Telephone interviews were carried out with a number of repondents from each constituency, as shown below:

Constituency	# Respondents
Educators	7
Employers	6
Legislature	4
Parents	5
TOTAL	22

Initially it had been intended to interview more from each group, but these open-ended interviews generated a large number of issues, as well as a substantial amount of duplication, completely adequate for the modest scope of this case study.

In these interviews respondents were told briefly about the survey and the reason for calling them. They were then asked to identify and describe any issues or concerns dealing with high school education at the interface with the world of work and college that were of special interest to the constituency they represented. A number were able to answer in general, others specifically about their own concerns.

It was not possible, and probably not desirable, to maintain a strict format for each, and in most cases after the introductory remarks the interviews developed differently: for this reason they are described as open-ended. Respondents were not at a loss for words, and interviews generated on the average about five distinct topics of interest each.

Taken together, seven topics were identified as of major interest/concern to the respondents. In approximate order of emphasis and frequency of occurrence, these were:

(a) Career education. A wide variety of questions were raised, or points of view expressed, on this subject, which was generally equated with "work readiness". These included:

- high school graduates have no salable skills
- what kinds to career education programs are there in high school?
- work study programs are essential to preparing students for work
- work study may have bad side-effects on the running of schools, and hence on the basic educational programs
- high school graduates are of no use without experience
- are minority students getting the vocational message?

(b) Maturity. Success in college and work was widely attributed to a mixture of personal attributes including maturity, motivation, autonomy, and a

high level of personal expectations. Does the data bank throw any light on this view?

(c) Future. Students are going to live most of their lives in the twenty-first century. How are they being prepared for this? The state needs to create a work force capable of supporting the high technology industry sought as a major component of the future state economy. What steps are being taken in this direction?

(d) Non-standard students. How well do the schools handle both the academically gifted and the less able, and what do we know about these group?

(e) Extra-curricular activities. What is the contribution that these make to other areas of student life, e.g., are students active here less likely to be absent without consent, do they get better grades, etc.?

(f) Finances. What is the students' knowledge of, attitude to, and use or expected use of, various financial sources and means of funding?

(g) Family. The immediate family is widely regarded as extremely influential in determining the aspirations and successful transition into work or college of high school students. Does the data bank throw any light on this view?

Additional areas of interest/concern included:

- what should be the future role of grade 12?

- teachers are out of touch with the work world
- students have considerable anxiety in anticipation of college
- health education
- lack of parent involvement at the high school level, except in sports/band booster activities.

In order to keep the case study manageable, these were not followed up further.

Analyses of the data bank were planned for the seven primary topic areas listed above. However, topic (b) maturity was not capable of being addressed by the data, and so was omitted from the analysis. Topic (a) career education was not addressed directly by the data bank, and consequently was replaced by plans for work and college, which seemed a more fruitful topic for analysis.

Analyses for these six areas were designed, typically involving between five and ten variables from the student questionnaire. These were carried out at the University of Washington by Dr Brent Wholeben, using SPSS. His assistance is much appreciated.

The data bank was not originally designed to address these areas of interest, and consequently the analyses tend not to bear too closely or directly on the specific questions asked by the respondents. Nevertheless, they do give some illumination to these areas of interest/concern for various constituencies in the state.

Following the computer analysis, the six topics were then written up as draft mini papers suitable for revising and distribution by the WSPI in due course. These six papers are given as appendices to this report.

3. DISCUSSION OF RESULTS

3.1 Results for WSPI

The main results of this study, as far as WSPI is concerned, are the six draft papers in the appendices.

The topics treated by the six draft papers are real topics, of current concern to various constituencies concerned with education in Washington State. The papers, themselves, are drafts, not expected to be issued by WSPI without revision, including changes in language and emphasis, additional data known to be pertinent, and so on. The papers do not, in general, address the topics of concern directly, since the topics have been chosen after the survey. In addition, the survey is the first of a longitudinal series, and therefore much of its value is intended to lie in analyses which utilize data from two or more survey years. This has limited the potential usefulness of analyses based upon a single year's data.

Of some interest are questions of scale of effort. The national survey has a cost of about $5 million for each of the first two survey years (1980, 1982) according to the National Center for Education Statistics. The extension of the survey to the Washington State data bank cost WSPI something in the range of $50-70,000 according to Dr Rasp, when internal staff costs are counted. The present study is costing $3-4,000 including computer costs. It is difficult to say that one of these efforts represents better value for money that the others, but these figures may be of some interest to the reader. What seems to be the

case is that the more money is spent the more remote the expenditure is from specific issues and the less immediate use the data bank is. On the other hand, it would be possible to justify the entire national survey as a national research project whose research fruits are sought over a decade rather than in the short term.

In conclusion, the consultant has at modest cost been able to develop six draft analysis papers from the survey data bank. It is believed that these can usefully form the basis for a set of papers to be issued to interested parties by WSPI, and which address some current issues in the state. The quality of these has been limited by the consultant's lack of familiarity with the state educational milieu, by the coverage of the data bank, and by the lack of any feedback from interested parties prior to finalization of the text.

3.2 Results for the Program

In order to be able to assess the results of this case study from the Program's point of view, it is first of all necessary to identify the individual components of the conjecture being tested, namely that management consulting techniques may be applied cost effectively to tasks within a SEA evaluation unit setting. This is a general case of methodology testing and implies tests of the component conjectures, which include:

- it is possible to locate an hospitable SEA setting for the test;

- it is possible to select a task for the test which is suitable, in the subject sense, i.e., the proposed techniques are believed to be particularly applicable to the task, and in the operational sense, i.e., it fits the constraints of time and money assigned to the test;

- there is a control task, for example, last year's task, carried out by traditional methods, with known time, cost and outcome;

- the exercise is workable, in the sense that the outsider is able to perform the work effectively in the test SEA context; and

- the results of the test methodology compare favorably with the control in a number of dimensions, e.g., time, cost, and quality.

As was pointed out in the introduction, the primary goal of the study, in the sense of a complete test of the conjecture, was not achieved. However, a number of component conjectures are supported, and these are now discussed briefly.

(a) WSPI is an hospitable setting for the test, and demonstrates that the Program is able to find such settings, at least in part due to having developed a relationship with a number of SEAs over the years.

(b) It did prove possible to select a task for the consultant to carry out which was suitable operationally, although not particularly suitable

in terms of applicability of management consulting techniques, i.e., in subject.

(c) There was no control task, and in fact it appears that controls may be difficult to find in the operational setting of an SEA in contrast to research environments.

(d) The exercise was clearly workable, in the sense of the consultant working with the SEA evaluation unit and others to do the task, without any adverse side-effects from introducing an outsider into the SEA environment.

(e) The results are regarded by WSPI as competitive with those that might be produced by an evaluator (see Postscript), as well as having certain additional benefits. They do not, however, show the cost effectiveness of management consulting in the sense sought by the Program. The main reasons for this are the limited applicability of management consulting to the task chosen, and the absence of a control task.

Reviewing these results, there are three areas in which we can draw conclusions:

- field testing of methodologies;
- results as they stand; and
- further testing.

The concept of field testing methodologies using an experimental design in a controlled setting is characteristic of the approach of academic evaluation,

rather than SEA evaluation or management consulting. The latter understand the value of such precise testing but typically have two other considerations:

- Firstly, they are often required to make a judgement against an external deadline on insufficient or imprecise evidence. This leads to a pragmatic view of testing within the external constraints of delivering practical service to clients, on the clients' terms.

- Secondly, they are aware of the many extra-methodological factors that enter into the successful use of methodologies, and consequently may not regard exact, controlled tests of methodologies as providing information that would determine use in a particular setting.

The results of the present case study do not show conclusively that management consulting is either superior or inferior to evaluation, at least in the test setting. On the other hand, it does suggest that, at least in some cases, it may be possible to substitute other professionals for evaluators without any ill effects, and possibly with some beneficial ones (see Postscript). In questions such as this it is important to distinguish between professionals and techniques. Professionals, such as management consultants and evaluators, are distinguished by their characteristic approaches revealed over a period of time and in a variety of settings, not just by individual techniques which may be specific to certain

tasks. Consequently, if the task, as in the present case, is fairly specific, it is likely to draw broadly similar approaches from different professionals.

In considering the further testing (if any) of the conjecture that management consulting is a potentially cost effective approach to some areas of evaluation, the question of suitability must be considered, i.e., what is a suitable test, one which allows management consulting to show its special strengths. This is most likely to be some kind of ad hoc investigative analysis to support assessment, planning, or decision making within the client system. It is not likely to be primarily concerned with reporting, testing, or information systems. Because of the things that management consulting is good at, it may be difficult to find good historic controls. Finally, because of the organizationally high level at which management consulting tends to work, it may be necessary to involve the client system (e.g., program managers, SEA administration, state legislative analysts) in the test, and secure their agreement to use the results of the test, possibly with the proviso that they carry the endorsement of the evaluation unit. In this respect, testing management consulting is more difficult than testing two specific techniques, e.g., sampling alternatives, whose consequences are generally hidden from the client system.

4. POSTSCRIPT

[By Dr Alfred F. Rasp, Director, Testing and Evaluation, Washington State Superintendent of Public Instruction.]

I am pleased that the inclusion of this postscript provides an opportunity to comment briefly on the highlights of this Management Consulting Case Study from the manager's point of view. For years I have heard educational administrators claim that better professional decisions could be made if hard data existed to serve as a decision-making base. The High School and Beyond data collection activities undertaken in 1980 and 1981 resulted in a rich reservoir of data related to secondary education. Once the data were collected, however, a new question quickly emerged. How could information from the data pool be organized and reported so that it actually gained utility for policy makers?

In June 1981, as priorities were being developed for the 1981-82 efforts of the State's Testing and Evaluation Section, a special target was established:

> "Prepare and disseminate at least 10 short, high interest reports based on the High School and Beyond Study."

Two papers had been completed during the spring of 1981, but little else accomplished before the launching of the present study. The management consultant got the job done. That is not to say that we could not have done the job ourselves, but we had not completed the task over the period of many months. In addition,

the consultant brought a fresh and perhaps more objective approach to the problem, and the task was completed using very little SEA management time.

Both the new perspective and the reduction of supervision are strong selling points for the use of management consultant services.

The reduced amount of administrative involvement is an especially appealing feature when working with a management consultant. Being able to get a job done in these days with minimal interaction and supervision is crucial. In this project some lead time was required to clearly delineate the task, but the total project interaction between consultant and manager did not exceed four hours. Typically, working with regular staff involves lengthier time commitments as more discussing and sharing of ideas take place. Involvement is, of course, crucial when staff members are called upon for implementation; in this instance the goal was to provide others with useful information.

The management consultant approach offered a cost effective alternative to the use of regular staff to prepare the draft reports. The section staff did not feel anxiety over the involvement of an external consultant. A task that we all felt important was accomplished, and we are pleased with the results.

APPENDICES

A. Plans for Work and College

B. Future

C. Non-standard Students

D. Extra-curricular Activities

E. Finances

F. Family

NOTE:

These appendices are written as if they were drafts, to be revised by WSPI and issued for distribution within the state to interested parties. Emphasis is on overall meaning rather than statistical detail. Item numbers from the questionnaires are shown as [N] for ease of cross reference by WSPI and the Program, but may be omitted in future public versions. Original computer output for these analyses has been made available to WSPI separately by Dr Wholeben.

A. PLANS FOR WORK AND COLLEGE

A.1 Summary

How do high school seniors prepare for work and college? Is their planning a function of their schooling, their career goals, their family background, or other variables? These and other questions are explored in this paper, based upon an analysis of data from a recent study of over 1700 Washington high school seniors.

A.2 Introduction

In 1980 the State Superintendent's office with the cooperation and assistance of the Association of Washington School Principals, Washington Association of Secondary School Principals, and the University of Washington successfully completed the first data collection phase of the Washington High School and Beyond Study. This effort, which supplements a national longitudinal effort headed by James Coleman as chief investigator, has generated a reservoir of rich data including the opinions of high school sophomores and seniors about their background, schooling, expectations and aspirations, achievement scores and school characteristics.

To form the Washington sample Coleman scientifically added 50 schools to the 15 drawn for the national study. Following systematic sampling procedures tenth and twelfth grade students in these 65 schools were randomly selected to participate; a total of 3,645

responded to the questionnaires and tests.

The field work was carried out by well-trained two-person teams of professional educators. Each of the schools was visited by a field team at least twice to orient the school coordinators and students, to administer the questionnaires and tests, and to pick up the principal's School Questionnaire. The first phase of the data collection was completed during the spring of 1980. The report that follows is based upon an analysis of the seniors' data.

A.3 On the Job Training

Students take a variety of jobs while in school [24]. When asked how much training their most recent job afforded [26], the average rating was:

Almost no training	69%
Less than one quarter of the time	17
About a quarter of the time	7
About half of the time	3
More than half of the time	4

As might be expected, occupations such as skilled trade and hospital or health showed the highest rate of training, while those such as baby-sitting and lawn work or odd jobs showed virtually none.

A.- Plans for Work after High School

Students who intended to work after high school were asked if they had a definite job lined up for after they left school [73]. Their answers were:

Yes, continue in same job	22%
Yes, new job lined up	14
No, but have enquired	14
No, have done nothing yet	14
Do not plan to work full time	35

Thus the students are roughly divided into thirds: those who want and have a definite job, those who want and do not have one, and those who do not want one. The survey data was then analyzed to see if there were any relationships between students' plans for work and a number of other variables:

- type of high school program [2]
- time spent in programs outside of school [13]
- high school co-op or work-study programs [14]
- hours/week worked while in school [22]
- future job aspirations [62]
- father's profession [38]
- sex [83]

Most of these analyses showed some significant relationship.

Students from general or vocational programs in high school are more likely to have a job lined up, while those from academic or college preparatory programs are most likely not to want an immediate job, presumably

because they intend to study further.

Students who spent an average of half or more of the school day in programs outside of school in some kind of work or community service setting are more likely to have a definite job lined up. This was a fairly small proportion, however, since 75% of students did not spend any time outside school.

Students were asked if they had ever heard of, or participated in, a cooperative vocational program or a high school vocational education work-study program. Their answers were:

	Co-op	Work-study
Never heard of it	53%	37%
Heard, but not participated	39	48
Participated	8	15

Students who participated in these programs are more likely to have definite jobs lined up than those who did not, whether they had heard of the programs or not.

The amount of hours worked per week while in high school is positively related to the students' plans for work. About half of the students who worked over 21 hours per week wanted, and had, jobs lined up. In contrast, over half of the students who had never worked wanted, but did not have, jobs lined up. Curiously, those students who reported working 5-14

hours per week were most likely (46%) to have no plans for immediate work, presumably because of intentions to go to college.

Students were asked what occupational category best described the job that they expected or planned to have at age 30. They were also asked which job category best described their father's work. Their responses were:

Occupation	Student at age 30	Father	Change F→S
Clerical	7.4%	2.3%	+
Craftsman	8.0	13.6	-
Farmer, farm manager	1.4	3.6	-
Homemaker or housewife only	3.2	0.2	+
Laborer	2.5	9.8	-
Manager, administrator	7.7	13.9	-
Military	2.1	4.2	-
Operative (e.g., welder)	3.4	8.8	-
Professional I*	25.7	8.8	+
Professional II**	11.1	6.2	+
Proprietor of small business	5.7	9.9	-
Protective service	2.3	2.6	-
Sales	2.5	5.9	-
School teacher	4.6	2.4	+
Service (e.g., waiter)	3.1	1.8	+
Technical (e.g., technician)	8.2	5.6	+
Not working	1.0	NA	

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*Usually requiring basic undergraduate degree, e.g., accountant, engineer, social worker

**Usually requiring an advanced degree, e.g., doctor, college teacher

Almost all students expect to be working at age 30. Over one third expect to be working in some professional capacity. Compared to their fathers' generation, students have a substantially higher expectation of jobs that are: clerical, professional, school teacher, service and technical. Whether this expected change in job profile is realized is something that the survey cannot answer at this time.

There is some correlation between students' expected job at age 30 and their plans for immediate work. As might be expected, those occupations requiring college training are more likely to be coupled with no plans for immediate work, while students who both want and have a job lined up are more likely to be expecting occupations such as craftsman, farmer, laborer, manager, proprietor, sales. No clear pattern emerges when considering the influence of fathers' jobs on students' plans for immediate work.

Students' plans for immediate work are broadly similar by sex, except that female students are much less likely to have arranged a new job (as opposed to continuing one in which they are already working).

A.5 Plans for Vocational Training

About a quarter of the students indicated that they planned to go to a vocational training program of some sort. They were asked questions about their plans [114]. Their responses were:

Have applied and been accepted	19%
Have applied, but not yet been accepted	8
Program does not require advance application	8
Plan to apply later	65

The same analysis as in A.4 above was carried out to explore the possible relationship between students' plans and other variables. Plans for vocational training are less directly related to other variables than was the case for plans for immediate work. Students more likely to have applied and been accepted than others came from vocational high school programs, or had fathers who were farmers, laborers and operatives. The opposite was the case for those who had fathers who were managers, military or professional.

A.6 Plans for College

About three quarters of the students indicated that they planned to go to college. They were asked questions about whether they had actually applied for admission. Their responses were:

Yes, to one college	30%
Yes, to two or three colleges	22
Yes, to four or more colleges	7
No, the college I am planning to attend does not require advance application	4
No, I plan to apply soon	17
No, I plan to go to college later	20

The same analysis as in A.4 above was was carried out to explore the possible relationship between students' plans for college and other variables. Plans for college are related to other variables to an extent intermediate between plans for immediate work and plans for vocational training.

Students from high school academic or college preparatory programs are more likely than others to have applied.

Students who participated in special high school work-study programs are less likely than others to have applied, although the same is not true for those who participated in cooperative vocational programs.

Students' likelihood of having applied to college at the time of the questionnaire is related to their aspirations for type of job at age 30, as well as to their fathers' occupations, although less strongly. Increased likelihood of application is found for students expecting jobs as: manager, professional, proprietor, and school teacher. The same is true for students whose fathers hold jobs as: farmer, manager, professional, protective service, sales. Other occupations are generally related to reduced likelihood of application, both for students' own expectations, as well as their fathers' occupation.

B. FUTURE

B.1 Summary

The high school seniors of today will work well into the twenty-first century. This work world is often characterized by very high technology industry, and at the same time a surplus of leisure. We may therefore ask: What do the high school seniors of today study in order to be equipped for work in the next century? Are their lifestyle preferences consonant with what are envisaged to be the conditions likely to be prevailing then? These and other questions are explored in this paper, based upon an analysis of data from a recent study of over 1700 Washington high school seniors. The answers are of the greatest importance, not only for the educational process, but also for the state's long term social and economic future.

B.2 Introduction

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B.3 Coursework

The coursework experience [4] of current high school seniors during their time in grades 10-12 is shown in Table B.1. We can see that the subjects fall into a number of groups:

- a major emphasis throughout the three years of interest: English and history
- a wide but shallow coverage for most, with a few continuing for the full three years: Math and science
- many not taking any, but a few continuing for three years: Business, office or sales, trade

Percent+ of Students Taking:

SUBJECT Years:	0	.5	1	1.5	2	2.5	3	3+
Mathematics	5	7	21	11	25	7	13	5
English/literature	1	1	2	3	17	14	44	19
French	82	3	6	1	6	0	2	0
German	86	2	4	0	5	0	2	0
Spanish	71	5	10	1	9	1	3	1
History/social study	0	1	5	7	34	16	28	10
Science	4	4	39	9	23	5	12	5
Business/office/sales	24	16	23	9	13	3	9	3
Trade and industry	60	9	13	3	6	2	4	3
Technical courses	65	12	11	3	4	0	3	2
Other vocational	44	10	17	5	10	1	7	5

+Because of rounding, 0 stands for less than .5%

Table B.1: Total Coursework by Subject 10-12 Grade

and industry, technical courses, and other vocational courses

- almost none taking them: French, german and spanish

These profiles of course experience suggest that the state is not graduating a significant number of students with majors in math and science - considered by many to be absolutely essential for a future high technology work force. What must be weighed is whether a well rounded liberal arts centered education is more desirable for future social reasons, or whether such students are simply destined to be largely unemployable.

Attitudes and experience of students in a number of courses [8] are set forth in Table B.2. English is the subject that most students report doing best in, expect to find useful in their future, and find interesting. Math is experienced as a somewhat more difficult subject, although judged comparable for usefulness and interest. Trade courses are found difficult, and of relatively little use or interest. Business courses are somewhat intermediate.

B.4 General Attitudes

Students were asked a number of questions about the importance of various factors to them in their personal life or future work. Their answers are summarized in Tables B.3a and B.3b [57,63]. Most important are such factors as success, income, good marriage, steady and interesting work, and leisure.

Percent Reporting:

	Math	English or lit	Business office	Trade industry
I got mostly A's and B's in this subject	41	51	44	28
It will be useful in my future	62	63	55	27
It was interesting to me	41	45	34	27
Took no courses	3	1	23	52

Experience and Attitudes to Coursework

Table B.2

Percent Reporting:

FACTOR Importance:	not	somewhat	very
Success in work	1	13	86
Right, happy marriage	7	15	78
Money	17	57	27
Friendships	1	14	85
Steady work	2	17	82
Leader in community	54	38	8
Better opportunities for my children	10	36	55
Living close to parents	38	51	11
Getting away from area	64	27	9
Correcting social and economic inequalities	42	47	11
Having children	27	42	31
Having leisure for own interests	2	26	72

Table B.3a: Importance of Various Factors

FACTOR Importance:	not	somewhat	very
Previous experience	30	39	31
Good income	13	48	40
Job security	7	38	55
Interesting work	1	12	87
Freedom for own decisions	3	36	60
Meeting friendly people	4	33	63

Table B.3b: Importance of Various Factors in Work

Least important are moving from the area, and being a leader in the community.

B.5 Ability

As we consider the movement of students into the world of work and college, it is of some interest to see where the more able students, in terms of present grades, intend to go.

Students' expectations for progress through school, college and postgraduate training [65] are clearly correlated with their ability as measured by grades [7]. This is as one would expect.

Students were asked which types of jobs they thought that they would hold at age 30 [62]. Jobs that appear to correlate with above average ability are: professional and technical. Correlated with below average ability are: craftsman, farmer, laborer, military, operative, proprietor, protective service, sales, and service. Not clearly correlated with ability are: clerical, homemaker, manager and school teacher.

C. NON-STANDARD STUDENTS

C.1 Summary

Not all students are average. Some are more able, others less able. Some have handicaps, others have language difficulties. One current concern is how well does education designed primarily for the "average" student meet the needs of the more able and less able students. How many of these latter are there? Are they a small minority, or a substantial number? How is their experience of education different from that of the average student? These and other questions are explored in this paper, based upon an analysis of data from a recent study of over 1700 Washington high school seniors.

C.2 Introduction

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C.3 Proportion of Non-standard Students

Students were asked a number of questions about specific programs in high school [11]. Their answers showed that the proportion having taken a specific program were:

Remedial english	41%
Remedial math	37
Advanced english	27
Advanced math	24
Bilingual/bicultural	15
Family life/sex ed	56
Alcohol/drug abuse	46
Educationally handicapped	5
Physically handicapped	4

The analysis of this paper is primarily concerned with non-standard students from a scholastic point of view. Consequently the data was analyzed to yield the following breakdown:

(S)	"Average" students who took none of these programs except for possibly family life and health	26%
(R)	Students who took one of the remedial programs but not both, and were otherwise average	11
(RR)	Students who took both remedial programs, and were otherwise average	15
(A)	Students who took one of the advanced programs but not both, and were otherwise average	10
(AA)	Students who took both advanced programs, and were otherwise average	6
	Other students	32

This enables us to concentrate attention on what may be called average or standard students, remedial (in one or two subjects), and advanced (in one or two subjects). What is of interest is the relatively

large number of such non-standard students (42% of all students) compared to the scholastically standard (26%). The other category includes special education students, bilingual students, and students who reported mixed advanced/remedial experiences. It should be borne in mind that these results are self-reported and based upon students' experience with actual programs. The breakdown may therefore represent the perceptions of the school system in assigning students to programs, rather than the inherent characteristics of the students.

In what follows the first five groups of students will be abbreviated by S, R, RR, A, and AA, as shown in the breakdown above.

C.4 More about Non-standard Students

Students were asked about their experience of different kinds of instructional methods during the year of the survey [3]. Their answers suggest that students of differing ability may receive different instructional approaches.

Instructional approach	Frequency of experience compared to the average for students in group* - S	R	RR	A	AA
Lecture	-	-	-	+	+
Student-centered discussion	-	-	-	+	+
Projects and lab work	-	+	-	+	+
Writing essays, themes, etc.	-	-	-	+	+
Individualized instruction	-	+	+	+	+
Teaching machines	+	+	+	-	-

* see above

The meaning of these responses is not clear. However, the last two items accord well with what is expected: teaching machines are used mostly for remedial instruction, and individualized instruction is most likely for both remedial and advanced groups.

Students were asked about their agreement with various propositions about school [35]. Remedial and advanced students generally differed significantly in their response to these propositions as shown below.

Proposition	Relative agreement	
	Remedial	Advanced
More academic emphasis needed	-	+
More voc/tech emphasis needed	+	-
Not enough work experience	+	-
Counseling was helpful for continuing education	No difference	
Counseling was helpful for finding employment	No difference	

Thus it appears that, despite attempts to cater to the needs of these two groups, both regard the attempts as less than satisfactory and believe that more could be done.

Students were asked about their best friends [51], e.g., is it true that your best friend who is also a senior:

- gets good grades
- is interested in school
- attends class regularly
- plans to go to college
- is popular with others

Advanced students report that the first four statements are significantly more true about their friends than the remedial students, which makes sense. Popularity is evenly divided.

Students were asked about obstacles that might interfere with their education [52]:

Obstacle	Relative agreement	
	Remedial	Advanced
Courses too hard	+	-
Hard to adjust to school	+	-
Poor teaching	No difference	
Poor study habits	+	-
Courses too easy	-	+

Again we see a clear distinction in the perspective of these two groups of students.

D. EXTRA-CURRICULAR ACTIVITIES

D.1 Summary

Students' extra-curricular activities are of interest, both from the point of view of the overall degree of participation, and the possible relationship between participation and other variables, e.g., class attendance, family background. Extra-curricular activities are explored in this paper, based upon an analysis of data from a recent study of over 1700 Washington high school seniors.

D.2 Introduction

In 1980 the State Superintendent's office with the cooperation and assistance of the Association of Washington School Principals, Washington Association of Secondary School Principals, and the University of Washington successfully completed the first data collection phase of the Washington High School and Beyond Study. This effort, which supplements a national longitudinal effort headed by James Coleman as chief investigator, has generated a reservoir of rich data including the opinions of high school sophomores and seniors about their background, schooling, expectations and aspirations, achievement scores and school characteristics.

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D.3 Participation in Extra-curricular Activities

Participation in extra-curricular activities [32] is shown in Table D.1.

The data was analyzed to show the overall level of participation by the use of the following weights:

non-participation	0
participate but not leader	1
leader	2

This analysis showed a distribution of overall participation scores of:

Score	%
0	11
1-3	37
4-6	28
7-10	15
10 +	9

Percent Reporting:

ACTIVITY	none	active not leader	active leader
Varsity athletics	59	25	16
Other athletics	57	33	11
Cheer leaders, etc.	83	11	6
Debating, drama	83	13	4
Band, orchestra	85	11	4
Chorus, dance	78	17	5
Hobby clubs	76	20	5
Honorary clubs	82	16	3
School magazine, etc.	82	13	6
School subject clubs	78	18	4
Student council	78	13	9
Vocational clubs	76	16	8
Youth organizations	78	14	8
Church activities	63	27	10
Junior achievement	94	4	2

Table D.1: Extra-curricular Acivities

Thus, only 11% of students participate in none of the activities shown in Table D.1. About one third participate in one to three activities (or one plus lead in one). A few participate in numerous such activities, leading in some, with scores over 10.

D.4 Extra-curricular Activities and Other Variables

Analyses were carried out to explore the relationship between participation scores in extra-curricular activities and other variables.

Student grades [7] appear positively correlated with participation scores, which average 6.3 for those reporting mostly A grades, down to 1.5 for those reporting mostly D grades. This suggests that extra-curricular activities do not result in a reduced quality of academic work, but that ability and motivation to participate go hand in hand.

This is about the only clear correlation. When extra-curricular participation scores are analyzed in respect of:

- absenteeism [16]
- lateness [17]
- hours per week worked [22]
- job expectations at age 30 [62]
- household composition [36]
- sex [83]
- family income [101]

there is virtually no significant correlation.

E. FINANCES

E.1 Summary

Finances are an essential aspect of education. Of some interest is students' knowledge of, and attitude to, various financial support schemes and alternatives. These topics are explored in this paper, which is based upon an analysis of data from a recent study of over 1700 Washington high school seniors.

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E.3 Funding Programs Beyond High School

Students were asked about their knowledge of, and intention to use, a variety of funding programs for further study beyond high school [121]. About two thirds of the seniors answered this question, and their answers are summarized in Table E.1. On the average about four out of five students know enough about the programs concerned to answer the questions. The programs that students most intend to use are:

College or university scholarship	22%
College work-study	21
Scholarships from private sources	20
Basic educational opportunity grant (BEOG)	16
College or university student loan	15
State scholarship	12
Federal guaranteed student loan	11

Percent Reporting:

PROGRAM Plan to use:	no	yes	do not know the program
LOANS			
National student loan	66	5	28
Federal guaranteed loan	62	11	28
Nursing student loan	78	1	20
State student loan	66	7	27
College or university loan	62	15	24
Regular bank loan	77	9	14
SCHOLARSHIPS, GRANTS			
Basic educational opportunity grant (BEOG)	62	16	22
ROTC scholarship	65	7	28
Social security benefits in respect of parents	79	3	18
Nursing scholarship	76	7	16
Veterans' administration in respect of parents	82	1	17
Veterans' educational assistance	78	3	19
State scholarship	79	2	19
College or university scholarship	65	12	23
Private scholarship	55	22	19
Division of vocational rehabilitation	62	20	18
WORK PROGRAMS			
CETA sponsored	74	3	23
College work-study	56	21	23
Co-op education	69	4	27

Table E.1: Intention to Use Financial Programs

E.4 Support for First Year Beyond High School

Students were asked where they would get the money to pay living expenses and schooling expenses (if any); in the year immediately following the survey [79]. Their answers are summarized in Table E.2. They show that the greatest contribution is expected to come from:

- parents
- summer earnings
- next year's earnings
- savings

E.5 Response to Financial Need

Students were asked to imagine the following situation: "You want to go to college next year, but the college you want to attend will cost $1,500 more than you and your family and any scholarship funds can provide." They were then asked which course of action they would most likely take [78]. Their responses were:

Try to get a loan	26%
Try to get a part time job	37
Choose a college that costs less	12
Go to college later when funds become available	9
Don't know	16

Percent Reporting:

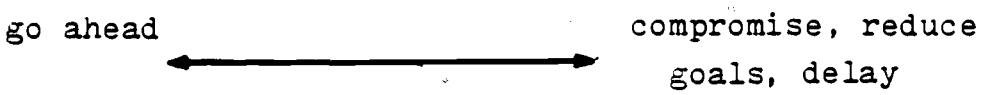
SOURCE	None	Under $300	$300- $599	$600- $1199	$1200- $2000	Over $2000
FAMILY						
Parents	28	18	14	15	8	17
Husband or wife	92	1	2	2	1	2
Other relatives	79	14	2	2	1	2
MYSELF						
Summer earnings	10	8	19	32	16	15
Earnings during year	22	11	13	19	11	26
Savings	28	20	18	16	7	10
OTHER						
State scholarship	81	4	6	5	2	2
Federal scholarship	84	3	4	4	2	2
Other scholarship	76	6	6	7	2	3
State loan	92	1	3	2	1	1
Federal loan	91	1	2	3	1	1
Other loan	90	3	3	2	1	1
Social security or VA benefits	89	2	3	2	2	3

Table E.2: Sources of Income for Next Year

These responses were analyzed in relation to a number of other variables:

- grades [7]
- job expectation at age 30 [62]
- sex [83]
- family income [101]

The responses may be considered to represent a range of approaches to the problem posed by the question, on the scale:



With this interpretation in mind, the analyses suggest that students with higher grades are more go ahead than others, and less likely to compromise. Students who expect professional or sales careers are more go ahead than others. Female students are more go ahead than male students.

F. FAMILY

F.1 Summary

The family is often assumed to play an extremely important role in students' performance in high school, and their aspirations for work and college. This topic is explored briefly in this paper, based upon an analysis of data from a recent study of over 1700 Washington high school seniors.

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F.3 Family Influence

When students are asked to give their expectation of occupation at age 30 [62], these are more likely to be the same occupation as their fathers' [38] than would be expected on the basis of chance alone. For example, about 4.7% of all students expect to be school teachers. However, the proportion of students who wish to be school teachers who also have fathers who are school teachers is 14.7%, higher than that expected by chance by a ratio of 3.2. Thus the influence of the father's occupation on the choice of the student may be measured by this ratio. If this is thought of as the influence ratio of the fathers' occupations, then values of the ratio fall into the following ranges:

1 - 2.5	clerical, craftsman, manager, professional, protective service, sales, technical
2.5 - 5	laborer, operative, proprietor, school teacher
5 - 10	military, farmer

Thus we see that the children of military and farmers are much more likely to repeat their fathers' choice of careers than is the case for other fathers' occupations.

In the matter of grades [7], students are more likely to have higher grades if their fathers' occupations are: professional, proprietor, protective service, sales, school teacher, service; and lower grades if their fathers' occupations are clerical, craftsman, laborer, military.

Students' expectations concerning the length of schooling that they will take [65], ranging from high school completion to postgraduate training, correlate closely with the amount of schooling of their fathers [39].