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HERMAN ALBERT BERLINER

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REAL ECONOMIC BENEFITS OF HIGHER EDUCATION

by

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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
II. ECONOMICS OF HIGHER EDUCATION: A REVIEW OF THE LITERATURE	7
III. THE CONTRIBUTION OF COLLEGE GRADUATES: PERSONNEL DIRECTORS	18
IV. THE CONTRIBUTION OF COLLEGE EDUCATION: GRADUATES OF 1959	50
V. CONCLUSIONS	83
VI. A BRIEF POLICY CONCLUSION	104
APPENDIXES	109
SELECTED BIBLIOGRAPHY	168

LIST OF TABLES

Table	Page
1. Capital Value at Age 14 of Life Income by Years of Schooling Completed	8
2. Mean Income for Males 25-34 Years and 45-54 Years of Age, by Level of School Completed, for the United States - 1939, 1946, 1956, and 1958	13
3. Army General Classification Test Scores . .	14
4. Occupation of Employed Persons by Years of School Completed	21
5. Contributions of College Education: Personnel Directors	29
6. Contributions of College Education - CCNY Graduates of 1959 - Business Majors . . .	60
7. Contributions of College Education - CCNY Graduates of 1959 - Engineering and Science Majors	68
8. Contributions of College Education - CCNY Graduates of 1959 - Social Science Majors	75
9. Contributions of College Education - CCNY Graduates of 1959 - Arts and Humanities Majors	77

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CHAPTER I

INTRODUCTION

Training is everything. The Peach was once a bitter almond; Cauliflower is nothing but Cabbage with a college education.

--Mark Twain

In our society, for various reasons, a college education is rapidly becoming a necessity. Yet this necessity, this product called higher education, is most difficult to define. Economists have stated that higher education is an investment that earns a rate of return in terms of income differentials. The literature, however, finds no general agreement as to the value of this rate, and the range varies quite significantly. Economists also make note of a broader form of investment that is likewise a function of higher education. Included here are personal cultural satisfactions, neighborhood effects, and the notion of an enlightened electorate, etc. This investment is troublesome to quantify as to rate of return, and is usually just mentioned.

The consumption element that is part of higher education receives limited attention in economics. Theodore W. Schultz, delivering the presidential address at the Seventy-Third Annual Meeting of the American Economic

Association, spoke of "investment in human capital."

Mr. Schultz asked himself the question of how one can "distinguish between expenditures for consumption and investment?" He spoke of the question as follows:

This distinction bristles with both conceptual and practical difficulties. We can think of three classes of expenditures: expenditures that satisfy consumer preferences and in no way enhance the capabilities under discussion--these represent pure consumption; expenditures that enhance capabilities and do not satisfy any preference underlying consumption--these represent pure investment; and expenditures that have both effects. Most relevant activities clearly are in the third class, partly consumption and partly investment, which is why the task of identifying each component is so formidable. . . .¹

College is a multi-product form. Yet, "thus far, in estimating the rate of return to schooling from earnings, all of the costs of schooling are treated as if they were an 'investment in such earnings,' and none are allocated to 'consumption'. . . ."² We will not change this oversimplification, and we cannot isolate the "consumption" element in higher education. We will, however, concentrate on the investment package called education.

There is agreement that college education (or the college degree) has benefits. The degree holder earns more per hour, and has an easier time finding and maintaining employment. Yet are these benefits a result of returns to fairly specific training (e.g., business skills) or the

¹Theodore W. Schultz, "Investment in Human Capital," AER, Vol. LI, No. 1 (March, 1961), pp. 8-13.

²Theodore W. Schultz, The Economic Value of Education (New York: Columbia University Press, 1963), p. 37.

effect of general training. We will attempt to divide the package called higher education. We will attempt to determine exactly what the real benefits are, and what part of the education is the cause.

A further question that must be asked is whether the benefits of college education are really benefits that take four years to achieve. The reduced costs of fewer years of college could (if the end product is almost the same) once again increase the rate of return. We are attempting to determine the marginal product of the extra years. What is the difference in performance and productivity between those with four and those with fewer (or no) years of college? Note we are not asking about the marginal revenue that accrues to the individual due to an extra year of education. Work in this area has already been done, and the results will be reviewed later in this dissertation. We are asking about real performance, and changes in real productivity. With the information on real performance, we may be able to determine if the existent income differentials are valid indicators of higher productivity.

What is the product of college education, and where does the economic value lie--in the education, in part of the education, or in the degree being used as a restrictive selection device? Has the college graduate become a unique product far removed from his high school counterpart? What has made the graduate unique? Must higher education be a four year undertaking? These questions have a direct

bearing on the magnitude and the cause, of the rate of return. Before society and individuals commit (additional) funds to higher education we should understand the investment contribution of higher education.

The use of questions is, one hopes, the discovery of answers. We have presented some questions, and this dissertation will now attempt to find the answers. The actual answering will take place in the following chapters. Here we will briefly preview what is to come, and also describe the methods that will be used.

Chapter II is a historical background including a review of the literature, and the direction that the economics of higher education has and has not taken.

The next chapter, one that will bring us our first indication of where the real worth of higher education (as an investment) lies, comes from personnel directors. If personnel directors accept only college graduates, or have a strong preference for them, they were asked to explain why. What is the economic contribution that a college education makes to job performance? What is the difference between those with a college degree and those who have just completed high school? Furthermore, what performance difference is there between college graduates and those who have had only some college training (about two years)? Do the benefits from college really take four years to achieve; or can they be achieved in less time? For similar jobs, is the period of on-the-job training the same for college and

non-college graduates? A questionnaire was used to obtain this information from personnel directors, and the results of this survey are presented in Chapter III.

The value of higher education can perhaps also be gauged by those that graduated ten years ago. What benefits did this group derive from their education? Were certain parts of the education most beneficial? Was the undergraduate major necessary (or helpful) in carrying out the job? Should the major be more specific, or the total education more general? Did the graduate have to undertake on-the-job training, and was this training different from the training that a non-graduate, in the same situation, has to undergo? Was higher education (or part of that education) a constant companion in handling a job, or merely the key to obtaining the job? We have once again used the technique of an empirical study, a questionnaire, to attempt to ascertain this information. The results are presented in Chapter IV.

It must be admitted immediately that our replies from personnel directors and graduates are deficient. The number of responses is limited. Our measures are imprecise and weak. The respondents to our questionnaires are not impartial, objective experts. Yet, hopefully, we will still succeed in dividing the package called education, and shedding some light on what in higher education is most valuable in aiding real performance.

Chapter V attempts to summarize and interpret the results. This chapter also attempts to consolidate our results with some of the existing economic knowledge. Chapter VI presents a brief policy conclusion.

CHAPTER II

ECONOMICS OF HIGHER EDUCATION:

A REVIEW OF THE LITERATURE

Education is a companion which no misfortune can depress--no enemy alienate--no despotism enslave. At home, a friend; abroad, an introduction; in solitude, a solace; and in society, an ornament. Without it, what is man? - a splendid slave, a reasoning savage.

--Varle

The quest for new knowledge is always built upon the foundations of past discoveries. We learn from what has been uncovered before, and then go on, hopefully, to make our own contributions. It is the purpose of this chapter of my dissertation to review briefly and sketchily what has come before--to state the important contributions in this dissertation's area of concern that have already been made to the economics of (higher) education.

In economics, as elsewhere, agreement on the part of all contributors is rarely found. Where there is disagreement, various viewpoints (but not necessarily all) will be noted. There is no attempt in this chapter to resolve differences, merely an attempt to review the state of the art.

The economics of education has put great stress on the rate of return that one receives from going to college. What then is this rate of return? H. S. Houthakker in his article "Education and Income" uses an "analysis of income received by people of different ages and educational histories during a single year,"--a cross section approach. He does not favor a particular discount rate, and his analysis does not include the concept of educational costs. His results are presented below:³

Capital Value [in thousands] at Age 14 of Life Income by Years of Schooling Completed (Based on 1949 data) [at 0, 3, 6, 8% discount rates]

					<u>After Tax</u>			
<u>Before Tax</u>	0	3	6	8	0	3	6	8
college								
4 or more	\$281	106	48	30	239	91	41	25
years								
high school	\$175	72	32	25	158	66	33	23

The results do not give us a "rate of return." However, it might be possible to determine the cost of college and then find the rate of return which equalizes the present value of the stream of college related costs, and the stream of college related returns. This is the method followed by W. Lee Hansen.

Hansen, talking of the rate of return for four years of college, and utilizing the concept of total costs, comes

³H. S. Houthakker, "Education and Income," RES, Vol. XLI, No. 1 (February, 1959), pp. 24-27.

to the conclusion that the rate is 10.2 per cent. The Hansen approach can be highlighted as follows:

In the case of investment in four years of college, the income profile for the base group, high school graduates begins at age eighteen.

The cost-income profile for the person who completes four years of college also begins at age eighteen; during the four years to age twenty-one it reflects both school and related costs, and thereafter the somewhat higher income profile of the college graduate. The cost income stream, the difference between these two profiles, reflects at ages eighteen to twenty-one both school and school related costs as well as opportunity costs; at ages beyond twenty-one the difference reflects the net income stream resulting from four years of college.⁴

Gary Becker talks of "most studies estimating the return to college education at about 15 per cent and elsewhere at about 5 per cent, clearly suggesting underinvestment in college education." Yet these studies "use private college costs rather than total costs, make no adjustment for differential ability of college graduates, deal only with urban white or all urban males, and use a long term interest rate to measure the rate of return elsewhere." Becker continues:

Using total costs reduces the rate of return on college to about 11 per cent; and adjusting for differential ability reduces it further to about 9 per cent and including non whites females and rural persons reduces it still further. On the other hand, the before tax rate of return, to business is much higher than the long term interest rates because of risk, and liquidity premiums and the heavy corporate income tax. The average rate

⁴W. Lee Hansen, "Total and Private Rates of Return to Investment in Schooling," JPE, Vol. LXXI, No. 2 (April, 1963), p. 131.

of return to business and to college education--adjusted for these factors--do not seem very far apart.⁵

The total cost based rate of return as determined by Hansen (10.2%) and Becker (about 11%) show fundamental agreement on their part.

"Education and Income" by Morgan and David presents a different way of looking at the rate of return. They suggested using hourly earnings as a method of comparison rather than annual earnings. They state that "annual money earnings indicate not only productivity but also reflect the unwanted unemployment of the less educated, and the desired extra leisure that can be afforded by those with more education." To convince us of the correctness of this approach they state that "we should not attribute to education differences which result from the failure to preserve full employment, nor should we undervalue extra education because some of its benefit is taken in longer vacations or shorter hours."⁶ To state that extent of education should be separated completely from unemployment is open to question. The possible rate of return in two cases--a high risk case, and a safe investment--may be the same on paper, yet the true rate of return would be lower the greater the risk. According to the authors, when "the effect of education on

⁵Gary S. Becker, "Underinvestment in College Education," AER, Vol. L, No. 2 (May, 1960), p. 349.

⁶James Morgan and Martin David, "Education and Income," QJE, Vol. LXXVII, No. 3 (August, 1963), p. 423.

hourly earnings is adjusted to account for other correlated factors, data from a 1960 cross section of the United States indicate(s) that investment in education pays a modest 4-6 per cent return." They continue:

The implication is that much of the value of education lies in the security and stability of his income and the kinds of occupation (education) makes possible rather than in higher hourly earnings.⁷

We have dealt so far with the rate of return to a completed (four year) college education. It is interesting to pause and look over available information on students who have had some college education, but have not earned a degree. This question was explored by Houthakker. He determined that "the capital values increase uniformly with the level of schooling for all discount rates considered." He states:

In other words, the increment in capital value associated with each successive level of education is nearly always positive. The only exception is in "college, 1-3 years" group, which at eight per cent discount (and also after tax, at six per cent) has a lower capital value than the "High Schools, 4 years" group. Hence it may not be true, in the case of higher learning that it is better to have loved and lost than never to have loved at all.⁸

Hansen seems to be in fundamental agreement with Houthakker. Hansen's figures show that the internal rate of return "drops . . . for the first two years of college (5.4%) and

⁷Ibid., pp. 423-24.

⁸Houthakker, Education and Income, p. 27.

it then displays a significant rise with the completion of four years of college."⁹

It seems odd that there are such diminished benefits for those that have come only a part (no matter how great a part) of the way. The degree seems to have a value in, and of itself. Part of the added benefits to degree holders comes of course from I.Q. and other personal factors. "The average Stanford-Binet I.Q. for college entrants is in the neighborhood of 118, for bachelors degree recipients 123. . . ."¹⁰ There will be further discussion of this later on in this chapter.

Up to this point we have talked about a rate of return that is based on the lifetime earnings of the college graduate. Yet the phrase "lifetime earnings" is too general--we need more information as to where the college years show their strongest influence on the earning stream. According to Herman Miller "the advantage of additional years of schooling do not have a very strong immediate impact on earnings." He adds the following:

. . . the financial benefits of additional schooling tend to accumulate over time, and the greatest impact is felt during a period of peak earnings. These tendencies are clearly reflected in Table 6 [reproduced in part below] which shows the earnings at an average age of 30 (i.e. about the age of peak earnings) for men with different amounts of educational attainment. If data were

⁹Hansen, Rates of Return in Schooling, p. 134.

¹⁰Edward F. Renshaw, "Estimating the Return to Education," Review of Economics and Statistics, Vol. XLIII, No. 3, Part 1 (August, 1960), p. 320.

available, an average age of 22 might have provided a better basis for comparison.

College graduates, on the other hand, tend to work at jobs in which the possibilities of high earnings are much greater and therefore have peak earnings which on the average far exceed initial earnings.¹¹

Table* - Mean Income (or Earnings) for Males 25-34 Years and 45-54 Years of Age, By Level of School Completed, for the United States - 1939, 1946, 1956, and 1958

High School graduates	1939	1946	1949	1956	1958
25 to 34	1,335	2,335	3,246	4,813	4,909
45 to 54 years	2,256	3,744	4,689	6,104	6,295
per cent increase	69	60	44	27	28
College graduates					
25 to 34	1,956	3,237	4,122	6,307	7,152
45 to 54 years	3,575	5,242	8,116	11,702	12,269
per cent increase	83	62	97	86	72

*Miller, Annual and Lifetime Income, p. 974.

The college graduate gets the job with the greater potential. The college graduate gets the greatest pecuniary benefits of higher education during the peak earning period--out of college for 25 years. What is the contribution to the earning stream of the actual education? What is the contribution of the degree that opened the door to these job possibilities? What is the contribution of a multitude of other factors that have influence on earnings?

¹¹Herman P. Miller, "Annual and Lifetime Income in Relation to Education: 1939-59, AER, Vol. L, No. 5 (Dec., 1969), pp. 973-74.

I.Q. or, better stated, intelligence has a definite effect on the rate of return. But "our present knowledge makes it difficult to separate intelligence and schooling [nevertheless] the observed income difference(s) among the lower and higher levels of schooling undoubtedly overstate and by increasing amounts the differentials attributable to schooling."¹² We have already mentioned that the average I.Q. for those who enter college is 118, and the average I.Q. for those who graduate is 123.¹³ We also know that the average I.Q. of high school graduates is 112.0.¹⁴ Additional information on differences in intelligence is supplied in an article by D. S. Bridgman:¹⁵

Army General Classification Test Scores (110,000 Enlisted Men of Whom 82% were tested in 1944, 18% in 1946) (AGCT Distribution)*

Length of schooling	Percentiles		
	25%	50%	75%
Scores			
High School 4 years	103	113	122
College 4 years or more	117	126	139

*Source: Bridgman, Problems in Estimating, p. 181.

¹²Hansen, Rates of Return in Schooling, p. 132.

¹³Renshaw, Estimating Returns, p. 320.

¹⁴Gary Becker, Human Capital (New York: Columbia University Press, 1964), p. 125.

¹⁵D. S. Bridgman, "Problems in Estimating the Monetary Value of College Education," Review of Economics and Statistics, Vol. XLII, No. 3, Part 2, Supplement (August, 1960), p. 181.

To the already mentioned factor of intelligence, Houthakker adds the idea that college graduates also come from families with higher income. He states that "both these factors increase the chance of entering and completing college; both also increase the expected lifetime income in the absence of college education." He adds that "this is particularly true for the second factor, if only because a prosperous family background will normally lead to the inheritance of property income."¹⁶ Both of these factors lead to an overstatement of the returns to education. There are no doubt many other factors that affect, and perhaps also help to overstate, the returns from higher education, and education in general.

Observation of the factors mentioned above (I.Q., family income, etc.) "indicates that college graduates tend to be more 'able' than high-school graduates, apart from the effect of college education."¹⁷ Gary Becker in examining those studies that "permit some assessment of the relative importance of ability and education in explaining earning differentials," comes to the following conclusions:

By and large, it appears, ability explains only a relatively small part of the differentials and college education explains the larger part.¹⁸

It has been common in the history of health care and medicine that the effect of an illness or drug is sometimes

¹⁶Houthakker, Education and Income, p. 28.

¹⁷Becker, Human Capital, p. 154.

¹⁸Ibid., pp. 154-55.

known long before the causal factor is determined. Much scientific knowledge, psychological knowledge, and economic knowledge follows this same pattern with the effect often seen clearly by many, and the cause often hidden from all view. The economics of higher education has followed this pattern. An association between higher education and income has been determined and measured by many. Yet it is too simple a solution to say that "Higher Education" has caused this rate of return. We are not sure what part of higher education is the cause. Economics to date has accepted higher education as a package--we will attempt to divide that package. Are we dealing here with a rate of return determined by a very specific training, or is it determined by general training, or is it a rate of return brought about by a restriction--only college graduates need apply. David C. Beardslee and Donald D. O'Dowd in an article titled "Students and the Occupational World," state the following:

A large number of positions ranging from lower management and direct sales to the executive levels are accessible only on presentation of a degree bearing the proper seals and signatures. Similar changes have also taken place in the professions.

It is clear that college has become the gateway to professional and higher managerial status.¹⁹

Harris calls higher education a ticket of admission to high paying occupations. He goes further and "concede(s)

¹⁹David C. Beardslee and Donald D. O'Dowd "Students and the Occupational World" in The American College, ed. by Nevitt Sanford (First Science Edition; New York: John Wiley & Sons, Inc., 1967), p. 597.

that the condition of a degree for entry is overdone and often tends to be undemocratic in excluding many without a B.S. who are competent for particular occupations."²⁰

We will now attempt to see, from various points of view, what part of the investment in higher education earns the rate of return. We will also attempt to see if the diploma earns part of this return.

²⁰Harris, Higher Education, p. 151.

CHAPTER III

THE CONTRIBUTION OF COLLEGE GRADUATES:

PERSONNEL DIRECTORS

"Many recruiters delude themselves that they have the ability to separate the wheat from the chaff on the basis of a short interview. While a few may have some special talent for this, the soundest course for most would be to practice their art in choosing between men whose objective indices . . . indicate a higher probability of success."²¹ These indices are rank in graduating class, quality of college, and extent of extracurricular activities.²² College education, and its differences, help perform the function of separating the wheat from the chaff--college education indeed serves as a restrictive selection device.

Colleges are valuable for providing the various indices, and ATT in the above case is being realistic and pragmatic.

The Bell System has developed "Initial Management Development" for college graduates. The initial on-the-job

²¹ Personnel Research Section, American Telephone and Telegraph Company, College Achievement and Progress in Management (March, 1962), p. 10.

²² Ibid.

training program takes one year. If after this year the recruit is "adjudged to have middle management potential, a four year program of development assignments is worked out near the end of the I.M.D.P. year."²³ A five year on-the-job training program for middle management--a program longer than the actual time spent in college--is the future that faces Bell System management trainees. Therefore, since the graduates still have to undertake a five year training program, what exactly is it that colleges do for the students? More narrowly stated--what contribution does the education (or part of the education) make to the performance of employees?

This question is at best a difficult one to answer. It is complicated by the fact that the contribution may vary in different time periods. Paul Woodring explains this point as follows:

The employment officer who interviews the graduate seeking his first job is not likely to be greatly interested in the candidate's knowledge of philosophy, history, literature, or the arts. He is more likely to ask "what can you do right now?" A narrowly technical or vocationally oriented education provides the best answer for getting the first job. But twenty years later, when the same man is ready to move up to the higher echelons, his training will have become less important than his liberal education. Then the question will be "Can you make wise decisions?" Do you understand the complexities of the modern world in all their ramifications?"²⁴

²³New York Telephone, The Initial Management Development Program, p. 5.

²⁴Paul Woodring, The Higher Learning in America: A Reassessment (New York: McGraw Hill, 1968), p. 200.

What this chapter attempts to determine is the contribution of college education, as seen by personnel directors. What separates the college grads from the high school grads? Is it skill? Is it general knowledge? Is it potential? Further one must ask what separates the college grad from the person that has some college experience? Once again is it skill . . . knowledge . . . potential, etc.?

Many personnel directors should be in a position to make these comparisons. College grads and non-college grads are often working side by side, even in highly technical areas. Engineers are an example--Blank and Stigler report that "nongraduates have formed a large component of the supply of new engineers over the last thirty years." They continue:

There is no reason to believe that this component of supply will diminish rapidly in the near future.²⁵

The U.S. Department of Labor provides us with additional evidence that college graduates and non-grads are at least working in the same occupational category. Let us look first at the following broad occupational groups (including both sexes):²⁶

²⁵David Blank and George J. Stigler, The Demand and Supply of Scientific Personnel (New York: National Bureau of Economic Research, Inc., 1957), p. 87.

²⁶U.S. Department of Labor, Educational Attainment of Workers, March 1968 (Washington, D.C.: U.S. Department of Labor, 1969), p. A-13.

Occupation of Employed Persons by Years of School Completed	Per Cent of Total		
	H.S. 4 yrs.	C. 1-3 yrs.	C. 4 yrs.
Professional, technical and kindred workers	18.3	18.5	31.3
Managers, officials and proprietors, except farm	37.7	18.3	14.8
Clerical and kindred workers	60.2	18.7	3.8
Craftsmen, foremen, and kindred workers	40.8	8.4	1.3

More specific information can be gotten from the Census report on Occupation by Earnings and Education. From the category of "Professional, technical and kindred workers," let us select one specific occupation--Technical Engineer. The breakdown of all technical engineers finds there are 124,000 male technical engineers with 4 years of high school; 157,000 with 1-3 years of college; and 299,000 with four years of college. If we just select the 25 to 34 year old group, we find there are 32,000 technical engineers with 4 years of high school; 58,000 with 1-3 years of college; and 128,000 with 4 years of college.²⁷

If we move on to male chemists, we also find some overlap:²⁸

	Total 25 to 64 yrs. old	Total 25 to 34 yrs. old
H. S. 4 yrs.	8,000	2,000
College 1-3 yrs.	9,000	3,000
College 4 yrs.	22,000	9,000

²⁷U.S. Bureau of the Census, Occupation by Earnings and Education (Washington, D.C.: U.S. Government Printing Office, 1963), p. 22.

²⁸Ibid., p. 44.

Breaking down the category of "Managers, officials, proprietors, except farm," we look at "Store buyers and department heads:"²⁹

	Total 25 to 64 yrs. old	Total 25 to 34 yrs. old
H. S. 4 yrs.	53,000	14,000
College 1-3 yrs.	34,000	10,000
College 4 yrs.	23,000	11,000

For our last breakdown we select "insurance agents, brokers, and underwriters," from the broad category of "Clerical and kindred workers":³⁰

	Total 25 to 64 yrs. old	Total 25 to 34 yrs. old
H. S. 4 yrs.	93,000	29,000
College 1-3 yrs.	70,000	22,000
College 4 yrs.	54,000	24,000

In order to facilitate the desired comparison between graduates and non-graduates, I sent questionnaires to approximately 175 personnel directors chosen at random from the almost 2000 directors listed in the College Placement Annual. The Annual lists those employers who "normally recruit college graduates,"³¹ among others. Of the 175 questionnaires sent out, responses were received from 90 personnel directors. These responses--the real economic

²⁹Ibid., p. 82.

³⁰Ibid., p. 40.

³¹The College Placement Council, Inc., College Placement Annual, 1969, p. 1.

contribution of college education as seen by the personnel people--will be discussed in this chapter. First we reproduce the questionnaire and cover letter that were sent out. They are as follows:

THE CITY COLLEGE
OF
THE CITY UNIVERSITY OF NEW YORK
NEW YORK, N. Y. 10031

DEPARTMENT OF ECONOMICS

Dear Personnel Director:

Your name has been selected for a small sample of personnel directors to be contacted as part of a study which I am doing at The City University and which may be of value to you and your associates. We are attempting to gauge the contribution of college education to the performance of employees in a variety of leading business organizations.

Your response to the attached questionnaire, together with other information from various sources, will throw light on such personnel activities as hiring and promotion of persons with diverse educational qualifications. The study will also suggest changes in higher education to help improve the quality and productivity of future employees, and the effectiveness of expenditure on higher education.

Thank you for your cooperation.

Sincerely yours,



Herman Berliner
Lecturer

HB:mb
Enc.

CONTRIBUTIONS OF COLLEGE EDUCATION

This questionnaire asks for your candid opinion about college education in relation to the qualifications and performance of employees in your firm.

Please do not write your name, or your corporation's name, on the questionnaire. Do not mark more than one space on any question. Please return the questionnaire in the enclosed postage-paid envelope.

1. Total number of employees in the corporation:

- A. under 100 ()
- B. 100-500 ()
- C. 501-1000 ()
- D. 1001-2500 ()
- E. over 2500 ()

2. Classification of your corporation:

- A. agriculture and mining ()
- B. construction and manufacturing ()
- C. wholesale and retail trade/ and services ()
- D. finance ()
- E. other ()

3. Does your corporation do a "seasonal business," with proportionately large additions to the work force just for peak periods?

- A. yes ()
- B. no ()

4. The number of permanent employees in your corporation is

- A. growing rapidly ()
- B. growing moderately ()
- C. stable ()
- D. decreasing ()

composition of your employees

Questions 5-11

Please answer as follows:

- A. very substantial percentage
- B. moderate percentage
- C. small percentage
- D. not relevant to your company

- | | | | | |
|---|--------|--------|--------|--------|
| 5. engineers and scientists | A. () | B. () | C. () | D. () |
| 6. specific business skills
(such as accountancy) | A. () | B. () | C. () | D. () |
| 7. management and administration
(requiring only general
knowledge at outset of employment) | A. () | B. () | C. () | D. () |
| 8. skilled labor | A. () | B. () | C. () | D. () |
| 9. semi-skilled labor | A. () | B. () | C. () | D. () |
| 10. unskilled labor | A. () | B. () | C. () | D. () |
| 11. Do you have an overall preference for hiring college graduates? | | | | |
| A. yes | () | | | |
| B. no | () | | | |

preferences in education for potential employees

Questions 12-17

Please answer as follows:

- A. only college graduates acceptable
 B. preference for college graduates
 C. no preference
 D. preference against college grads.

- | | | | | |
|-----------------------------------|--------|--------|--------|--------|
| 12. engineers and scientists | A. () | B. () | C. () | D. () |
| 13. specific business skills | A. () | B. () | C. () | D. () |
| 14. management and administration | A. () | B. () | C. () | D. () |
| 15. skilled labor | A. () | B. () | C. () | D. () |
| 16. semi-skilled labor | A. () | B. () | C. () | D. () |
| 17. unskilled labor | A. () | B. () | C. () | D. () |

18. Are the same or similar positions being held, in your corporation, by college and non-college graduates?

- A. yes ()
 B. no ()

19. If these same or similar positions require a period of on-the-job training, then is this period the same for college and non-college graduates?

- A. yes ()
 B. no, shorter period of training for college graduates ()
 C. no, longer period of training for college graduates ()
 D. none in comparable positions ()

20. Are their salaries, all else being equal, the same?

- A. yes ()
 B. no ()
 C. none in comparable positions ()

college graduates vs. high school graduates: a comparison
 questions 21-28/ Answer only if response to question 18 is "yes"

Comparing college graduates in your firm with those who have had no college experience but are in the same or comparable jobs, have you found that college graduates, on the average

Questions 21-28

Please answer as follows

- A. yes college graduates are superior
 B. no noticeable difference between groups
 C. no, high school graduates are superior in this area

- | | | | |
|--|--------|--------|--------|
| 21. are faster learners | A. () | B. () | C. () |
| 22. have greater ability to make decisions | A. () | B. () | C. () |
| 23. have greater ability to communicate with others (speaking and writing) | A. () | B. () | C. () |
| 24. have greater general knowledge | A. () | B. () | C. () |
| 25. have learned more specific skills | A. () | B. () | C. () |
| 26. have greater capacity to grow with the firm | A. () | B. () | C. () |
| 27. are more permanent employees | A. () | B. () | C. () |
| 28. are more productive | A. () | B. () | C. () |

29. In summary, you find when comparing high school graduates to college graduates, that college graduates, on the average
- A. make far superior employees ()
 - B. make moderately superior employees ()
 - C. are "equal" employees ()
 - D. are inferior employees ()
30. You find when comparing those who have had considerable college experience (at least two years) with college graduates, that college graduates, on the average
- A. make far superior employees ()
 - B. make moderately superior employees ()
 - C. are "equal" employees ()
 - D. are inferior employees ()

college graduates vs. those with some college experience: a comparison

Comparing college graduates in your firm with those who have had some college experience (at least two years) and are in the same or comparable jobs, have you found that college graduates, on the average

Questions 31-38

Please answer as follows

- A. yes college graduates are superior
- B. no noticeable difference between groups
- C. no, students with some college experience are superior in this area

- | | | | |
|--|--------|--------|--------|
| 31. are faster learners | A. () | B. () | C. () |
| 32. have greater ability to make decisions | A. () | B. () | C. () |
| 33. have greater ability to communicate with others (speaking and writing) | A. () | B. () | C. () |
| 34. have greater general knowledge | A. () | B. () | C. () |
| 35. have learned more specific skills | A. () | B. () | C. () |
| 36. have greater capacity to grow with the firm | A. () | B. () | C. () |
| 37. are more permanent employees | A. () | B. () | C. () |
| 38. are more productive | A. () | B. () | C. () |
39. Can the benefits that your corporation derives from college graduates be acquired by a student in less than four years of college
- A. yes ()
 - B. no ()
40. If your answer to question 39 is "yes" do you think that the benefits can be imparted in
- A. three years ()
 - B. two years ()
 - C. one year ()
 - D. no benefits from college ()

41. Do you think that there is a correlation between good grades in college, and good employees?
- A. strong positive correlation ()
- B. weak positive correlation ()
- C. no correlation ()
- D. negative correlation ()
42. Would an increased availability of college graduates for your firm affect further mechanization and automation?
- A. deter ()
- B. encourage ()
- C. no effect ()

OPEN RESPONSE

1. From the point of view of an employer, what advantages are there to hiring college graduates, as compared to non-graduates?

A.

B.

2. What are some of the disadvantages, if any, to hiring college graduates, as compared to non-graduates?

A.

B.

3. We would appreciate any comments about the questionnaire or on the subject matter, that you would care to make.

Of the 90 responses, 83 were usable. The following calculations are based on all 83 responses. These summary calculations are the starting point of this discussion:

Contributions of College Education: Personnel Directors

1. Total number of employees in the corporation:

A. under 100	(1)
B. 100-500	(9)
C. 501-1000	(10)
D. 1001-2500	(20)
E. over 2500	(43)
2. Classification of your corporation:

A. agriculture and mining	(4)
B. construction and manufacturing	(25)
C. wholesale and retail trade/and services	(17)
D. finance	(11)
E. other	(25)
3. Does your corporation do a "seasonal business," with proportionately large additions to the work force just for peak periods?

A. yes	(0)
B. no	(83)
4. The number of permanent employees in your corporation is:

A. growing rapidly	(13)
B. growing moderately	(52)
C. stable	(18)
D. decreasing	(0)

composition of your employees

Questions 5-11

Please answer as follows:

NOTE:

THE FOLLOWING FIGURES
ARE ALL IN THE FORM OF
PER CENTS

- | |
|--------------------------------|
| A. very substantial percentage |
| B. moderate percentage |
| C. small percentage |
| D. not relevant to your comp. |

5. engineers and scientists A. (22.89%) B. (27.71%) C. (26.51%)
D. (22.89%)
6. specific business skills A. (10.98%) B. (43.90%) C. (42.68%)
(such as accountancy) D. (2.44%)
7. management and administration A. (17.07%) B. (50%)
(requiring only general C. (29.27%) D. (3.66%)
knowledge at outset of
employment)

8. skilled labor A. (20.99%) B. (37.04%) C. (24.69%)
 D. (17.28%)
9. semi-skilled labor A. (20.48%) B. (34.94%) C. (27.71%)
 D. (16.87%)
10. unskilled labor A. (13.25%) B. (15.66%) C. (44.58%)
 D. (26.51%)
11. Do you have an overall preference for hiring college graduates?
 A. yes 74.36%
 B. no 25.64%

Preferences in education for potential employees

Questions 12-17

Please answer as follows:

- A. only college graduates acceptable
 B. preference for college graduates
 C. no preference
 D. preference against college graduates

12. engineers and scientists A. (71.43%) B. (21.43%) C. (5.71%)
 D. (1.43%)
13. specific business skills A. (30.38%) B. (58.23%) C. (7.59%)
 D. (3.80%)
14. management and A. (37.50%) B. (61.25%) C. (1.25%)
 administration D. (0)
15. skilled labor A. (1.33%) B. (5.33%) C. (65.34%)
 D. (28%)
16. semi-skilled labor A. (0) B. (2.77%) C. (41.67%)
 D. (55.56%)
17. unskilled labor A. (0) B. (1.37%) C. (45.62%)
 D. (63.01%)
18. Are the same or similar positions being held, in your corporation, by college and non-college graduates?
 A. yes 76.83%
 B. no 23.17%
19. If these same or similar positions require a period of on-the-job training, then is this period the same for college and non-college graduates?
 A. yes 34.67%
 B. no, shorter period of training for college graduates 38.67%

- C. no, longer period of training for college graduates 4.00%
- D. none in comparable positions 22.66%

20. Are their salaries, all else being equal, the same?
- A. yes 55.70%
 - B. no 24.05%
 - C. none in comparable positions 20.25%

college graduates vs. high school graduates: a comparison
 questions 21-28/ Answer only if response to question 18 is yes. Comparing college graduates in your firm with those who have had no college experience but are in the same or comparable jobs, have you found that college graduates, on the average

Questions 21-28

Please answer as follows:

- A. yes, college graduates are superior
- B. no noticeable difference between groups
- C. no, high school graduates are superior in this area

- 21. are faster learners A. (67.80%) B. (32.20%) C. (0)
- 22. have greater ability to make decisions A. (62.06%) B. (37.94%) C. (0)
- 23. have greater ability to communicate with others (speaking and writing) A. (89.66%) B. (10.33%) C. (0)
- 24. have greater general knowledge A. (77.97%) B. (22.03%) C. (0)
- 25. have learned more specific skills A. (34.48%) B. (58.62%) C. (6.90%)
- 26. have greater capacity to grow with the firm A. (91.38%) B. (8.62%) C. (0)
- 27. are more permanent employees A. (5.08%) B. (71.19%) C. (23.73%)
- 28. are more productive A. (31.58%) B. (68.42%) C. (0)
- 29. In summary, you find when comparing high school graduates to college graduates, that college graduates, on the average
 - A. make far superior employees 30.91%
 - B. make moderately superior employees 54.545%
 - C. are "equal" employees 14.545%
 - D. are inferior employees 0

30. You find when comparing those who have had considerable college experience (at least two years) with college graduates, that college graduates, on the average
- | | |
|---------------------------------------|--------|
| A. make far superior employees | 10.17% |
| B. make moderately superior employees | 76.47% |
| C. are "equal" employees | 13.46% |
| D. are inferior employees | 0 |

college graduates vs. those with some college experience:
a comparison

Comparing college graduates in your firm with those who have had some college experience (at least two years) and are in the same or comparable jobs, have you found that college graduates, on the average

Questions 31-38

Please answer as follows:

- A. yes, college graduates are superior
B. no noticeable difference between groups
C. no, students with some college experience are superior in this area

31. are faster learners A. (52.54%) B. (47.46%) C. (0) _____
32. have greater ability
to make decisions A. (50%) B. (50%) C. (0) _____
33. have greater ability
to communicate with
others (speaking
and writing) A. (76.27%) B. (23.73%) C. (0) _____
34. have greater general
knowledge A. (72.73%) B. (27.27%) C. (0) _____
35. have learned more
specific skills A. (31.04%) B. 63.79% C. (5.17%) _____
36. have greater capacity
to grow with the firm A. (88.14%) B. (11.86%) C. (0) _____
37. are more permanent
employees A. (9.84%) B. (67.21%) C. (22.95%) _____
38. are more productive A. (22.03%) B. (76.27%) C. (1.70%) _____
39. Can the benefits that your corporation derives from college graduates be acquired by a student in less than four years of college?
- | | |
|--------|--------|
| A. yes | 49.30% |
| B. no | 50.70% |

40. If the answer to question 39 is "yes": do you think that the benefits can be imparted in
- | | |
|-----------------------------|--------|
| A. three years | 58.82% |
| B. two years | 35.29% |
| C. one year | 5.89% |
| D. no benefits from college | 0 |
41. Do you think that there is a correlation between good grades in college and good employees?
- | | |
|--------------------------------|--------|
| A. strong positive correlation | 32.10% |
| B. weak positive correlation | 53.09% |
| C. no correlation | 14.81% |
| D. negative correlation | 0 |
42. Would an increased availability of college graduates for your firm affect further mechanization and automation?³²
- | | |
|--------------|-----|
| A. deter | 0 |
| B. encourage | 30% |
| C. no effect | 70% |

We notice immediately that there is a strong overall preference for hiring college graduates (question 11), with 74 per cent of the personnel directors feeling that way. Questions 12-17 show how this preference is broken down among the different occupational categories.

One of the goals of this questionnaire was to find if college and non-college graduates are holding the same or similar position. We find this to be the case in 77 per cent of the cases. There is nothing in this question that tells us how many examples of college and non-college graduates we have working together in each corporation; nor can we tell how many different positions they occupy; nor can we tell the precise level of these positions. There might be only two examples of working together, and only one

³² Personnel directors are not that knowledgeable in this area, and therefore we will not refer to this question.

position involved in each of the corporations responding affirmatively. I am, however, convinced that in those cases where we have an affirmative response, the number of examples of college and non-college graduates working in the same (or similar) jobs is not the exception, and is perhaps the rule. I am basing my conviction on the Census data and on the fact that in certain cases, where personnel directors responded negatively to this question, they wrote in, next to the question: "with some exceptions of course," "some," "generally no." This question did not address itself to the exceptions, and I feel that the personnel directors realized this.

The question concerning the length of on-the-job training is answered in a most interesting way. According to the questionnaire results (question 19), 35 per cent of the personnel directors responding reported the same period of training (for the same job) for both college and non-college graduates. Thirty-eight per cent said the period of training was shorter for college grads, and 4.00 per cent said the period of training was shorter for non-college grads. The remaining 22 per cent of the cases had no employees in comparable positions. Omitting the 22 per cent having no comparisons, we find that in only half of the cases was the period of training shorter for college graduates. In the other half of the cases, college does not seem to have shortened the period of training for these comparable jobs.

Looking at salary, specifically those cases where there are comparable positions being held, we find that 70 per cent of the personnel directors said the salaries are the same. Keeping this statistic in our mind, we now turn and look at some of the answers to the open response question concerning "disadvantages, if any, to hiring college graduates, as compared to non-graduates." Over 25 per cent of the personnel directors felt that the salaries of the college graduates, at least initially, were too high. Some of the open response on this aspect is as follows:

Salary considerations--cause problems because of escalating "fresh-out" salaries. Also not really worth the money it takes to get them.

Very expensive in this competitive market.

Salary scale high for trainees.

Too expensive, want too much & too fast promotion.

Starting salaries are not relevant to capabilities to produce in the first year.

Within this open response question the mention of high salaries was one of the three recurrent themes which dominated this section (all responses to this question are in Appendix B). We find question 20 has told us that in 70 per cent of the cases, for the same or comparable jobs, employees receive equal salaries whether or not they are college graduates. In the open response we find that salaries for graduates are considered too high. One possible explanation for this apparent conflict is the fact

that in the open response the personnel directors were not limited to only those areas where grads and non-grads were in comparable jobs. Therefore, we may be determining that the overall picture for college graduates finds them receiving high (too high) salaries. The exclusion of non-college graduates which is due to a restrictive selection device could lead to these higher salaries.

Why do personnel directors overwhelmingly prefer college graduates? The answers to this question come from the responses to questions 21-28: the comparison of college graduates and high school graduates. The results show that the potential superiority of college graduates was considerable. If this is so, we are then finding a qualitative difference in the product which can justify a restrictive selection device. The results show that 91 per cent of the personnel directors felt that college graduates "have greater capacity to grow with the firm." Eighty-nine per cent felt that college grads have greater ability to communicate with others. Seventy-seven per cent felt that college graduates have greater general knowledge. Sixty-eight per cent felt that college graduates were faster learners. And 62 per cent felt that college graduates "have greater ability to make decisions." Yet only 32 per cent of the personnel directors felt that graduates were more productive. Restating this determination we have found that almost 70 per cent of the personnel directors felt, when comparing college graduates and non-college

students, that in the area of productivity there was "no noticeable difference between groups." It does seem, or it is believed, that college graduates have the greater potential for the future, but they do not, in the majority, have the greater productivity today. Personnel directors, at this point, must be thinking about recent hirings, and it is in this group that the productivity is believed equal.

Another statistic of great interest shows that only 34 per cent of the personnel directors felt that college graduates were superior in the area of specific skills. Non-college students do well in the areas of productivity and skills. Yet, in the areas of potential (general knowledge, ability to communicate, etc.) they are completely overshadowed. This brings forward an important economic possibility in the guise of the old debate between general education and specific (training) education. The areas of greatest mastery for our sample of college graduates is a general mastery, perhaps better stated as overall preparation. This conclusion is reinforced in the answers to open-response question one: "From the point of view of an employer, what advantages are there to hiring college graduates, as compared to non-graduates." An often times mentioned advantage was broader background knowledge. Some of the responses were as follows:

They have broader background knowledge, and theoretical knowledge to draw from and can come up with several solutions to problems.

Also the college graduate, through exposure to many courses, comes to the company with a more broad background than the non-college graduate.

They have overall greater potential for advancement and are used to learning quickly.

The college graduate has a greater general knowledge of a diversity of subjects that may prove of benefit to their employer.

Broader viewpoints--better base to grow on.

All the answers to this question will be found in Appendix C.

The area of specialization does not seem as important as a general, overall, broad training. The economic implication of this helps provide justification to reverse the trend toward more specific courses and particular areas of training. Jacques Barzun in The American University discusses the trend toward specialization:

Every specialist wants his own course; all are specialists from an early age; the sum of these specialties swells the number of courses; the number of students is static; long division is bound to reveal that each course has fewer students. Each hour of instruction thus becomes more and more expensive ³³

" Business executives and professional leaders . . . keep saying to the colleges: don't try to prepare your graduates for our techniques and routines which may change overnight. Inservice training will teach the tricks; you teach them to use their brains, work hard and be adaptable.³⁴

Our survey tends to bear out what Barzun has said. It also tends to dispute the statement by Paul Woodring

³³ Jacques Barzun, The American University (New York: Harper & Row, 1968), p. 192.

³⁴ Ibid., pp. 215-16.

near the beginning of this chapter. A general education--which would be a lower cost education--seems to have the greatest value.³⁵

General education, not job training, is the best vocational education. Training for a job is wasted if it is not used; general education is never unused.³⁶

In speaking of cost savings it is also worthwhile to look at the results of question 39. Approximately 50 per cent of the personnel directors felt that the benefits their corporations derive from college graduates can be acquired in less than four years of college. The cost saving possibilities for the institution, as well as the reduced foregone income for the student make this an attractive alternative.

Is then the two year college (or two years of college) the type of institution that gives the student all the benefits of college within a reduced time span? In this new comparison we find that the superiority of the college graduate remains. Eighty-eight per cent of the personnel directors felt that college grads "have greater capacity to grow with the firm" than those with some college experience. Seventy-six per cent felt the graduates had "greater ability to communicate" with others. Seventy-two per cent felt that the graduates had "greater general knowledge." The differences

³⁵Below, p. 88.

³⁶John S. Diekhoff, Democracy's College (New York: Harper & Row, 1950), p. 116.

(as we shall prove below) between college graduates and those with some college experience are not as great as the differences between college grads and high school grads. However, in the extremely important category of "capacity to grow with the firm," we find that 91 per cent of the personnel directors felt that college graduates were superior to those with no college, while 88 per cent felt that college graduates were superior to those with some college. Applying a Chi-square test to the results for these questions (26 and 36) we find that the differences in these results are not significant.³⁷ Potential for the future, as shown in the capacity to grow, does not seem to have been transmitted in the first two years of college. Next we move to the summary question comparing high school grads to college grads (29) and at the same time look at the responses to the summary question (30) comparing those with some college experience to those that have a degree. Question 29 told us that 31 per cent of the personnel directors felt college graduates (as opposed to high school grads) make far superior employees while 55 per cent felt grads make

37

e = Question 26: A = 54 responses B = 5

n = Question 36: A = 52 B = 7

$$\sum_{i=1}^k \frac{(n_i - e_i)^2}{e_i} = \frac{(52-54)^2}{54} + \frac{(7-5)^2}{5} = \frac{4}{54} + \frac{4}{5}$$

k-1 degrees of freedom = 1 critical region .05 = 3.841
 Difference not significant

moderately superior employees. Question 30 told us that 10 per cent of the personnel men felt that college grads were far superior to those with about two years of college experience; 76 per cent felt they were moderately superior. Contrasting the results we find there are significant³⁸ differences between these two groups (high school grads and those with some college). We can therefore determine that the group with some college is superior to the non-college group, but we can also note that capacity to grow has not shown any improvement.

If the above results are to be believed, we can have little basis for shortening the undergraduate college experience--college education seems to have a positive (and perhaps increasing) marginal product and the last years, those that deliver capacity to grow, are the most beneficial. Fifty per cent of the personnel men felt the college experience could be shortened, but the results derived above--showing the last years to be most beneficial--say the experience time-wise cannot be tampered with.

$$\begin{array}{llll}
 {}^{38}e = \text{Question 29} & A = 18 \text{ responses} & B = 32 & C = 9 \\
 n = \text{Question 30} & A = 6 & B = 45 & C = 8
 \end{array}$$

$$\sum_{i=1}^k \frac{(n_i - e_i)^2}{e_i} = \frac{(6-18)^2}{18} + \frac{(45-32)^2}{32} + \frac{(8-9)^2}{9} = \frac{144}{18} + \frac{144}{32} + \frac{1}{9}$$

k-1 degrees = 2 critical region .05 = 5.991
 Difference is significant

The analysis of college graduates and those with some college is a most difficult comparison for personnel directors--objective answers may not be as clear cut as they were in the college-no college comparison. In addition there seems to be evidence of a bias against those that have started but have not completed college. [Note: this comment would not pertain to junior college graduates.] This dissertation (page 11) presents evidence of this bias as shown by the earnings of those with some college. Further evidence of this bias comes from our open response answers. One personnel director stated that "completion of BA or BS degree indicates ability to learn and stay with problems. . . ." Another personnel director stated the following:

I am a college graduate and find college dropouts a far worse lot than high school dropouts.

There is one more point which must be stated in favor of the non-college graduate. They seem to make more permanent employees. Twenty-four per cent of the personnel directors felt that high school graduates were superior in this area (question 27). This question found non-college students, and those with some college (question 37) having their greatest superiority over college graduates. There is an economic cost involved in personnel turnover. This cost may bring some corporations to trade less potential for more permanency.

We have talked up to this point about the results in general--let us now spend a moment to talk about the questionnaire in general. We have mentioned above that personnel directors may have a bias against those who have completed only part of the college experience. We also know that most personnel directors cannot be considered impartial experts on the subject of the educational background and occupational performance. Yet, they must be well enough acquainted with the question to provide us with clear indicators of why and where college graduate employees are superior. Their responses, as channeled through the questionnaire, have only given us imperfect indicators. But they have allowed us, in the earlier pages of this chapter, to begin to develop a hypothesis on where the real worth lies in the investment package called higher education.

We now move from the general results to specifics. Because of the limited number of responses, and the crude nature of the questionnaire, we cannot place that much validity in the simple bivariate analysis which follows. Nor can we undertake any more sophisticated analysis.

We can state, as an introduction to the specifics, that the trends and conclusion established in the general summary seems to be continued when we focus on specifics. When we find the non-college graduate showing superiority in one area in a specific breakdown, we usually find him deficient in another area in the same specific breakdown.

Looking at different sized firms, we find that in the smallest size category (with any significant response) 100-500 employees, the preference for college grads is at a maximum. There is a 100 per cent preference for them as compared with the overall finding of 74 per cent. This predilection for college graduates was borne out by the response to question 18 which asks whether the same or similar positions are held by graduates and non-graduates. Only 44 per cent of the personnel directors in the 199-500 classification answered affirmatively. This compares with an overall response of 77 per cent. In the question of capacity to grow, 100 per cent of the personnel directors felt that college graduates were superior while the overall response was 91 per cent.

There are two possible and totally different explanations of this seemingly greater superiority of college graduates in the 100-500 employee category. The first is that, in a small corporation, it is possible to observe an employee more fully, and make more accurate judgments about him. This more intense observation may have brought out additional benefits of college education and the college graduate. This may have increased the desire for college graduates.

The other possibility is that small corporations, with limited resources, are less willing to experiment in the choice of their personnel.

One could perhaps present an economic argument against this stronger than average preference for college graduates. Note the results to question 27 and 37: no personnel man said that college graduates made more permanent employees. With a lack of employee permanency, high initial salaries, and a high turnover rate, a (very) small corporation may never reap the full benefits from their college graduate employees. Only if, in the long run, there is no differential movement between corporations can it be said that no firm will lose from paying the college graduates their high starting salaries.

Moving to the question of productivity (28) we find, that in the small corporation category 75 per cent of the personnel directors felt that college and non-college employees have the same productivity when doing the same job. Therefore even in the size classification showing the greatest preference for college graduates, we find that 75 per cent of the personnel men felt there was "no noticeable difference between groups." All results of the size breakdown will be found in Appendix A.

Going on to those firms with 1001-2500 employees we find that the period of on-the-job training (question 11) is shorter for college graduates according to 63 per cent of the personnel directors. In our summary result only 39 per cent said it was shorter. This would tend to indicate greater initial differences between grads and non-grads in this category. Note also that 100 per cent of the personnel

directors in this category said that college graduates "have greater capacity to grow with the firm" than either high school graduates or those with some college. Yet also evident in this category, as in our summary results, is the fact that productivity according to a majority of personnel directors is not greater for college graduates (question 28 and 38). This reinforces the evidence of what may be a bias in favor of college grads--a preference which according to productivity figures may be mostly unsubstantiated.

If we now move on to the classification by type of company we find that the category of "finance" presents the most interesting results. All of the 11 finance firms responding said there are similar positions being held by graduates and non-graduates. In the question of on-the-job training we find that 55 per cent of these personnel directors said that non-college graduates had either the same (45 per cent) or a shorter period (10 per cent) of on-the-job training. This once again reinforces the conclusion that there is for the majority no difference in productivity (for the same or similar job).

Looking further into this category of "finance" we ascertain that all of the personnel directors felt that college graduates had "greater capacity to grow with the firm." Present on-the-job training and functioning do not seem to be very good an indicator of future capacity.

Seventy-two per cent of the personnel directors in the field of wholesale and retail trade felt that college

graduates as opposed to high school graduates had greater capacity to grow. Our overall statistic for this question is 91 per cent. Yet even with the reduction in superiority in this all important area, the graduate did significantly better in the overall comparison between college and high school graduates (question 29). Even when "capacity" goes down, the overall comparison showed an increased superiority for the graduate. When we do encounter an area where the graduate is not doing as well as usual, we seem also to find another area where he is doing better. The superiority (actual and/or imagined) is not reduced.

Moving on the question which deals with the growth of permanent employees in the corporation (question 4) we find the following result. In those firms experiencing rapid growth in the number of permanent employees we note that in 74 per cent of the cases, where college and non-college graduates are doing the same or similar job, the college graduate had a shorter period of training. This compares with 50 per cent for our overall response. When growth is rapid a firm is perhaps less able to carefully select its employees. This may lead the non-college graduates to require additional training. Still 60 per cent of the personnel directors of these firms with rapidly growing employment find that the productivity for the same or similar jobs is identical between these groups.

Drawing conclusions from this chapter we note, as mentioned previously, that college graduates have the

greater potential. They gain from college greater capacity, greater general knowledge, and greater ability for the more difficult future tasks. We have already remarked that the average I.Q. for those who graduate from college is greater but not by that much.³⁹ We have already mentioned that college graduates do better on the "Army General Classification Test" but not by that much.⁴⁰ Becker has estimated that only 2 per cent of that often quoted 15 per cent return to college education is due to ability.⁴¹ The graduate takes a job, and is classed as having the greater potential. The majority have not achieved a superiority in either skills or productivity. They have doors open to them that non-college students find closed. The degree must help to create this favorable atmosphere and the favorable return. College does not necessarily add superiority in productivity, or superiority in skill. We must indeed be looking at a restriction of demand--employers want employees with (slightly) greater ability and potential. Their chance of getting them is improved if they look at the pool of graduates. The college degree is a ticket to admission.

If we ever get to the point, and we seem to be moving there, where everyone has a chance to get "higher education," we may find personnel directors looking again for a new pool

³⁹Below, p. 13.

⁴⁰Below, p. 14.

⁴¹Below, p. 9.

from which to select students of ability. Perhaps they will look at grades. I doubt this. In our question 41, we see that approximately 68 per cent of the personnel directors felt there was only a weak positive (53 per cent) or zero (15 per cent) correlation between good grades and good employees. Will personnel directors then begin to look for students with a Master's Degree? But a Master's Degree is customarily granted in some very specific area. Yet we have found that college graduates are most superior in the areas of general ability and potential, and it is this general superiority which business desires. Then business in its yen to work with a pool of better quality fish, will keep the student in school for at least an additional year. Statistics will show, if this happens, that students with a Master's Degree earn a good rate of return. But these are the same students that would have earned a good rate of return without a Master's Degree, if only they had been given a chance. Hopefully we can develop new indices of probable success--indices which will not increase the cost of education--indices which will not increase foregone earnings. Business does not think that "academicians are doing a better job than the organizations' own men could do with these able high school graduates."⁴² Yet business is demanding employees from this restricted group, and this requires a person to get more and more education. Changes are called for.

⁴²Christopher Jencks and David Riesman, The Academic Revolution (New York: Doubleday & Company Inc., 1968), p. 506.

CHAPTER IV

THE CONTRIBUTION OF COLLEGE EDUCATION:

GRADUATES OF 1959

To graduate a student must have acquired 120 units and be able to swim the length of the pool. In acquiring 120 units, it is hoped that the student has learned to think. In swimming the length of the pool, it is hoped that the student has learned to swim. Both of these requirements must be met, since it is not a case of think or swim.

--Richard Armour

The contribution of college has always been difficult to define or measure, for the problems involved in determining the contribution are indeed staggering.

Mervin B. Freedman puts one problem in the following way:

How can one say anything that is cogent systematic and accurate about college attendance? Students are rich and poor; Catholic, Protestant, and Jewish; Negro, Caucasian and Oriental; smart and not-so-smart (in fact, given the ubiquitousness of current college attendance, some students are even dumb). There are residential colleges, commuter colleges, prestigious colleges and colleges so small as to be almost unknown outside their localities.⁴³

Chapter III made clear what personnel directors feel is the contribution of college education. This time we have asked the graduate himself. We are attempting to find

⁴³Mervin B. Freedman, The College Experience (San Francisco: Jossey-Bass Inc., 1967), p. 21.

out where the graduate has been aided by the education. We concentrate on graduates of the year 1959. Most of this group have had time to establish themselves fully in an occupational setting, and most of this group must still remember their college education (and where this education has been beneficial). Herman P. Miller in his article on education and income has stated that "the financial benefits of additional schooling tend to accumulate over time, and the greatest impact is felt during the period of peak earnings."⁴⁴ He then proves his point by comparing earnings at age 30 with those during the peak period--age 50. The graduates in the present survey are about 30 years old. We have chosen them at this time so that extra monetary compensation and extra time do not distort, to any great extent, the objective effect and the subjective recollection of college. This age group seems well suited for the task.

Is this whole approach, of asking graduates, faulty? Have we asked the patient for a diagnosis which only a doctor can make. Is the methodology of asking grads what parts of college education are most valuable a weak approach that has little worth? Even though a patient cannot diagnose, he can perhaps relate which method of treatment has been of greatest help--that is, which treatment has helped him feel and function as close to normal as possible. The

⁴⁴Herman P. Miller, "Annual and Lifetime Income in Relation to Education: 1939-59," American Economic Review, Vol. L, No. 5 (December, 1960), p. 973.

graduate cannot be considered a higher education expert and this fact will weaken the validity of our results. Yet he can, through our questionnaire, speak to whether part or all or none of the education has helped him to function in his job. He should be able to indicate what in the education has been most valuable.

Questionnaires were sent to approximately 2000 graduates of The City College class of 1959. Over 700 responses were received. Before we discuss the results of this survey, we reproduce the questionnaire and the cover letter sent to the graduates. They are as follows:

THE CITY COLLEGE
of
THE CITY UNIVERSITY OF NEW YORK
New York, N. Y. 10031

DEPARTMENT OF ECONOMICS

June, 1969

Dear Graduate of 1959:

Your name has been selected for a small sample of CCNY graduates to be contacted as part of a study which I am doing at the City University. We are attempting to gauge the contribution of college education to your on-the-job performance.

Your response to the attached questionnaire, together with information from other sources, will throw light on the occupational worth of diverse educational backgrounds. The study will also suggest changes in higher education to help improve the quality and productivity of job performance, and the effectiveness of expenditures on higher education.

Since the questionnaire does not require your name, there can be no follow-up. Please therefore try to respond promptly and return the completed questionnaire in the postage free reply envelope.

Thank you for your cooperation.

Sincerely yours,

Herman Berliner
Herman Berliner
Lecturer

This questionnaire asks for your candid opinion about college education.

Please do not write your name on the questionnaire. Do not mark more than one space on any question. Please return the questionnaire in the enclosed post-paid envelope.

IF YOU ARE NOT PRESENTLY WORKING (A HOUSEWIFE, FOR EXAMPLE) OMIT QUESTIONS 1, 2, 3, 7-20.

1. Do you own all or part of the business in which you work?
A. Yes, have my own business ()
B. Yes, own part of business ()
C. No ()
2. Classification of your firm
A. agriculture and mining ()
B. construction and manufacturing ()
C. services // wholesale and retail trade ()
D. finance ()
E. other () Specify: _____
3. Classification of your occupation
A. engineer or scientist ()
B. businessman ()
C. professional ()
D. skilled worker ()
E. semi-skilled worker ()
4. Level of your education: what is the highest academic degree that you have obtained?
A. Bachelor's degree ()
B. Master's degree ()
C. Ph.D. or Ed.D. ()
E. LL.B. or J.D. ()
F. M.D., D.D.S., D.V.M. ()
5. Undergraduate average
A. A- or better ()
B. B or B+ ()
C. below B ()
6. Classification of your undergraduate major
A. arts and humanities ()
B. the physical & biological sciences and engineering ()
C. social sciences ()
D. business ()
E. professional ()
7. Which area of college training do you find most useful in your occupation? Check one only.
A. arts and humanities ()
B. the physical & biological sciences and engineering ()
C. social sciences ()
D. business ()
E. pre-professional curriculum ()

(over)

8. Which area of college training has been least useful in your occupation?
Check one only.

- A. arts and humanities ()
- B. the biological & physical sciences and engineering ()
- C. social sciences ()
- D. business ()
- E. pre-professional curriculum ()

9. Were the courses in which you received your highest grades the most valuable courses in relation to your occupation?

- A. Yes ()
- B. No ()

Contributions of College Education

Questions 10-14, please answer as follows

- A. college education has made a major contribution
- B. college education has made a minor contribution
- C. college education has made no contribution

College education, in your opinion, has helped in your employment by

10. making you a faster learner

- A. () B. () C. ()

11. giving you the ability to make decisions

- A. () B. () C. ()

12. giving you the ability to communicate with others
(speaking and writing)

- A. () B. () C. ()

13. giving you greater knowledge and/or perspective

- A. () B. () C. ()

14. giving you specific skills and specific knowledge

- A. () B. () C. ()

15. From your own point of view, what have been the advantages of a college education in your career?

- a. _____
- b. _____
- c. _____

16. Before undertaking your present position was a period of on-the-job training required?

- A. yes, a period of over 1 year ()
- B. yes, a period of 6 months to 1 year ()
- C. yes, a period of less than 6 months ()
- D. no training was required ()

17. Are the same or similar positions being held, in your job assignment by non-college graduates?
- A. yes ()
 B. no ()
 C. don't know ()
18. If your answer to question 17 is "yes," then was the period of on-the-job training for the non-college graduate
- A. longer ()
 B. the same ()
 C. shorter ()
 D. don't know ()
19. If your answer to question 17 is "yes," then in the same or similar position does the non-college graduate earn
- A. a greater salary ()
 B. the same salary ()
 C. a smaller salary ()
 D. don't know ()
20. On the average, do non-college graduates in your firm advance
- A. faster ()
 B. slower ()
 C. no difference ()
 D. don't know ()
21. Did you meet your wife (husband) in college or through college activities?
- A. yes ()
 B. no ()
 C. not married ()
22. Did you meet your present group of close friends while in college, or through college activities?
- A. yes ()
 B. no ()
23. Were your present political opinions, or your political philosophy, formed while you were in college?
- A. yes ()
 B. no ()

Various aspects of college education: College education is not any one thing such as career preparation, but rather a combination of experiences. Thinking back to your college days, please answer questions 24-28 as follows:

- | |
|--|
| A. major part of college education
B. minor part
C. no part of college education |
|--|

24. career skills A. () B. () C. ()
25. contacts leading to jobs A. () B. () C. ()
26. development of mind and personality A. () B. () C. ()
27. pursuit of good time (social activities) A. () B. () C. ()
28. wasted time A. () B. () C. ()

If we were taking part in an experiment in a physical science, and if we were attempting to gauge the effect of some input, then the methodology would utilize controlled experimentation. One sample would receive the input, another identical sample would not. We would then calculate the effect of the input, *ceteris paribus*. Unfortunately this methodology is not available to economists. With life being complicated, with changes always taking place, with so many factors involved, the answers are most difficult to assess. We are attempting to gauge the contribution of college education as seen by the graduate. We are interested in how the graduate sees the contribution--and we are concerned about the actual and potential contribution itself. At this point we are concerned about the contribution when a person's education and employment follow the most closely connected of sequences. For example, we are interested in the business major who enters the field of business, or the scientist who enters upon a career in the sciences. Undoubtedly, versatility and transferability of education is important. It would, however, be most difficult to calculate the full potential worth of a scientific training when a person enters into employment in a department store. If a person in such a case were to present certain criticisms of the education received in college, it is quite possible that his criticisms would be discounted--as different careers require different educations. However, if a person in the most ideal case--a businessman who

received his training in business, or a scientist who received his training in the sciences--were to praise or question the contribution of college (or parts of the college experience) to their career, we should pay close attention. A person who has followed the most closely connected sequence is the most logical choice to help us determine the value of the specialized part of college education. If we can prove that even when a person follows the most logical sequence, the general education is still most helpful (on-the-job), then, by inductive reasoning, we will be able to say that it is general and not specific education that is most valuable.

The first results presented will be on businessmen, and then we will talk about scientists and engineers. In accordance with the hypothesis presented above, we will discuss first those businessmen who majored in business during their college career, and those engineers and scientists who majored in engineering and science during their college career. We next look at the results from arts and humanities majors and also social science majors. In addition, there is a separate discussion on those who switched fields in Appendix E. We have made one additional restriction before computing these results--we have only considered those graduates with solely a B.A. degree. We are attempting to determine the real contribution of college (undergraduate) education in the clearest of circumstances.

There were 43 responses in which a person employed in business had majored in business while an undergraduate, and had only received a Bachelor's degree. The summary results for this category now follow:

Contributions of College Education
CCNY Graduates of 1959 - Business Majors

1. Do you own all or part of the business in which you work?

A. yes, have my own business	4.65%
B. yes, own part of business	16.28%
C. no	79.07%

2. Classification of your firm

A. agriculture and mining	2.38%
B. construction and manufacturing	35.71%
C. services//wholesale and retail trade	30.95%
D. finance	11.91%
E. other	19.05%

3. Classification of your occupation

B. BUSINESSMAN	100 %
----------------	-------

4. Level of your education: what is the highest academic degree that you have obtained?

A. BACHELOR'S DEGREE	100 %
----------------------	-------

5. Undergraduate average

A. A- or better	4.65%
B. B or B+	51.16%
C. below B	44.19%

6. Classification of your undergraduate major

D. BUSINESS	100 %
-------------	-------

7. Which area of college training do you find most useful in your occupation? Check only one.

A. arts and humanities	13.95%
B. the physical & biological sciences and engineering	0 %
C. social sciences	4.65%
D. business	81.40%
E. pre-professional curriculum	0 %

8. Which area of college training has been least useful in your occupation? Check only one.

A. arts and humanities	28.57%
B. the biological and physical sciences and engineering	57.14%
C. social sciences	11.91%
D. business	0 %
E. pre-professional curriculum	2.38%

9. Were the courses in which you received your highest grades the most valuable courses in relation to your occupation?

A. yes	56.10%
B. no	43.90%

Contributions of college education

Questions 10-14, please answer as follows:

- A. college education has made a major contribution
- B. college education has made a minor contribution
- C. college education has made no contribution

College education, in your opinion, has helped in your employment by

10. making you a faster learner

A. 46.51% B. 37.81% C. 16.28%

11. giving you the ability to make decisions

A. 35.71% B. 40.48% C. 23.81%

12. giving you the ability to communicate with others (speaking and writing)

A. 74.42% B. 20.93% C. 4.65%

13. giving you greater knowledge and/or perspective

A. 76.19% B. 21.43% C. 2.38%

14. giving you specific skills and specific knowledge

A. 46.51% B. 44.19% C. 9.30%

15. From your own point of view, what have been the advantages of a college education in your career?
See appendix D

16. Before undertaking your present position was a period of on-the-job training required?

- A. yes, a period of over 1 year 35.71%
- B. yes, a period of 6 months to 1 year 14.29%
- C. yes, a period of less than 6 months 16.67%
- D. no training was required 33.33%

17. Are the same or similar positions being held, in your job assignment, by non-college graduates?

- A. yes 36.58%
- B. no 53.68%
- C. don't know 9.76%

18. If your answer to question 17 is "yes" then was the period of on-the-job training for the non-college graduate

- A. longer 15.39%
- B. the same 46.15%
- C. shorter 0 %
- D. don't know 38.46%

19. If your answer to question 17 is "yes," then in the same or similar position does the non-graduate earn

- A. a greater salary 9.09%
- B. the same salary 54.55%
- C. a smaller salary 0 %
- D. don't know 36.36%

20. On the average, do non-college graduates in your firm advance
- | | |
|------------------|--------|
| A. faster | 5.41% |
| B. slower | 72.97% |
| C. no difference | 13.51% |
| D. don't know | 8.11% |
21. Did you meet your wife (husband) in college or through college activities?
- | | |
|----------------|--------|
| A. yes | 9.53% |
| B. no | 83.33% |
| C. not married | 7.14% |
22. Did you meet your present group of close friends while in college or through college activities?
- | | |
|--------|--------|
| A. yes | 9.76% |
| B. no | 90.24% |
23. Were your present political opinions, or your political philosophy, formed while you were in college?
- | | |
|--------|--------|
| A. yes | 20.00% |
| B. no | 80.00% |

Various aspects of college education: College education is not any one thing such as career preparation, but rather a combination of experiences. Thinking back to your college days, please answer questions 24-28 as follows:

- | | | |
|------------------------------------|--|--|
| A. major part of college education | | |
| B. minor part | | |
| C. no part of college education | | |
24. career skills
- | | | |
|-----------|-----------|----------|
| A. 42.86% | B. 50.00% | C. 7.14% |
|-----------|-----------|----------|
25. contacts leading to jobs
- | | | |
|-----------|-----------|-----------|
| A. 15.00% | B. 25.00% | C. 60.00% |
|-----------|-----------|-----------|
26. development of mind and personality
- | | | |
|-----------|-----------|----------|
| A. 68.28% | B. 26.83% | C. 4.88% |
|-----------|-----------|----------|
27. pursuit of good time (social activities)
- | | | |
|----------|-----------|-----------|
| A. 9.53% | B. 57.14% | C. 33.33% |
|----------|-----------|-----------|
28. wasted time
- | | | |
|----------|-----------|-----------|
| A. 4.88% | B. 26.83% | C. 68.29% |
|----------|-----------|-----------|

The first important statistic which must be discussed comes from question 7: Which area of college training do you find most useful in your occupation? The overwhelming choice--the choice of 81 per cent--was business. It was the business training that was of most benefit to those who entered upon a career in business. On the surface this is not unexpected. Yet upon referring to the results obtained in the last chapter we find that personnel directors felt it was the potential rather than the specific skills which distinguished the graduate. The capacity to grow with the firm and the ability to communicate were outstanding strengths for the graduates. First glance at these results show it is the specific training which graduates feel has been most valuable, perhaps because it eased the strain of beginning a job. This outcome, however, is modified later by additional statistics. First note the results of questions 12, 13, and 14. Seventy-four per cent felt that college "has made a major contribution" in giving the ability to "communicate with others"; 76 per cent felt that college "has made a major contribution" in giving "greater knowledge and/or perspective"; while only 47 per cent felt that college "has made a major contribution" in giving "specific skills and specific knowledge." Moving to the results of question 24 and 26 we find that 43 per cent felt that "career skills" were a major part of college education, while 68 per cent felt a "major part" was the "development of mind and personality." General (liberal, academic)

education is an important part of college for business students.

Further evidence in support of the value of basic general education is presented in the responses to question 15: From your own point of view, what have been the advantages of a college education in your career? One of the main themes in the response to this question went as follows:

well rounded education

well rounded

broadening of knowledge and perspective understanding of the complexities of living

it allows one to mature and develop a sense of values in a stimulating and enriched environment

improved ability to discuss and communicate

you think for yourself

All answers to this question will be found in Appendix D.

The general education seems to have been helpful to the graduates and the business skills acquired also seem to have been helpful to the graduates. Our colleges seem to be mixing general and vocational education. This is not unanticipated. Jencks and Riesman in The Academic Revolution bring out the following point:

In almost any discussion of American higher education, whether with professors, students or the general public, somebody is likely to put forward the idea that the nation's colleges have been corrupted by vocationalism. But . . . purity of motive and singlemindedness of purpose have never been the characteristic of American colleges and the question

has always how an institution mixed the academic with the vocational, not whether it did so.⁴⁵

We will discuss the mix between academic and vocational education later on in this chapter: economic analysis, that is a comparison of costs and benefits, can help answer the question of what the mix should or should not be.

We know that college education is in part an investment, and we know, troublesome as it is to identify, that there is a consumption element which is part of higher education. For our purposes we will define consumption as being the good times that are part of college. Surprisingly only 10 per cent felt that pursuit of a good time was a "major part of college education." Fifty-seven per cent felt that "good times" were a minor part of education. Consumption activities do not seem an overshadowing part of the education of the CCNY business class of '59.

Five per cent felt that wasted time was a major part of college education while 27 per cent saw it as a minor part. Wasted time activities are not consumption activities-- they do not satisfy the preference of consumers. Wasted time also does not seem to fit the definition of investment-- capabilities are not enhanced.

Good time and wasted time are part of college education. When computing the occupational return to college

⁴⁵Christopher Jencks and David Riesman, The Academic Revolution (New York: Doubleday & Company Inc., 1968), p. 199.

education the cost of the above activities should not enter the calculations.

While proving that the education of CCNY business students of the year 1959 has substantial value, we find three additional points which must be noted. Checking the results to questions 17, 18, 19 (and discounting those who "don't know") we find that 41 per cent say that similar jobs are being held by non-graduates; 75 per cent say the period of on-the-job training for these similar jobs is identical; and 86 per cent say the salary in these cases is identical. Yet, 79 per cent of the responses stated that non-graduates advance more slowly. College graduates do not seem to have been given any specific training--their rapid advancement seems due to the value of the general education (and the degree and ability difference).

From the information gained in the last chapter we find that it is finance firms that have the greatest concentration of employees with business skills (see Appendix A). In the category of "finance" we ascertain that all the personnel directors feel that college graduates had far "greater capacity to grow with the firm." A majority also felt that college graduates had not mastered any specific skills different from those with no/or some college. Personnel directors seem to be agreeing with the graduates that it is the general training that is most valuable.

Point three: we find again that the degree has an economic benefit all its own. It is almost as if the worth

of the education is secondary to the receiving of the degree. Referring to the responses to question 15 we find the following idea very much in evidence:

necessary to be considered for my position;

as an entree into positions which are closed to non-college degree holders;

a college diploma is the "open sesame" to many jobs;

as a door opener for any executive position;

it was a prerequisite to the interview.

This bears out the discrimination against the non-graduate that we determined from the questionnaire sent to the personnel directors. This discrimination was also obvious in the income statistics we presented in Chapter II--see page 11.

We move on to the 64 responses to the survey of engineers and scientists, which are as follows:

Contributions of College Education

CCNY Graduates of 1959 - Engineering and Science Majors

1. Do you own all or part of the business in which you work?

A. yes, have my own business	1.56%
B. yes, own part of business	1.56%
C. no	96.88%

2. Classification of your firm

A. agriculture and mining	0 %
B. construction and manufacturing	29.51%
C. services//wholesale and retail trade	0 %
D. finance	4.92%
E. other	65.57%

3. Classification of your occupation

A. engineer or scientist	100 %
--------------------------	-------

(64 responses)

4. Level of your education: what is the highest academic degree that you have obtained?

A. Bachelor's degree	100 %
----------------------	-------

5. Undergraduate average

A. A- or better	1.56%
B. B or B+	20.31%
C. below B	78.13%

6. Classification of your undergraduate major

B. the physical and biological sciences and engineering	100 %
---	-------

7. Which area of college training do you find most useful in your occupation? Check only one.

A. arts and humanities	1.56%
B. the physical & biological sciences and engineering	93.75%
C. social sciences	0 %
D. business	4.69%
E. pre-professional curriculum	0 %

8. Which area of college training has been least useful in your occupation? Check only one.

A. arts and humanities	57.14%
B. the biological & physical sciences and engineering	1.59%
C. social sciences	30.16%
D. business	3.17%
E. pre-professional curriculum	7.94%

9. Were the courses in which you received your highest grades the most valuable courses in relation to your occupation?

A. yes	41.27%
B. no	58.73%

Contributions of College Education

Questions 10-14, please answer as follows:

- A. college education has made a major contribution
- B. college education has made a minor contribution
- C. college education has made no contribution

College education, in your opinion, has helped in your employment by

10. making you a faster learner

A. 43.75%	B. 42.19%	C. 14.06%
-----------	-----------	-----------
11. giving you the ability to make decisions

A. 31.25%	B. 45.31%	C. 23.44%
-----------	-----------	-----------
12. giving you the ability to communicate with others (speaking and writing)

A. 46.88%	B. 42.18%	C. 10.94%
-----------	-----------	-----------
13. giving you greater knowledge and/or perspective

A. 75 %	B. 25 %	C. 0 %
---------	---------	--------
14. giving you specific skills and specific knowledge

A. 81.23%	B. 15.14%	C. 3.13%
-----------	-----------	----------
15. From your own point of view, what have been the advantages of a college education in your career?
See appendix D
16. Before undertaking your present position, was a period of on-the-job training required?

A. yes, a period of over 1 year	22.95%
B. yes, a period of 6 months to 1 year	11.475%
C. yes, a period of less than 6 months	11.475%
D. no training was required	54.10%
17. Are the same or similar positions being held, in your job assignment, by non-college graduates?

A. yes	25.00%
B. no	70.31%
C. don't know	4.69%
18. If your answer to question 17 is "yes," then was the period of on-the-job training for the non-college graduate

A. longer	23.53%
B. the same	47.06%
C. shorter	0 %
D. don't know	29.41%
19. If your answer to question 17 is "yes," then in the same or similar position does the non-college graduate earn

A. a greater salary	0 %
B. the same salary	35.29%
C. a smaller salary	47.06%
D. don't know	17.65%

20. On the average, do non-college graduates in your firm advance
- | | |
|------------------|--------|
| A. faster | 7.93% |
| B. slower | 82.54% |
| C. no difference | 1.59% |
| D. don't know | 9.93% |
21. Did you meet your wife (husband) in college or through college activities?
- | | |
|----------------|--------|
| A. yes | 11.11% |
| B. no | 79.37% |
| C. not married | 9.52% |
22. Did you meet your present group of close friends while in college, or through college activities?
- | | |
|--------|--------|
| A. yes | 6.25% |
| B. no | 93.75% |
23. Were your present political opinions, or your political philosophy, formed while you were in college?
- | | |
|--------|--------|
| A. yes | 7.94% |
| B. no | 92.06% |

Various aspects of college education: College education is not any one thing such as career preparation, but rather a combination of experiences. Thinking back to your college days, please answer questions 24-28 as follows:

- | | | |
|------------------------------------|--|--|
| A. major part of college education | | |
| B. minor part | | |
| C. no part of college education | | |
24. career skills
- | | | |
|-----------|-----------|--------|
| A. 79.69% | B. 20.31% | C. 0 % |
|-----------|-----------|--------|
25. contacts leading to jobs
- | | | |
|-----------|-----------|-----------|
| A. 17.19% | B. 28.12% | C. 54.69% |
|-----------|-----------|-----------|
26. development of mind and personality
- | | | |
|-----------|------------|-----------|
| A. 43.75% | B. 46.875% | C. 9.375% |
|-----------|------------|-----------|
27. pursuit of good time (social activities)
- | | | |
|----------|-----------|-----------|
| A. 7.94% | B. 42.86% | C. 49.20% |
|----------|-----------|-----------|
28. wasted time
- | | | |
|----------|-----------|-----------|
| A. 4.69% | B. 32.81% | C. 62.50% |
|----------|-----------|-----------|

Engineers and scientists find their specific training most valuable according to the results of this questionnaire. Almost 94 per cent stated that the physical and biological sciences and engineering were most useful in their occupation. Later on in the survey (question 14) 81 per cent said that college had made a major contribution in employment by "giving . . . specific skills and specific knowledge." Specific skills seem most useful, and it is these specific skills which are a major part of college education for this group. Eighty per cent stated, in response to question 24, that career skills were a major part of their college education. Contrast this with the fact that 44 per cent felt that "development of mind and personality" was a major part of college; 8 per cent felt that a good time was a major part; and 5 per cent felt that wasted time was a major part. In studying the business students, we find that valuable contributions were made in the general education area--in engineering and the sciences the specifics are most important. But in addition (question 13), we see that 75 per cent felt the college education has made a major contribution in giving "greater knowledge and/or perspective." In the answers to open response question 15, we find more evidence that general education is indeed valuable. One of

the prevailing themes in answering this question went as follows:

it allows me to think in a broader sense and with greater flexibility;

my college education did not necessarily give me specific skills but instead gave me the knowledge of the approach needed for successful problem solving;

develop the ability to think a problem through and stick to it even in the face of difficulties;

learning methods to attack problems;

a deeper and wider understanding of environment.

All answers to this question will be found in Appendix D.

Checking again with the results found in the last chapter, we find it is in the category of "other"⁴⁶ corporations that we find the greatest concentration of engineers and scientists. The personnel directors stated that when college graduate employees were compared to non-college graduates (doing the same or similar job), the majority of graduates could not be considered superior in their knowledge of specific skills--yet, graduates have an overwhelming edge in capacity to grow with the firm. The above statement does not give us an accurate idea of how many engineering or scientific jobs are being handled by both graduates and non-graduates. In fact, the above comparison could deal exclusively with non-engineering

⁴⁶See Appendix A.

(or non-scientific) tasks. With these qualifications in mind, we note that personnel directors are saying that the main contribution of college is not the acquisition of these specific skills for they can be gotten elsewhere. It is rather the overall preparation and the capacity to grow which makes the graduate desirable. This does not conflict with the results discussed above. The graduate has achieved some mastery of specifics and these specifics are valuable to him. But the personnel director knows of many avenues for mastery of specific skills--personnel directors want workers who also have capacity, and college seems to deliver that capacity.

Should the future education of scientists and engineers be geared toward more and more specifics? We note, of course, that increased specifics in the education, increased subdivisions in the education, make for a more expensive education. This may not be the best course for the future. "The wide range of choice available within many fields and the increasing specialization necessary in even the earliest stages of preparation pose critical problems which are responsible for many dissatisfactions on the part of both student and college."⁴⁷

Note the economic cost may be even higher than just a more expensive education. Gary Becker has mentioned that

⁴⁷W. Max Wise, They Come for the Best of Reasons - College Students Today (Washington, D.C.: American Council on Education, 1958), p. 26.

there are cases where the benefits of education go mostly to society.⁴⁸ Can a more specific education in the sciences (and engineering) reduce this return to society? In an article titled "The Education of Future Scientists," Professor J. A. Gengerelli stated the following:

The natural reaction of many investigators . . . is to restrict the field of research. As time passes, such persons write increasingly recondite papers upon smaller and smaller topics; the results become more and more precise and more and more sterile. Chasms of non-communication are thus created, not only between scientists and literate laymen, but between groups of scientists as well.

. . . the solution of a problem in one area of knowledge very often hinges upon the application of ideas, principles, or techniques from another sometimes unrelated area.⁴⁹

Our education seems geared to technicians, but it is the innovators who bring the greatest returns to society. There is no doubt that specific skills are a necessity in the sciences and engineering; the value of increasing specificity is, however, in doubt. This criticism would even be more germane in a study of graduate education.

Not all students major in business or engineering or the sciences. The social sciences, and the arts and humanities attract significant numbers and therefore these fields must be discussed. The following are the results for these groups:

⁴⁸Becker, Underinvestment in College, p. 350.

⁴⁹J. A. Gengerelli, "The Education of Future Scientists," Journal of Higher Education, Vol. XXXV, No. 2 (Feb., 1964), p. 65.

CONTRIBUTIONS OF COLLEGE EDUCATION--CCNY graduates of 1959
Social Science Majors (with only a Bachelor's Degree)
 20 responses

- | | | | | | | |
|-----|----|--------|----|--------|----|--------|
| 1. | A. | 0% | | | | |
| | B. | 5% | | | | |
| | C. | 95% | | | | |
| 2. | A. | 0% | | | | |
| | B. | 0% | | | | |
| | C. | 10.53% | | | | |
| | D. | 0% | | | | |
| | E. | 89.47% | | | | |
| 3. | C. | 100% | | | | |
| 4. | A. | 100% | | | | |
| 5. | A. | 0% | | | | |
| | B. | 40% | | | | |
| | C. | 60% | | | | |
| 6. | C. | 100% | | | | |
| 7. | A. | 10.53% | | | | |
| | B. | 0% | | | | |
| | C. | 63.16% | | | | |
| | D. | 21.05% | | | | |
| | E. | 5.26% | | | | |
| 8. | A. | 26.32% | | | | |
| | B. | 47.37% | | | | |
| | C. | 5.26% | | | | |
| | D. | 15.79% | | | | |
| | E. | 5.26% | | | | |
| 9. | A. | 78.95% | | | | |
| | B. | 21.05% | | | | |
| 10. | A. | 63.16% | B. | 26.32% | C. | 10.52% |
| 11. | A. | 31.58% | B. | 47.37% | C. | 21.05% |
| 12. | A. | 78.95% | B. | 10.52% | C. | 10.52% |
| 13. | A. | 94.74% | B. | 5.26% | C. | 0% |
| 14. | A. | 26.32% | B. | 47.37% | C. | 26.32% |
| 16. | A. | 31.58% | | | | |
| | B. | 15.79% | | | | |
| | C. | 26.32% | | | | |
| | D. | 21.05% | | | | |
| 17. | A. | 35.00% | | | | |
| | B. | 60.00% | | | | |
| | C. | 5.00% | | | | |

A COPY OF THE
 QUESTIONNAIRE
 CAN BE FOUND ON
 PAGES 54-56

18. A. 28.57%
 B. 14.28%
 C. 14.28%
 D. 42.87%

19. A. 0%
 B. 57.15%
 C. 14.28%
 D. 28.57%

20. A. 0%
 B. 53.33%
 C. 6.67%
 D. 40.00%

21. A. 25.00%
 B. 55.00%
 C. 20.00%

22. A. 5.00%
 B. 95.00%

23. A. 57.89%
 B. 42.11%

24. A. 30.00%

B. 60.00%

C. 10.00%

25. A. 5.00%

B. 30.00%

C. 65.00%

26. A. 65.00%

B. 30.00%

C. 5.00%

27. A. 20.00%

B. 50.00%

C. 30.00%

28. A. 5.00%

B. 40.00%

C. 55.55%

CONTRIBUTIONS OF COLLEGE EDUCATION--CCNY graduates of 1959
Arts and Humanities Majors (with only a Bachelor's degree)
 12 responses

1. A. 0%
B. 16.67%
C. 83.33%
2. A. 0%
B. 9.09%
C. 18.18%
D. 0%
E. 72.73%
3. C. 100%
4. A. 100%
5. A. 8.33%
B. 41.67%
C. 50.00%
6. A. 100%
7. A. 75.00%
B. 8.33%
C. 8.33%
D. 0%
E. 8.33%
8. A. 0%
B. 25.00%
C. 33.33%
D. 16.67%
E. 25.00%
9. A. 33.33%
B. 66.67%
10. A. 41.67% B. 16.67% C. 41.67%
11. A. 33.33% B. 25.00% C. 41.67%
12. A. 66.67% B. 33.33% C. 0%
13. A. 75.00% B. 25.00% C. 0%
14. A. 41.67% B. 41.67% C. 16.67%
16. A. 25.00%
B. 16.67%
C. 16.67%
D. 41.67%
17. A. 41.67%
B. 58.33%
C. 0%

18. A. 60.00%
 B. 40.00%
 C. 0%
 D. 0%

19. A. 0%
 B. 80.00%
 C. 0%
 D. 20.00%

20. A. 0%
 B. 75.00%
 C. 25.00%
 D. 0%

21. A. 0%
 B. 66.67%
 C. 33.33%

22. A. 16.67%
 B. 83.33%

23. A. 8.33%
 B. 91.67%

24. A. 8.33%
 25. A. 8.33%
 26. A. 66.67%
 27. A. 25.00%
 28. A. 25.00%

B. 75.00%
 B. 0%
 B. 25.00%
 B. 41.67%
 B. 50.00%

C. 16.67%
 C. 91.67%
 C. 8.33%
 C. 33.33%
 C. 25.00%

Analyzing the results, we find that the most valuable part of the education for both of these groups is the general education. The arts and humanities group felt as follows:

(question 12) college made a major contribution in giving the ability to communicate 67%

(question 13) college made a major contribution in giving greater knowledge and/or perspective . . . 75%

(question 14) college made a major contribution in giving specific skills or specific knowledge . . 42%

These results are strongly reinforced by the summary question which deal with various aspects of the college education. Career skills were a major part of college education for 8 per cent (question 24), while development of mind and personality (question 26) was a major part for 67 per cent. The corresponding figures for engineers and scientists are 80 per cent and 44 per cent.

The value of general education is apparent also when we look at the results for the social science majors. The social science group reacted as follows:

(question 12) college made a major contribution in giving the ability to communicate 79%

(question 13) college made a major contribution in giving greater knowledge and/or perspective . . . 95%

(question 14) college made a major contribution in giving specific skills or specific knowledge . . 26%

The summary questions for this group, as for the arts and humanities group shows that career skills (question 24) were a major part of college for only a very small segment--in this case 30 per cent; whereas 65 per cent of the social

science majors found development of mind and personality was a major part of the college experience (question 26). Specific skills and specific knowledge for these two groups is second to overall preparation.

The mix that should exist between the (general) academic and the (specific) vocational aspects of education can more easily be determined with the help of economics. Assume that at least 10 per cent of the graduates did not work in the fields related to their major. I sense that this may be an understatement of the true facts. We next note that 10 per cent of our total response came from housewives. This figure is also an understatement of the true facts. Women now make up 40 per cent of all college graduates. On average only 55 per cent remain in the labor force.⁵⁰ Therefore approximately 20 per cent of the total college graduate population is comprised of present or future housewives. The general knowledge acquired by these housewives during their college careers "has an effect on their subsequent ability to educate a family, and since much informal education takes place in the home, this effect of a woman's higher education can be significant."⁵¹ On the other hand "obsolescence in [specific] knowledge during the period of child-raising often prevents a return to

⁵⁰Department of Labor, Educational Attainment, p. A-9.

⁵¹W. Lee Hansen and Burton A. Weisbrod, Benefits, Costs and Finance of Public Higher Education, Markham Series in Public Policy Analysis (Chicago: Markham Publishing Co., 1969), p. 30.

employment at tasks for which she was initially trained."⁵²

Therefore a total of at least 30 per cent of those who have attended and graduated from college do not follow through in a field closely related to their specialized major. Specific training cannot be that advantageous to this group. With the trend to specialization very much in evidence we can expect this 30 per cent figure to increase. If we had access to a statistic for those who drop out of college and do not or cannot get a job in the field of their major, this figure of 30 per cent--those who cannot utilize the benefits of a specific education--would increase. This trend toward specialization--this cause of increasing costs--must take this figure into account. The discussion till now has only briefly mentioned the possibility of new information rendering useless previously acquired specific education. In an economic sense a trend toward specific education may bring increased wasted time and may bring increased numbers of graduates not working in their fields. And it is becoming increasingly clear that in every field of endeavor requiring college training new skills and talents must constantly be acquired after formal education has been completed.

Conclusions must vary from discipline to discipline but our existent trend toward more specialization, when the primary benefit of higher education often lies with more

⁵²Selma J. Mushkin, "Resource Requirements and Educational Obsolescence," in The Economics of Education, ed. by E.A.G. Robinson and J. E. Vaizey (New York: St. Martins Press, 1966), p. 467.

general training cannot be allowed to go forward unquestioned. The economic cost is increasing, but this increasing cost brought about by increasing specialization may not be a source of increasing returns, and may in fact reduce benefits for some. It must be made clear that this statement on the value of general as opposed to specific education is based on the courses as they existed then (and to a great extent exist now). Potentially special training could provide the greatest mental stimulation, and excellent preparation for positions. Perhaps the courses stress memorization rather than active thinking and problem solving. These courses stress "how"--perhaps they should stress "why." We must look at the quality of these specialized courses. The flaw may not lie with the specialization but rather with the method of education. More study--leading perhaps to a reversal of the present trend in some disciplines, or a change in the teaching and organization of specialization courses in other disciplines--is called for.

Education is not learning; it is the exercise
and development of the powers of the mind.

--Princeton Review

CHAPTER V

CONCLUSIONS

A college education has taught me how to learn on my own. This is more important than the actual material learned in college. In college I learned basic principles in physics, mathematics and engineering which I can use in almost any application. The basics are more important in college than applications. College broadened my outlook and personality (important in career).

--one college graduate
responding to question 15

The economics of (higher) education has dealt extensively with the monetary return received by the graduate and the non-graduate. In fact the association between higher education and income has been determined and measured in many different ways. We have information on the differences in hourly, yearly, and lifetime earnings for those with different educational and ability backgrounds. We have information on the rate of return using only private costs or using total costs. We further know at what career stage college education makes the greatest contribution to earnings. (Chapter II of this dissertation reviews some of the existing literature in the economics of education. Reflecting the literature itself, Chapter II stresses the pecuniary return associated with different levels of higher education.)

It is too simple a solution to say that "higher education" has earned this return. We are not sure what part of higher education is the cause. We have divided the package, and attempted to identify the benefits of higher education, and isolate the causes. We have concerned ourselves only with those who are presumed to have the mental ability to benefit from a four year higher education.

Setting aside those who took a program of professional education, we find the benefits of college do not always include a higher specific skill level. When identical jobs were held by college graduates and high school graduates, the productivity in the majority of cases seems equal. The skill level in the majority of these cases also seems equal, and of course the skills involved in these jobs are skills than can be acquired without college. These conclusions are verified in a book by Ivar Berg (Education and Jobs: The Great Training Robbery) published by Praeger for the Center for Urban Education. Mr. Berg's conclusions on education and worker performance can be summarized as follows:

A search of the considerable literature on productivity, absenteeism, and turnover has yielded little concrete evidence of a positive relationship between workers educational achievements and their performance records in many work setting in the private sector.^{53,54}

⁵³ Ivar Berg, Education and Jobs: The Great Training Robbery (New York: Center for Urban Education by Praeger Publishers, 1970), p. 104.

⁵⁴ Below, p. 101 (footnote 82).

Mr. Berg also comments on education and worker performance in the public sector:

There is . . . evidence to support the proposition that educational credentials as such have relatively little bearing on performance in the public sector. . . .⁵⁵

The college graduate is valuable in that he has potential--potential to grow with the firm. The potential is there, according to personnel men, because college graduates have greater ability to communicate; greater general knowledge; greater learning ability; and greater ability to make decisions.

The graduates we examined most carefully--business, science and engineering plus the arts and humanities and the social science majors--had views, regarding where the worth lies in higher education, that reinforced to a great extent the conclusions we have determined from our study of personnel directors.

While business majors felt that their business major had been valuable, they also noted the most important contributions of college were the ability to communicate and the absorption of general knowledge. Specific skills are felt to be a major contribution by a substantially smaller per cent of the total group.

The above trend was strengthened when we studied the arts and humanities plus the social science majors. Specific skills and specific knowledge for these two groups was

⁵⁵Ibid., p. 175.

far less valuable than overall preparation. For the business major, the arts and humanities major, and the social science major it is the general education that matters most.

With engineers and scientists the specifics were considered worthwhile above all else. However we must also note that the general education remains as a major benefit.

Should the whole education or the major in particular become more specific? The choice of more minute specialties force the student to make a more specific and perhaps earlier decision--this removes some degree of flexibility and may lead to greater student dissatisfaction; as well as a greater percentage of students not working in an area closely connected to the mini-major. There are already substantial numbers of graduates not working in a field connected with their majors. In Chapter IV we assumed that the number was at the very least 10 per cent. We can replace our assumptions with the facts uncovered in a study by Dael Wolfle which has determined the following:

As a percentage of the numbers of degrees in the natural sciences, 42 percent entered corresponding occupations with the percentage varying from 24 percent in the biological sciences to 68 percent for the earth sciences. In psychology the percentage is only 20 and in the social sciences 13; in the humanities and arts 24; in engineering 93; in health fields (other than medicine and dentistry) 98; business and commerce 123 and education 92. It is quite clear that a substantial number of those

who study in a particular field do not accept positions closely connected to their subjects.⁵⁶

Graduates not working in "their" field is the initial problem, but perhaps more importantly (at least in the fields of business, arts and humanities, and the social sciences) increased specialization may not be worthwhile. The students are desired for their general potential and ability. The more specific a course of study gets the fewer general competencies may be transferred to the students. In that way we may hinder the flexibility of the worker and the growth of society. Mark Blaug calls our attention to the fact that "specialization in schools starts much earlier in Britain than in America." He goes on to point out that "early specialisation is . . . one of the major causes of manpower difficulties in Britain."⁵⁷ Introducing more specifics makes for an added expense. Jacques Barzun has noted that increased specialization increases the number of courses and increases the cost of instruction.⁵⁸ The "approximate annual per student expenditure is \$1,250 for a college underclassman (stress on general

⁵⁶Seymour E. Harris, "General Problems in Education and Manpower," in Economic Aspects of Higher Education (Paris: O.E.C.D., 1964), p. 50.

⁵⁷Mark Blaug, "Approaches to Educational Planning," The Economic Journal, Vol. LXXVII, No. 306 (June, 1967), pp. 273-76.

⁵⁸Above, p. 42.

education) and \$1,800 for each college upperclassman (stress on specific education)."⁵⁹

Therefore, introducing more specifics makes for an added expense, and possibly a less worthwhile education. We must resist the trend to more specialization.

In the sciences increased specialization may hinder solution of important problems for society. The resolution of questions may only be possible with a knowledge of many fields--fields which for problem solving are inextricably interwoven.⁶⁰ Increased specialization may reduce both rates of return to the individual and rates to society. To solve problems and innovate, a very specific course may not be enough--a broad undergraduate education is still needed.

Fifty per cent of the personnel directors felt that the benefits their corporation derives from college graduates can be acquired in less than four years. The case for a higher education of less than four years (or 120 units) is strengthened when we determine that graduates felt there was a wasted time element that was part of their college experience. A shortening of the college experience would mean a lessening of the cost of college, a lessening of the time spent in college, and an increase in the time spent in the labor force.

⁵⁹Allen M. Cartter, "The Economics of Higher Education," in Contemporary Economic Issues, ed. by Neil W. Chamberlain (Homewood, Illinois: Richard D. Irwin, Inc., 1969), p. 148.

⁶⁰Above, p. 74.

Support for the proposition on the worth of the first college (general education) years, as well as support for shortening the educational experience comes from Irwin J. Lehmann. In an article titled "Changes from Freshman to Senior Years," Mr. Lehmann found the following:

Initially it would appear from the analysis of pretest and posttest data that significant changes in critical thinking ability, attitudes and values occurred during the student's four years at Michigan State University. This, however, is not the case. For the most part, the greatest magnitude of changes occurred during the freshman and sophomore years.⁶¹

If further study shows that too much specialization is indeed counterproductive and four years of higher education is indeed unnecessary, we will have the information necessary to shorten the education, without substantially reducing the benefits. Increased knowledge may also allow us to question those such as Denison that say everyone should "add one and one-half years to the time . . . spent in school . . . or, add an equivalent improvement in the quality of education."⁶² The marginal contribution of higher education seems greatest in the first two years. Therefore, for some this increased education will make a minor and unnecessary contribution. For others the increased time in

⁶¹Irwin J. Lehmann, "Changes from Freshman to Senior Years," in The College Student and His Culture, ed. by Kaoro Yamamoto (Boston: Houghton Mifflin, 1968), p. 383.

⁶²Edward F. Denison, The Sources of Economic Growth in The United States and the Alternatives Before Us, Supplementary Paper No. 13 (New York: Committee for Economic Development, 1962), p. 277.

school may bring increased specialization. But this extra specialization is not necessarily productive. Note the worth of the mini-major and the worth of increased time is open to question and even doubt.

The evidence presented seems to state that the real benefits of college can be gotten in less than the traditional 4 years--in fact the vast majority of benefits can be gotten perhaps during the freshman and sophomore years. But the results of studies by both Houthakker and Hansen presented on page 11 of this dissertation show the low level of pecuniary return for those who have completed only part of their undergraduate education. The marginal rate of return, as Hansen has stated is 13.7 per cent for the last two years of high school; 5.4 per cent for the first two years of college; and 15.6 per cent for the last two years of college.⁶³

This dissertation looked at those who had two years of college. Why is there a low marginal rate of return for those with limited college experience? Our results ascertained that potential for the future, as shown by capacity to grow, does not seem to have been transmitted to, or inherent in, those with two years of college. Yet the total superiority of the college graduate (as shown by summary questions 29 and 30) is not as great as it was in the

⁶³W. Lee Hansen, "Total and Private Rates of Return to Investment in Schooling," JPE, Vol. LXXI, No. 2 (April, 1963), p. 134.

college, non-college comparison. We have therefore determined that the group with some college is superior to the non-college group, but we have also noted that capacity to grow allegedly has not shown any improvement. Should we now state that the last years of college education have a higher marginal product (and earn a greater marginal rate of return) than the first years presumably because the last years are those that deliver capacity to grow which is most important? This explanation would fit well with traditional economics. We are taught that the maximum amount paid for the marginal unit of labor should reflect the actual contribution of that unit. Income differences should point up differences in real benefits. William G. Bowen in an article titled "Assessing the Economic Contribution of Education: An Appraisal of Alternative Approaches," has noted the following:

In general, in an economy where relative earnings are subject to the push and pull of market forces, we should certainly expect to find relatively high earnings accruing to persons possessing special skills (such as capacity to grow with the firm) which enable them to make a greater contribution than the average person.⁶⁴

But according to the proposition we have advanced on the value of general education (as well as the Lehmann study) it is the first years that have a substantially higher marginal product.

⁶⁴William G. Bowen, "Assessing the Economic Contribution of Education: An Appraisal of Alternative Approaches," in Economic Aspects of Higher Education (Paris: O.E.C.D., 1964), p. 186.

Bowen notes that the "link between relative wages and marginal productivities may well be weakened," because "some employers may choose to hire college graduates (and pay them 'college graduate' salaries) for jobs which do not require college training."⁶⁵ Why would business weaken this link? To help answer this question we must familiarize ourselves with the decision making process that personnel men follow in hiring employees--especially college graduate employees.

The personnel director in looking at the results of college education sees the graduate as a unique, valuable and expensive product that has potential. This potential (aside from the inherent differences in ability) provide some justification for the restrictions that personnel directors impose. By demanding the college graduate, the personnel directors are using a mechanism which restructures the numbers involved while presumably selecting quality. There is another justification for using college education as a selection mechanism--by this method the financial burden of selection rests not on the shoulders of the firm but rather with the prospective worker and society. In Chapter III of this dissertation we mentioned the comment by Christopher Jencks and David Reisman which stated that business does not feel "academicians are doing a better job than the organizations' own men could do,"⁶⁶ in training high school

⁶⁵Ibid.

⁶⁶Above, p. 49.

graduates. It is certain however that colleges are doing this job at a lower cost to the business. Why pay a salary or incur any costs finding out who is "more diligent, adaptable, and competent,"⁶⁷ when college can presumably serve the same function?

Expenditure on college education, and its use as a selection device would be justified if:

this selection cannot be operated at lower cost by other methods (such as general tests administered by personnel officers of large corporations).⁶⁸

Business which does not pay (fully or directly) for this selection device finds the college degree to be the most efficient method of allocation. It is increasingly hiring only college graduates for many positions.

The benefits of college as a selection device of "quality" personnel are well known to business. Business is also aware of many of the costs involved. Our results showed that no personnel director felt that college graduates made more permanent employees. This result is verified by many studies which show "a positive correlation between mobility and the number of years of high school and college training."⁶⁹ The Monthly Labor Review of September, 1969 states that white men, 25 to 34 years old, with a high school

⁶⁷Christopher Jencks and David Riesman, The Academic Revolution (New York: Doubleday & Company Inc., 1968), p. 104.

⁶⁸Andre Daniere, Higher Education in the American Economy (New York: Random House, 1964), p. 42.

⁶⁹Herbert S. Parnes, Research on Labor Mobility (New York: Social Science Research Council, 1954), p. 123.

education have spent 3.3 years (median) on their current job; those with 1-3 years of college have spent 2.8 years; and those who have 4 or more years of college have spent 2.4 years on their current job.⁷⁰ The full impact of this job mobility becomes clearest in a statement by Thomas H. Patten Jr.:

the turnover of these young people [college graduate employees] today is probably the prime managerial personnel problem.⁷¹

The full economic loss to the company of this turnover is best described by Gary Becker:

Suppose a firm paid all the specific training costs of a worker who quit after completing it. According to our earlier analysis he could have been receiving the market wage and a new employee hired at the same wage. If the new employee were not given training his marginal product would be less than that of the one who quit since presumably training raised the latter's productivity. Training could raise the new employee's productivity but would require additional expenditure by the firm.⁷²

Graduates are impatient. They are vexed to find themselves often working side by side with non-graduates. They are bothered that after college they must still undertake extensive on-the-job training. So they seek other opportunities.

⁷⁰U.S. Department of Labor, Job Tenure of Workers, January, 1968, Special Labor Force Report 112, p. 20.

⁷¹Thomas H. Patten Jr., "The College Graduate Trainee: Behavioral Science Perspectives on Managements' Prime Personnel Problem," Personnel Journal, August, 1969, p. 581.

⁷²Becker, Human Capital, p. 21.

We know that business realizes that college graduates receive higher salaries. In the 20-24 year old age group, we find that the average hourly earnings for those (male, female, white and non-white) who have completed high school was \$1.73 in 1959 while it was \$2.21 for those who had completed college and \$1.89 for those who had between one and three years of college.⁷³ College graduates are being paid approximately 30 per cent more than high school graduates; and 15 per cent more than those with some college. Our survey to personnel directors compared the salaries of those who have and have not graduated from college. The survey showed conflicting results. In 30 per cent of the cases where college graduates and non-college graduates are doing the same or similar jobs the salaries are unequal, and presumably college graduates are getting the higher salaries. A check of productivity found that in 32 per cent of the cases college graduates, doing the same or similar jobs, were thought to be more productive. Comparing these results we find no significant difference⁷⁴--personnel men seem to

⁷³Victor Fuchs, The Service Economy (New York: National Bureau of Economic Research, 1968), p. 223.

⁷⁴		<u>equal</u>	<u>unequal</u>
salaries (question 20)		44	19
productivity			
(question 28)		43	20

$$\sum_{i=1}^k \frac{(n_i - e_i)^2}{e_i}$$

k-1 degrees of freedom = 1
critical region = .05

$$\frac{(44-43)^2}{43} + \frac{(19-20)^2}{20} = \frac{1}{43} + \frac{1}{20} \quad \text{difference not significant}$$

be acting rationally and rewarding those with higher productivity. The higher salaries, presumably, are directly connected to higher productivity and not to the degree.

Yet in the open response to personnel directors we did find that salaries for graduates are considered too high. One possible explanation for this apparent conflict is the fact that in the open response the personnel directors were not limited to only those areas where graduates and non-graduates were in comparable jobs. Therefore they may be saying the overall picture for college graduates finds them receiving high (too high) salaries. Salaries, as Bowen has suggested, do not seem to be fully related to real benefits. Business should note that high school graduates are providing a valuable check on the salaries of the college graduates. Remove that check and we may lose an economic safeguard.

Why are personnel directors selecting college graduates when they are aware of the faster turnover rate, and also aware of the possibility of paying higher salaries for equal productivity? Personnel directors must base their choice of employees on less than perfect information--therefore there is an element of risk involved. Friedman has noted that people "prefer to take a certain small loss in . . . income in preference to a small chance of a large loss."⁷⁵ In the case of personnel men, and corporations,

⁷⁵Milton Friedman, Price Theory: A Provisional Text (Chicago: Aldine Publishing Company, 1962), p. 72.

what we have found suggests that business is willing to pay a certain sure sum in order to avoid an uncertain and highly improbable large loss. The salary premium paid for college graduates is a form of insurance that allows the personnel directors to avoid some risk and uncertainty to (themselves and) their corporation.

Perhaps the case for personnel directors being gamblers is equally strong. Personnel directors may see this situation as offering "the small chance of a large gain to the large chance of a small loss."⁷⁶ Business may be willing to pay a small certain sum (higher salaries for college graduates) for the opportunity to gain an uncertain large sum. It is presumably the college graduate who has "capacity to grow with the firm." Those that have the capacity will move up the managerial ladder where they will be in a position to make significant contributions to the corporation. But how many graduates get promoted into positions where they can start to make a significant contribution? As an example, we find that Bell Telephone Company, through its Initial Management Development Program, aims to have college graduates, who remain in the program for the full five years, in a middle management position at the end of that time.⁷⁷ Employee turnover is as usual a problem, but those employees who remain at the end of the five years

⁷⁶Ibid., p. 73.

⁷⁷Above, p. 19.

will be in a position to work for further advancement by making significant contributions to the corporation.

The added premium paid to college graduates serve as both an insurance policy and a lottery ticket. The same premium decreases the risk and uncertainty while opening the possibility of a large gain. There is no doubt that personnel directors are rational men who are trying to maximize the gain (or minimize the loss) to their corporations (or to themselves).

There are, however, shortcomings in the selection system that personnel men are following. One flaw in the system is eloquently described by David Hapgood:

like an arms race, this process is ultimately self-defeating. When enough people have diplomas, the diploma no longer serves to sort out applicants. The personnel man is threatened with using judgment. Terrified he escalates; but in a generation the applicants catch up with the requirements. That is why there is a longrun trend to demand higher and higher degrees for the same work.⁷⁸

Today we seem to be moving in the direction of giving everyone a chance to undertake higher education. Personnel directors will then need a new method of selection. Perhaps they will look for students with a Master's Degree. But a Master's Degree is customarily granted in some very specific area. Yet we have found that college graduates enjoy their greatest superiority in the area of general ability and potential, and it is this same general superiority that

⁷⁸David Hapgood, "Diplomaism: How We Zone People," The Washington Monthly, May, 1969, p. 7.

business desires. In fact, the responses of personnel directors and graduates, plus our proposition on general education all point to the possibility of shortening the college experience. But the need for a new selection device (more education) may serve to needlessly lengthen the educational experience. It will also serve to further weaken the link between wages and productivity. We will find a high marginal rate of return for those with a Master's Degree--a high marginal rate of return generated not by a corresponding increase in potential or capacity, but rather by the escalation of the selection device.

As long as the pecuniary gain remains favorable, the private individual will be induced to extend his educational experience, no matter how superfluous. But the cost of college is not just a private cost to the student. There are substantial additional costs involved before we can determine the total cost of college education. The nationwide figure for government contributions to "total education and general income" of public higher education institutions is 76 per cent. (Student fees contribute 13 per cent and the remainder is composed of gifts and "other" sources of income.)⁷⁹ The corresponding figure for government help to private institutions is 51 per cent. (Here the student

⁷⁹U.S. Department of Health, Education, and Welfare, Office of Education, Higher Education Finance: Selected Trend and Summary Data, OE-52009, 8 (1968).

contribution is 28 per cent, and the rest is comprised of gifts and "other" sources of income.)⁸⁰

With so much government assistance to higher education and with so many unfilled social needs, money should not be allocated to superfluous education. If business forces students to spend additional and often unnecessary years in college (getting a Master's Degree, for example) then business should and must be asked to pay an increased share of the burden. Perhaps when business discovers it is paying both higher salaries, and more of the cost of education, this trend toward increasing education will slow down. Also with business paying more of the cost, they will have a larger incentive to develop (with the aid of government) a new selection device. Since business feels it can do a better job--let them have the incentive to do so.

This dissertation has many imperfections. The methodology has been imperfect at best. We have not isolated for sex or color and we have not determined the age difference between college graduates and non-graduates in the same job. Often, we have lacked sufficient data for fully conclusive or detailed results. In particular the Census data on earnings and education contains no classification where we are certain that employees are not selected or channeled by personnel men. Therefore we could not fully verify our proposition that those with two years of college have the vast majority of real benefits.

⁸⁰Ibid., p. 9.

In addition there is the distinct possibility that our questionnaire did not compare the typical high school graduate with the typical college graduate, but rather the better high school graduate with the more mediocre college graduate. Ivar Berg, after matching jobs with educational requirements, concluded that there is a "surplus" of college graduates who "drift down" into middle level jobs. At the same time Berg points out that there is "a reduction in the number of 'less' educated people (high school graduates) who move up into middle level jobs" ⁸¹ Our comparisons were based on those college graduates that drifted down and those high school graduates that moved up. Therefore our sample cannot be considered fully representative. ⁸²

Furthermore, from looking at the Census data, we note that as the ratio of college graduates relative to high school graduates (in an occupation) decreases, the median salary for both groups also decreases. Let us take the category of engineers. Other occupational categories were examined and found unsatisfactory for the present comparison. We know from Blank and Stigler that engineers

⁸¹Berg, Education and Jobs, pp. 58-59.

⁸²This same criticism must be addressed to Ivar Berg's book. In addition, his comparisons cover only a very limited part of the range in which high school graduates and college graduates work together. This limited range of occupational examples undermines any test of supposed correlation between years of education and differential productivity--certainly they do not allow us to speak of a "great training robbery."

attempt to move into those areas where wages are highest.⁸³ The most superior student will get into the highest paid areas, and the more mediocre student will be forced into less lucrative areas. Sales engineers have the highest median income of all engineers. In the 25 to 34 year-old group, we find that the median college graduate is earning \$8,309, while the sales engineer with solely a high school diploma is getting \$7,665 (median). There are 9000 college graduate (B.S. only) sales engineers, and there are 1000 sales engineers with only a high school diploma--a 9 to 1 ratio. Looking at mechanical engineers we find a 5 to 1 ratio--five college graduates for every one with only a high school degree in the 25 to 34 year-old age group. The median salaries are \$8,030 for the college graduate (only a B.S. degree) and \$7,358 for the engineer with solely a high school diploma. With technical engineers we find a 4 to 1 ratio--the median income for college graduates being \$7,986 while it is \$6,749 for high school graduates. In the case of civil engineers we find a ratio of 3 1/2 to 1 and the median salaries are down to \$7,636 for college B.S. holders and \$5,839 for high school graduates.⁸⁴ Once again we must admit that in those areas where comparisons are most likely taking place, we may not be dealing with the best college graduates.

⁸³Blank and Stigler, The D and S of Scientific Personnel, p. 82.

⁸⁴U.S. Bureau of the Census, Occupation by Earnings and Education (Washington, D.C.: U.S. Government Printing Office, 1963), pp. 32, 30, 26, 68.

In all the above comparisons high school graduates are relatively rare, and so we are dealing with the better segment of those that have only a high school education.

Nevertheless, we have enough information to say that two trends must be watched and studied, namely, increased length of education, and enlarged but unnecessary specialized education. To allow these trends to go forward unquestioned may reduce the benefits of college, while increasing the time spent in college. Instead of increasing time, we feel a full-fledged Bachelor's degree should take less than the traditional four years. The results of this dissertation point out that we should be able, in many cases, to lessen the time spent in college--thus lowering the cost of higher education and reducing foregone income. With resources being scarce, excessive education is a misallocation which must be corrected.

Yet, for reasons of practicability, I feel we must consider the college experience as having a four-year parameter. Business (having no substitute) will not accept a watered down selection device. An education conscious public will not accept a trend to less education. The following chapter introduces a money saving policy possibility within the framework of a four-year 120 unit Bachelor's degree.

CHAPTER VI

A BRIEF POLICY CONCLUSION

College is an expensive activity, and the expense no doubt prevents some parts of the population from undertaking it. In a survey reported in the Harris book, Higher Education: Resources and Finance, it was found in the case of "Minnesota high school graduates of 1950, 58 per cent of the high ability students who were not planning to go to college reported that they would change their plans and attend college if they had additional sums of money."⁸⁵ It seems safe to say that some of these students would also go to college if the cost was reduced. The goal of this chapter is to present a policy which will lower the cost of the undergraduate education, retain the benefits that enhance overall performance, and also retain (because of the personnel director's bias) the four year time span and the B.A. degree. To achieve this goal we must first introduce some information on various tuition rates. Tuition in public 4-year colleges averaged \$299 in 1966-67; the corresponding figure for non-public institutions was \$1,273. Contrast this with the average tuition figures for 2-year

⁸⁵Seymour Harris, Higher Education: Resources and Finance (New York: McGraw Hill, 1962), p. 209.

institutions: public-\$1110; private-\$836. The projected figures for 1976-77 show that 4-year public institutions will have an average tuition of \$394 (1966-67 dollars) whereas public 2-year institutions will average \$132. Non-public 4-year institutions will charge \$1825 while non-public 2-year education will cost \$1,325.⁸⁶ The above figures show the substantially lower private costs of a junior college education.

The total educational costs are also lower for a junior college education, for both physical plant and institutional costs are reduced. The median salary for all teaching ranks combined was \$10,235 in 1967-68 for all 4-year colleges and universities. The median salary figure for all junior colleges is \$8,188.⁸⁷ The average physical plant value per student in all four year institutions in 1964 was \$5,445, but only \$2,398 for all two year institutions.⁸⁸ The human resources are lower priced for they have either less education, or education from a less desirable school. But "there is little objective evidence to prove that a degree earned at one institution guarantees greater competence than a similar degree earned at

⁸⁶Office of Education, Projections of Educational Statistics to 1976-77 (1967 Edition) (Washington, D.C.: U.S. Government Printing Office, 1968), p. 92.

⁸⁷Kenneth Simon and W. Vance Grant, Digest of Educational Statistics (1968 Edition) (Washington, D.C.: U.S. Government Printing Office, 1968), p. 81.

⁸⁸Ibid., p. 102.

another."⁸⁹ As to the significance of less education for teachers, Renshaw, after a search of the literature, has pointed out that "there exists little evidence to indicate that the amount of [education] training is an important determinant of . . . teacher competence. . . ."⁹⁰ The typical physical facilities of a junior college will not be as complete/advanced/or sophisticated as those of a senior college, but they need not be for the general training they are offering.

Some junior college programs consist of very specific vocational training. Other programs offer a very general education, often in anticipation of the student transferring to a four year college to complete his education. Since a lower cost, less specialized education is received in the liberal arts transfer programs of the junior college, it may be possible and even desirable to channel students through a junior college and then into an upper-divisional (upper two year) college. The cost to the student and the institution is lower; and the cost to society is also lower. Hansen and Weisbrod in their recently published book, Benefits, Costs and Finance of Public Higher Education, compared "the present value of California subsidies for higher

⁸⁹James Cass and Max Birnbaum, Comparative Guide to American Colleges (1970-71 Edition) (New York: Harper & Row, 1969), p. XXV.

⁹⁰Edward F. Renshaw, "Estimating the Return to Education," Review of Economics and Statistics, Vol. XLII, No. 3, Part 1 (August, 1960), p. 319.

education with the present value of all additional taxes paid."⁹¹ Their results are as follows:

. . . those going to the Junior College for two years and completing their work at the State Colleges--and thus receiving a \$4,400 subsidy--on the average repaid \$400 more than the subsidy. But there is still a substantial excess of subsidies over taxes for other college graduates as well as for those who did not complete college.

Besides the lower tuition cost, and the lower social cost, the proposed structure also has potential advantages for the student from an educational point of view. The undergraduate will not be compelled to undertake a specialty early in his college career. He will now have the opportunity to master the general skills which enhance his potential. He will then, in the upper two years, undertake a major. By this method we will be able to prevent the dissatisfactions and problems caused by a student undertaking a specialty too soon in his college career. We may also prevent the graduate from acquiring too many specific skills--skills which may become obsolete and for which there may be no demand.

The system outlined above may be of more value to the business, arts and humanities, and social science major than to the science or engineering major. This is because, for all except the science and engineering major, it was the general skills which were considered most helpful. Perhaps those who intend to major in the sciences should not take a

⁹¹W. Lee Hansen and Burton A. Weisbrod, Benefits, Costs and Finance of Public Higher Education, Markham Series in Public Policy Analysis (Chicago: Markham Publishing Co., 1969), p. 60.

full four terms of general education. Conclusions for all disciplines can be made only after additional study.

APPENDIX A

The following are the breakdowns by different classifications of the questionnaire sent to personnel directors:

CONTRIBUTIONS OF COLLEGE EDUCATION

This questionnaire asks for your candid opinion about college education in relation to the qualifications and performance of employees in your firm.

Please do not write your name, or your corporation's name, on the questionnaire. Do not mark more than one space on any question. Please return the questionnaire in the enclosed postage-paid envelope.

1. Total number of employees in the corporation:

- A. under 100 ()
- B. 100-500 ()
- C. 501-1000 ()
- D. 1001-2500 ()
- E. over 2500 ()

2. Classification of your corporation:

- A. agriculture and mining ()
- B. construction and manufacturing ()
- C. wholesale and retail trade/ and services ()
- D. finance ()
- E. other ()

3. Does your corporation do a "seasonal business," with proportionately large additions to the work force just for peak periods?

- A. yes ()
- B. no ()

4. The number of permanent employees in your corporation is

- A. growing rapidly ()
- B. growing moderately ()
- C. stable ()
- D. decreasing ()

composition of your employees

Questions 5-11

Please answer as follows:

- A. very substantial percentage
- B. moderate percentage
- C. small percentage
- D. not relevant to your company

- | | | | | |
|---|--------|--------|--------|--------|
| 5. engineers and scientists | A. () | B. () | C. () | D. () |
| 6. specific business skills
(such as accountancy) | A. () | B. () | C. () | D. () |
| 7. management and administration
(requiring only general
knowledge at outset of employment) | A. () | B. () | C. () | D. () |
| 8. skilled labor | A. () | B. () | C. () | D. () |
| 9. semi-skilled labor | A. () | B. () | C. () | D. () |
| 10. unskilled labor | A. () | B. () | C. () | D. () |

11. Do you have an overall preference for hiring college graduates?

- A. yes ()
- B. no ()

preferences in education for potential employees

Questions 12-17

Please answer as follows:

- A. only college graduates acceptable
 B. preference for college graduates
 C. no preference
 D. preference against college grads.

- | | | | | |
|-----------------------------------|--------|--------|--------|--------|
| 12. engineers and scientists | A. () | B. () | C. () | D. () |
| 13. specific business skills | A. () | B. () | C. () | D. () |
| 14. management and administration | A. () | B. () | C. () | D. () |
| 15. skilled labor | A. () | B. () | C. () | D. () |
| 16. semi-skilled labor | A. () | B. () | C. () | D. () |
| 17. unskilled labor | A. () | B. () | C. () | D. () |

18. Are the same or similar positions being held, in your corporation, by college and non-college graduates?

- A. yes ()
 B. no ()

19. If these same or similar positions require a period of on-the-job training, then is this period the same for college and non-college graduates?

- A. yes ()
 B. no, shorter period of training for college graduates ()
 C. no, longer period of training for college graduates ()
 D. none in comparable positions ()

20. Are their salaries, all else being equal, the same?

- A. yes ()
 B. no ()
 C. none in comparable positions ()

college graduates vs. high school graduates: a comparison
 questions 21-28/ Answer only if response to question 18 is "yes"

Comparing college graduates in your firm with those who have had no college experience but are in the same or comparable jobs, have you found that college graduates, on the average

Questions 21-28

Please answer as follows

- A. yes college graduates are superior
 B. no noticeable difference between groups
 C. no, high school graduates are superior in this area

- | | | | |
|--|--------|--------|--------|
| 21. are faster learners | A. () | B. () | C. () |
| 22. have greater ability to make decisions | A. () | B. () | C. () |
| 23. have greater ability to communicate with others (speaking and writing) | A. () | B. () | C. () |
| 24. have greater general knowledge | A. () | B. () | C. () |
| 25. have learned more specific skills | A. () | B. () | C. () |
| 26. have greater capacity to grow with the firm | A. () | B. () | C. () |
| 27. are more permanent employees | A. () | B. () | C. () |
| 28. are more productive | A. () | B. () | C. () |

29. In summary, you find when comparing high school graduates to college graduates, that college graduates, on the average
- A. make far superior employees ()
 - B. make moderately superior employees ()
 - C. are "equal" employees ()
 - D. are inferior employees ()

30. You find when comparing those who have had considerable college experience (at least two years) with college graduates, that college graduates, on the average
- A. make far superior employees ()
 - B. make moderately superior employees ()
 - C. are "equal" employees ()
 - D. are inferior employees ()

college graduates vs. those with some college experience: a comparison

Comparing college graduates in your firm with those who have had some college experience (at least two years) and are in the same or comparable jobs, have you found that college graduates, on the average

Questions 31-38

Please answer as follows

- A. yes college graduates are superior
- B. no noticeable difference between groups
- C. no, students with some college experience are superior in this area

- | | | | |
|--|--------|--------|--------|
| 31. are faster learners | A. () | B. () | C. () |
| 32. have greater ability to make decisions | A. () | B. () | C. () |
| 33. have greater ability to communicate with others (speaking and writing) | A. () | B. () | C. () |
| 34. have greater general knowledge | A. () | B. () | C. () |
| 35. have learned more specific skills | A. () | B. () | C. () |
| 36. have greater capacity to grow with the firm | A. () | B. () | C. () |
| 37. are more permanent employees | A. () | B. () | C. () |
| 38. are more productive | A. () | B. () | C. () |
39. Can the benefits that your corporation derives from college graduates be acquired by a student in less than four years of college
- A. yes ()
 - B. no ()
40. If your answer to question 39 is "yes" do you think that the benefits can be imparted in
- A. three years ()
 - B. two years ()
 - C. one year ()
 - D. no benefits from college ()

41. Do you think that there is a correlation between good grades in college, and good employees?
- A. strong positive correlation ()
- B. weak positive correlation ()
- C. no correlation ()
- D. negative correlation ()
42. Would an increased availability of college graduates for your firm affect further mechanization and automation?
- A. deter ()
- B. encourage ()
- C. no effect ()

OPEN RESPONSE

1. From the point of view of an employer, what advantages are there to hiring college graduates, as compared to non-graduates?

A.

B.

2. What are some of the disadvantages, if any, to hiring college graduates, as compared to non-graduates?

A.

B.

3. We would appreciate any comments about the questionnaire or on the subject matter, that you would care to make.

Summary 100-500 employees. 9 responses.

1.	B.	All				
2.	A.	1				
	B.	2				
	C.	3				
	D.	1				
	E.	2				
3.	B.	All				
4.	A.	1				
	B.	3				
	C.	5				
	D.	0				
5.	A.	33.33 %	B.	22.22 %	C.	0 %
6.	A.	22.22 %	B.	33.33 %	C.	44.45 %
7.	A.	0 %	B.	55.56 %	C.	33.33 %
8.	A.	22.22 %	B.	22.22 %	C.	44.45 %
9.	A.	11.11 %	B.	22.22 %	C.	22.22 %
10.	A.	0 %	B.	11.11 %	C.	33.33 %
					D.	44.45 %
					D.	0 %
					D.	11.11 %
					D.	11.11 %
					D.	44.45 %
					D.	55.56 %
11.	A.	100 %				
	B.	0 %				
12.	A.	85.72 %	B.	0 %	C.	14.28 %
13.	A.	44.44 %	B.	55.56 %	C.	0 %
14.	A.	66.67 %	B.	33.33 %	C.	0 %
15.	A.	0 %	B.	12.50 %	C.	75.00 %
16.	A.	0 %	B.	0 %	C.	50.00 %
17.	A.	0 %	B.	0 %	C.	33.33 %
					D.	66.67 %
18.	A.	44.45 %				
	B.	55.56 %				
19.	A.	33.33 %				
	B.	11.11 %				
	C.	0 %				
	D.	55.56 %				
20.	A.	33.33 %				
	B.	11.11 %				
	C.	55.56 %				

21.	A.	50.00 %	B.	50.00 %	C.	0 %
22.	A.	75.00 %	B.	25.00 %	C.	0 %
23.	A.	75.00 %	B.	25.00 %	C.	0 %
24.	A.	75.00 %	B.	25.00 %	C.	0 %
25.	A.	75.00 %	B.	25.00 %	C.	0 %
26.	A.	100.00 %	B.	0 %	C.	0 %
27.	A.	0 %	B.	50.00 %	C.	50.00 %
28.	A.	25.00 %	B.	75.00 %	C.	0 %
29.	A.	25.00 %				
	B.	50.00 %				
	C.	25.00 %				
	D.	0 %				
30.	A.	0 %				
	B.	75.00 %				
	C.	25.00 %				
	D.	0 %				
31.	A.	50.00 %	B.	50.00 %	C.	0 %
32.	A.	50.00 %	B.	50.00 %	C.	0 %
33.	A.	75.00 %	B.	25.00 %	C.	0 %
34.	A.	50.00 %	B.	50.00 %	C.	0 %
35.	A.	50.00 %	B.	50.00 %	C.	0 %
36.	A.	100.00 %	B.	0 %	C.	0 %
37.	A.	0 %	B.	75.00 %	C.	25.00 %
38.	A.	25.00 %	B.	75.00 %	C.	0 %
39.	A.	33.33 %				
	B.	66.67 %				
40.	A.	100.00 %				
	B.	0 %				
	C.	0 %				
	D.	0 %				
41.	A.	44.44 %				
	B.	55.56 %				
42.	A.	0 %				
	B.	12.50 %				
	C.	87.50 %				

Summary 501-100 employees. 10 responses.

1. C. All

2. A. 0
B. 2
C. 3
D. 1
E. 4

3. B. All

4. A. 2
B. 5
C. 3

5. A.	30.00 %	B.	10.00 %	C.	30.00 %	D.	30.00 %
6. A.	20.00 %	B.	50.00 %	C.	30.00 %	D.	0 %
7. A.	20.00 %	B.	50.00 %	C.	30.00 %	D.	0 %
8. A.	0 %	B.	22.22 %	C.	44.45 %	D.	33.33 %
9. A.	10.00 %	B.	50.00 %	C.	20.00 %	D.	20.00 %
10. A.	0 %	B.	10.00 %	C.	60.00 %	D.	30.00 %

11. A. 90.00 %
B. 10.00 %

12. A.	100.00 %	B.	0 %	C.	0 %	D.	0 %
13. A.	30.00 %	B.	70.00 %	C.	0 %	D.	0 %
14. A.	40.00 %	B.	60.00 %	C.	0 %	D.	0 %
15. A.	0 %	B.	12.50 %	C.	62.50 %	D.	25.00 %
16. A.	0 %	B.	0 %	C.	75.00 %	D.	25.00 %
17. A.	0 %	B.	0 %	C.	75.00 %	D.	25.00 %

18. A. 80.00 %
B. 20.00 %

19. A. 30.00 %
B. 40.00 %
C. 10.00 %
D. 20.00 %

20. A. 55.56 %
B. 22.22 %
C. 22.22 %

- | | | | | | | |
|-----|----|----------|----|---------|----|---------|
| 21. | A. | 75.00 % | B. | 25.00 % | C. | 0 % |
| 22. | A. | 62.50 % | B. | 37.50 % | C. | 0 % |
| 23. | A. | 100.00 % | B. | 0 % | C. | 0 % |
| 24. | A. | 75.00 % | B. | 25.00 % | C. | 0 % |
| 25. | A. | 25.00 % | B. | 62.50 % | C. | 12.50 % |
| 26. | A. | 87.50 % | B. | 12.50 % | C. | 0 % |
| 27. | A. | 12.50 % | B. | 62.50 % | C. | 25.00 % |
| 28. | A. | 25.00 % | B. | 75.00 % | C. | 0 % |
| | | | | | | |
| 29. | A. | 37.50 % | | | | |
| | B. | 62.50 % | | | | |
| | C. | 0 % | | | | |
| | D. | 0 % | | | | |
| | | | | | | |
| 30. | A. | 12.50 % | | | | |
| | B. | 87.50 % | | | | |
| | C. | 0 % | | | | |
| | D. | 0 % | | | | |
| | | | | | | |
| 31. | A. | 75.00 % | B. | 25.00 % | C. | 0 % |
| 32. | A. | 75.00 % | B. | 25.00 % | C. | 0 % |
| 33. | A. | 100.00 % | B. | 0 % | C. | 0 % |
| 34. | A. | 87.50 % | B. | 12.50 % | C. | 0 % |
| 35. | A. | 12.50 % | B. | 75.00 % | C. | 12.50 % |
| 36. | A. | 100.00 % | B. | 0 % | C. | 0 % |
| 37. | A. | 12.50 % | B. | 75.00 % | C. | 12.50 % |
| 38. | A. | 25.00 % | B. | 75.00 % | C. | 0 % |
| | | | | | | |
| 39. | A. | 62.50 % | | | | |
| | B. | 37.50 % | | | | |
| | | | | | | |
| 40. | A. | 100.00 % | | | | |
| | B. | 0 % | | | | |
| | C. | 0 % | | | | |
| | D. | 0 % | | | | |
| | | | | | | |
| 41. | A. | 33.33 % | | | | |
| | B. | 55.55 % | | | | |
| | C. | 22.22 % | | | | |
| | D. | 0 % | | | | |
| | | | | | | |
| 42. | A. | 0 % | | | | |
| | B. | 30.00 % | | | | |
| | C. | 70.00 % | | | | |

Summary 1001-2500 employees. 20 responses.

1. D. All

2. A. 1
B. 7
C. 2
D. 5
E. 5

3. B. All

4. A. 2
B. 14
C. 4
D. 0

5.	A.	10.00 %	B.	35.00 %	C.	30.00 %	D.	25.00 %
6.	A.	10.00 %	B.	35.00 %	C.	55.00 %	D.	0 %
7.	A.	30.00 %	B.	40.00 %	C.	25.00 %	D.	5.00 %
8.	A.	30.00 %	B.	35.00 %	C.	20.00 %	D.	15.00 %
9.	A.	10.00 %	B.	50.00 %	C.	25.00 %	D.	15.00 %
10.	A.	10.00 %	B.	30.00 %	C.	30.00 %	D.	30.00 %

11. A. 60.00 %
B. 40.00 %

12.	A.	66.65 %	B.	11.10 %	C.	16.65 %	D.	5.55 %
13.	A.	25.00 %	B.	45.00 %	C.	20.00 %	D.	10.00 %
14.	A.	45.00 %	B.	55.00 %	C.	0 %	D.	0 %
15.	A.	5.26 %	B.	5.26 %	C.	52.63 %	D.	36.85 %
16.	A.	0 %	B.	10.53 %	C.	31.58 %	D.	57.89 %
17.	A.	0 %	B.	5.26 %	C.	21.05 %	D.	73.69 %

18. A. 85.00 %
B. 15.00 %

19. A. 26.31 %
B. 63.16 %
C. 0 %
D. 10.53 %

20. A. 60.00 %
B. 30.00 %
C. 10.00 %

21.	A.	70.59 %	B.	29.41 %	C.	0 %
22.	A.	82.35 %	B.	17.65 %	C.	0 %
23.	A.	88.23 %	B.	11.77 %	C.	0 %
24.	A.	70.59 %	B.	29.41 %	C.	0 %
25.	A.	29.41 %	B.	70.59 %	C.	0 %
26.	A.	100.00 %	B.	0 %	C.	0 %
27.	A.	0 %	B.	82.35 %	C.	17.65 %
28.	A.	29.41 %	B.	70.59 %	C.	0 %
29.	A.	29.41 %				
	B.	58.82 %				
	C.	11.76 %				
30.	A.	5.88 %				
	B.	82.36 %				
	C.	11.76 %				
31.	A.	47.06 %	B.	52.94 %	C.	0 %
32.	A.	58.82 %	B.	41.18 %	C.	0 %
33.	A.	70.59 %	B.	29.41 %	C.	0 %
34.	A.	58.82 %	B.	41.18 %	C.	0 %
35.	A.	29.41 %	B.	64.71 %	C.	5.88 %
36.	A.	100.00 %	B.	0 %	C.	0 %
37.	A.	5.88 %	B.	70.59 %	C.	23.53 %
38.	A.	11.76 %	B.	88.24 %	C.	0 %
39.	A.	50.00 %				
	B.	50.00 %				
40.	A.	55.56 %				
	B.	33.33 %				
	C.	11.11 %				
	D.	0 %				
41.	A.	30.00 %				
	B.	55.00 %				
	C.	15.00 %				
	D.	0 %				
42.	A.	25.00 %				
	B.	75.00 %				
	C.	0 %				

Summary over 2500 employees. 43 responses.

1. E. All
2. A. 2
B. 14
C. 9
D. 4
E. 13
3. B. All
4. A. 8
B. 29
C. 6
5. A. 23.26 % B. 30.23 % C. 30.23 % D. 16.27 %
6. A. 71.15 % B. 50.00 % C. 38.09 % D. 4.76 %
7. A. 14.29 % B. 54.76 % C. 28.57 % D. 2.38 %
8. A. 21.43 % B. 45.24 % C. 19.05 % D. 14.28 %
9. A. 30.23 % B. 27.90 % C. 32.56 % D. 9.30 %
10. A. 20.93 % B. 11.63 % C. 51.17 % D. 16.27 %
11. A. 72.50 %
B. 27.50 %
12. A. 63.87 % B. 36.13 % C. 0 % D. 0 %
13. A. 30.75 % B. 61.57 % C. 5.12 % D. 2.56 %
14. A. 27.50 % B. 70.00 % C. 2.50 % D. 0 %
15. A. 0 % B. 2.56 % C. 69.24 % D. 28.20 %
16. A. 0 % B. 0 % C. 39.48 % D. 60.52 %
17. A. 0 % B. 0 % C. 64.08 % D. 35.90 %
18. A. 89.95 %
B. 19.05 %
19. A. 41.67 %
B. 33.34 %
C. 5.55 %
D. 19.41 %
20. A. 60.00 %
B. 25.00 %
C. 15.00 %

21.	A.	66.67	%	B.	33.33	%	C.	0	%
22.	A.	48.28	%	B.	51.72	%	C.	0	%
23.	A.	89.65	%	B.	10.35	%	C.	0	%
24.	A.	83.25	%	B.	16.65	%	C.	0	%
25.	A.	36.67	%	B.	53.32	%	C.	10.00	%
26.	A.	86.20	%	B.	13.80	%	C.	0	%
27.	A.	6.67	%	B.	69.98	%	C.	23.35	%
28.	A.	34.49	%	B.	65.51	%	C.	0	%
29.	A.	13.33	%						
	B.	70.00	%						
	C.	16.66	%						
	D.	0	%						
30.	A.	13.33	%						
	B.	70.00	%						
	C.	16.66	%						
	D.	0	%						
31.	A.	50.00	%	B.	50.00	%	C.	0	%
32.	A.	43.33	%	B.	56.66	%	C.	0	%
33.	A.	73.33	%	B.	26.66	%	C.	0	%
34.	A.	80.77	%	B.	19.23	%	C.	0	%
35.	A.	34.48	%	B.	62.07	%	C.	3.45	%
36.	A.	76.66	%	B.	23.33	%	C.	0	%
37.	A.	13.33	%	B.	66.66	%	C.	20.00	%
38.	A.	26.66	%	B.	70.00	%	C.	3.33	%
39.	A.	52.78	%						
	B.	47.22	%						
40.	A.	44.44	%						
	B.	50.00	%						
	C.	5.56	%						
	D.	0	%						
41.	A.	29.27	%						
	B.	53.66	%						
	C.	17.07	%						
	D.	0	%						
42.	A.	0	%						
	B.	36.59	%						
	C.	63.41	%						

Summary: construction and manufacturing. 25 responses.

1. A. 0
B. 2
C. 7
D. 14
2. B. All
3. B. All
4. A. 6
B. 12
C. 7
D. 0
5. A. 32.00 % B. 32.00 % C. 36.00 % D. 0 %
6. A. 8.34 % B. 45.83 % C. 45.83 % D. 0 %
7. A. 12.00 % B. 48.00 % C. 40.00 % D. 0 %
8. A. 28.00 % B. 56.00 % C. 16.00 % D. 0 %
9. A. 28.00 % B. 52.00 % C. 20.00 % D. 0 %
10. A. 16.00 % B. 12.00 % C. 64.00 % D. 8.00 %
11. A. 64.00 %
B. 36.00 %
12. A. 70.83 % B. 29.17 % C. 0 % D. 0 %
13. A. 20.83 % B. 75.00 % C. 4.17 % D. 0 %
14. A. 20.83 % B. 75.00 % C. 4.17 % D. 0 %
15. A. 0 % B. 4.17 % C. 58.33 % D. 37.50 %
16. A. 0 % B. 0 % C. 29.17 % D. 70.83 %
17. A. 0 % B. 0 % C. 20.83 % D. 79.17 %
18. A. 79.17 %
B. 20.83 %
19. A. 35.00 %
B. 50.00 %
C. 0 %
D. 15.00 %
20. A. 56.52 %
B. 30.44 %
C. 13.04 %

21.	A.	72.22	%	B.	27.78	%	C.	0	%
22.	A.	66.67	%	B.	33.33	%	C.	0	%
23.	A.	83.83	%	B.	16.67	%	C.	0	%
24.	A.	55.56	%	B.	44.44	%	C.	0	%
25.	A.	27.78	%	B.	72.22	%	C.	0	%
26.	A.	94.44	%	B.	5.56	%	C.	0	%
27.	A.	0	%	B.	83.83	%	C.	16.67	%
28.	A.	33.33	%	B.	66.67	%	C.	0	%

29.

A.	33.33	%
B.	50.00	%
C.	16.67	%
D.	0	%

30.

A.	15.79	%
B.	68.42	%
C.	15.79	%
D.	0	%

31.	A.	55.56	%	B.	44.44	%	C.	0	%
32.	A.	55.56	%	B.	44.44	%	C.	0	%
33.	A.	72.22	%	B.	27.78	%	C.	0	%
34.	A.	50.00	%	B.	50.00	%	C.	0	%
35.	A.	33.33	%	B.	61.11	%	C.	5.56	%
36.	A.	88.89	%	B.	11.11	%	C.	0	%
37.	A.	5.55	%	B.	77.78	%	C.	16.67	%
38.	A.	23.53	%	B.	76.47	%	C.	0	%

39.

A.	31.58	%
B.	68.42	%

40.

A.	83.33	%
B.	16.67	%
C.	0	%
D.	0	%

41.

A.	45.83	%
B.	37.50	%
C.	16.67	%
D.	0	%

42.

A.	0	%
B.	45.83	%
C.	54.17	%

Summary: wholesale and retail trade/and services.
17 responses.

1. A. 0
B. 3
C. 3
D. 2
E. 9
2. C. All
3. B. All
4. A. 2
B. 12
C. 3
D. 0
5. A. 11.77 % B. 5.88 % C. 47.06 % D. 35.29 %
6. A. 11.76 % B. 17.65 % C. 58.82 % D. 11.76 %
7. A. 17.65 % B. 70.59 % C. 5.88 % D. 5.88 %
8. A. 6.25 % B. 31.25 % C. 37.50 % D. 25.00 %
9. A. 11.76 % B. 17.65 % C. 41.18 % D. 29.41 %
10. A. 11.77 % B. 5.88 % C. 47.06 % D. 35.29 %
11. A. 68.75 %
B. 31.25 %
12. A. 76.92 % B. 15.39 % C. 7.69 % D. 0 %
13. A. 40.00 % B. 46.67 % C. 13.33 % D. 0 %
14. A. 41.18 % B. 58.82 % C. 0 % D. 0 %
15. A. 0 % B. 7.69 % C. 84.62 % D. 7.69 %
16. A. 0 % B. 0 % C. 58.33 % D. 41.67 %
17. A. 0 % B. 0 % C. 58.33 % D. 41.67 %
18. A. 70.59 %
B. 29.41 %
19. A. 37.50 %
B. 25.00 %
C. 6.25 %
D. 31.25 %
20. A. 50.00 %
B. 25.00 %
C. 25.00 %

21.	A.	55.54	%	B.	45.46	%	C.	0	%
22.	A.	60.00	%	B.	40.00	%	C.	0	%
23.	A.	90.00	%	B.	10.00	%	C.	0	%
24.	A.	100.00	%	B.	0	%	C.	0	%
25.	A.	36.37	%	B.	45.45	%	C.	18.18	%
26.	A.	72.73	%	B.	27.27	%	C.	0	%
27.	A.	0	%	B.	63.64	%	C.	36.36	%
28.	A.	27.27	%	B.	72.73	%	C.	0	%
29.	A.	18.18	%						
	B.	81.82	%						
	C.	0	%						
	D.	0	%						
30.	A.	9.09	%						
	B.	81.82	%						
	C.	9.09	%						
	D.	0	%						
31.	A.	36.36	%	B.	63.64	%	C.	0	%
32.	A.	54.55	%	B.	45.45	%	C.	0	%
33.	A.	72.73	%	B.	27.27	%	C.	0	%
34.	A.	90.91	%	B.	9.09	%	C.	0	%
35.	A.	22.22	%	B.	77.78	%	C.	0	%
36.	A.	81.82	%	B.	18.18	%	C.	0	%
37.	A.	0	%	B.	63.64	%	C.	36.36	%
38.	A.	18.18	%	B.	72.73	%	C.	9.09	%
39.	A.	62.50	%						
	B.	37.50	%						
40.	A.	44.44	%						
	B.	44.44	%						
	C.	11.11	%						
41.	A.	23.53	%						
	B.	58.82	%						
	C.	17.65	%						
	D.	0	%						
42.	A.	0	%						
	B.	31.25	%						
	C.	68.75	%						

Summary: finance. 11 responses.

1. A. 0
B. 1
C. 1
D. 5
E. 4
2. D. All
3. B. All
4. A. 1
B. 9
C. 1
D. 0
5. A. 0 % B. 0 % C. 9.09 % D. 90.91 %
6. A. 36.36 % B. 54.55 % C. 9.09 % D. 0 %
7. A. 45.45 % B. 45.45 % C. 9.09 % D. 0 %
8. A. 9.09 % B. 18.18 % C. 18.18 % D. 54.55 %
9. A. 0 % B. 18.18 % C. 27.27 % D. 54.55 %
10. A. 9.09 % B. 18.18 % C. 9.09 % D. 63.64 %
11. A. 66.67 %
B. 33.33 %
12. A. 20.00 % B. 20.00 % C. 40.00 % D. 20.00 %
13. A. 27.27 % B. 45.46 % C. 18.18 % D. 9.04 %
14. A. 27.27 % B. 72.73 % C. 0 % D. 0 %
15. A. 0 % B. 0 % C. 66.67 % D. 33.33 %
16. A. 0 % B. 0 % C. 37.50 % D. 62.50 %
17. A. 0 % B. 0 % C. 25.00 % D. 75.00 %
18. A. 100.00 %
B. 0 %
19. A. 45.45 %
B. 45.45 %
C. 9.09 %
D. 0 %
20. A. 70.00 %
B. 30.00 %

21.	A.	80.00	%	B.	20.00	%	C.	0	%
22.	A.	60.00	%	B.	40.00	%	C.	0	%
23.	A.	90.00	%	B.	10.00	%	C.	0	%
24.	A.	90.00	%	B.	10.00	%	C.	0	%
25.	A.	40.00	%	B.	50.00	%	C.	10.00	%
26.	A.	100.00	%	B.	0	%	C.	0	%
27.	A.	10.00	%	B.	50.00	%	C.	40.00	%
28.	A.	33.33	%	B.	66.67	%	C.	0	%
29.	A.	50.00	%						
	B.	40.00	%						
	C.	10.00	%						
	D.	0	%						
30.	A.	0	%						
	B.	90.00	%						
	C.	10.00	%						
	D.	0	%						
31.	A.	54.55	%	B.	45.45	%	C.	0	%
32.	A.	54.55	%	B.	45.45	%	C.	0	%
33.	A.	81.82	%	B.	18.18	%	C.	0	%
34.	A.	72.73	%	B.	27.27	%	C.	0	%
35.	A.	27.27	%	B.	63.64	%	C.	9.09	%
36.	A.	90.91	%	B.	9.09	%	C.	0	%
37.	A.	9.09	%	B.	72.73	%	C.	18.18	%
38.	A.	18.18	%	B.	81.82	%	C.	0	%
39.	A.	81.82	%						
	B.	18.18	%						
40.	A.	66.67	%						
	B.	22.22	%						
	C.	11.11	%						
	D.	0	%						
41.	A.	18.18	%						
	B.	45.46	%						
	C.	36.36	%						
	D.	0	%						
42.	A.	0	%						
	B.	27.27	%						
	C.	72.73	%						

Summary: other corporations. 25 responses.

1. A. 1
B. 2
C. 4
D. 4
E. 14

2. E. All

3. B. All

4. A. 3
B. 17
C. 5
D. 0

5. A. 32.00 % B. 40.00 % C. 16.00 % D. 12.00 %

6. A. 4.00 % B. 56.00 % C. 40.00 % D. 0 %

7. A. 8.33 % B. 41.67 % C. 45.83 % D. 4.17 %

8. A. 29.17 % B. 25.00 % C. 33.33 % D. 12.50 %

9. A. 28.00 % B. 36.00 % C. 28.00 % D. 8.00 %

10. A. 16.00 % B. 24.00 % C. 36.00 % D. 24.00 %

11. A. 86.96 %

B. 13.04 %

12. A. 73.91 % B. 21.74 % C. 4.35 % D. 0 %

13. A. 30.43 % B. 56.52 % C. 4.35 % D. 8.70 %

14. A. 52.17 % B. 47.83 % C. 0 % D. 0 %

15. A. 4.17 % B. 4.17 % C. 62.50 % D. 29.16 %

16. A. 0 % B. 4.17 % C. 50.00 % D. 45.83 %

17. A. 0 % B. 0 % C. 45.83 % D. 54.17 %

18. A. 76.00 %

B. 24.00 %

19. A. 36.00 %

B. 36.00 %

C. 4.00 %

D. 24.00 %

20. A. 54.17 %

B. 20.83 %

C. 25.00 %

21.	A.	68.42	%	B.	31.58	%	C.	0	%
22.	A.	57.90	%	B.	42.10	%	C.	0	%
23.	A.	94.74	%	B.	5.26	%	C.	0	%
24.	A.	78.95	%	B.	21.05	%	C.	0	%
25.	A.	42.10	%	B.	57.90	%	C.	0	%
26.	A.	94.44	%	B.	5.56	%	C.	0	%
27.	A.	10.53	%	B.	73.68	%	C.	15.79	%
28.	A.	33.33	%	B.	66.67	%	C.	0	%
29.	A.	21.05	%						
	B.	63.16	%						
	C.	5.79	%						
	D.	0	%						
30.	A.	10.53	%						
	B.	73.68	%						
	C.	15.79	%						
	D.	0	%						
31.	A.	57.90	%	B.	42.10	%	C.	0	%
32.	A.	47.37	%	B.	52.63	%	C.	0	%
33.	A.	78.95	%	B.	21.05	%	C.	0	%
34.	A.	88.24	%	B.	11.76	%	C.	0	%
35.	A.	36.84	%	B.	57.90	%	C.	5.26	%
36.	A.	89.47	%	B.	10.53	%	C.	0	%
37.	A.	22.22	%	B.	61.11	%	C.	16.67	%
38.	A.	21.05	%	B.	78.95	%	C.	0	%
39.	A.	41.67	%						
	B.	58.33	%						
40.	A.	60.00	%						
	B.	40.00	%						
	C.	0	%						
	D.	0	%						
41.	A.	24.00	%						
	B.	68.00	%						
	C.	8.00	%						
	D.	0	%						
42.	A.	0	%						
	B.	20.83	%						
	C.	79.17	%						

Summary firms growing rapidly. 13 responses.

1.	A.	0							
	B.	1							
	C.	2							
	D.	2							
	E.	8							
2.	A.	1							
	B.	6							
	C.	2							
	D.	1							
	E.	3							
3.	B.	All							
4.	A.	All							
5.	A.	25.00 %	B.	25.00 %	C.	16.67 %	D.	33.33 %	
6.	A.	15.38 %	B.	53.85 %	C.	30.77 %	D.	0 %	
7.	A.	23.08 %	B.	46.15 %	C.	30.77 %	D.	0 %	
8.	A.	30.77 %	B.	15.38 %	C.	30.77 %	D.	23.08 %	
9.	A.	7.69 %	B.	46.15 %	C.	30.77 %	D.	15.39 %	
10.	A.	23.08 %	B.	0 %	C.	46.15 %	D.	30.77 %	
11.	A.	76.92 %							
	B.	23.08 %							
12.	A.	60.00 %	B.	30.00 %	C.	10.00 %	D.	0 %	
13.	A.	61.54 %	B.	30.77 %	C.	7.69 %	D.	0 %	
14.	A.	53.85 %	B.	30.46 %	C.	7.69 %	D.	0 %	
15.	A.	0 %	B.	8.33 %	C.	50.00 %	D.	41.67 %	
16.	A.	0 %	B.	0 %	C.	50.00 %	D.	50.00 %	
17.	A.	0 %	B.	0 %	C.	33.33 %	D.	66.67 %	
18.	A.	76.92 %							
	B.	23.08 %							
19.	A.	22.22 %							
	B.	55.56 %							
	C.	0 %							
	D.	22.22 %							
20.	A.	41.67 %							
	B.	41.67 %							
	C.	16.66 %							

21.	A.	80.00	%	B.	20.00	%	C.	0	%
22.	A.	60.00	%	B.	40.00	%	C.	0	%
23.	A.	80.00	%	B.	20.00	%	C.	0	%
24.	A.	80.00	%	B.	20.00	%	C.	0	%
25.	A.	40.00	%	B.	60.00	%	C.	0	%
26.	A.	90.00	%	B.	10.00	%	C.	0	%
27.	A.	10.00	%	B.	60.00	%	C.	30.00	%
28.	A.	40.00	%	B.	60.00	%	C.	0	%
29.	A.	50.00	%						
	B.	30.00	%						
	C.	20.00	%						
	D.	0	%						
30.	A.	20.00	%						
	B.	70.00	%						
	C.	10.00	%						
	D.	0	%						
31.	A.	40.00	%	B.	60.00	%	C.	0	%
32.	A.	40.00	%	B.	60.00	%	C.	0	%
33.	A.	50.00	%	B.	50.00	%	C.	0	%
34.	A.	75.00	%	B.	25.00	%	C.	0	%
35.	A.	42.86	%	B.	42.56	%	C.	14.28	%
36.	A.	75.00	%	B.	25.00	%	C.	0	%
37.	A.	12.50	%	B.	62.50	%	C.	25.00	%
38.	A.	12.50	%	B.	87.50	%	C.	0	%
39.	A.	30.00	%						
	B.	70.00	%						
40.	A.	66.67	%						
	B.	33.33	%						
	C.	0	%						
	D.	0	%						
41.	A.	18.18	%						
	B.	72.73	%						
	C.	9.09	%						
	D.	0	%						
42.	A.	0	%						
	B.	0	%						
	C.	100.00	%						

Summary: firms growing rapidly. 52 responses

1. A. 1
B. 3
C. 5
D. 14
E. 29
2. A. 2
B. 12
C. 12
D. 9
E. 17
3. B. All
4. B. All
5. A. 21.57 % B. 27.45 % C. 27.45 % D. 23.53 %
6. A. 11.54 % B. 36.54 % C. 43.08 % D. 3.84 %
7. A. 17.65 % B. 45.10 % C. 31.37 % D. 5.83 %
8. A. 14.00 % B. 42.00 % C. 24.00 % D. 20.00 %
9. A. 17.31 % B. 32.69 % C. 34.62 % D. 15.38 %
10. A. 9.62 % B. 19.23 % C. 46.15 % D. 25.00 %
11. A. 75.51 %
B. 24.49 %
12. A. 70.45 % B. 20.45 % C. 6.82 % D. 2.27 %
13. A. 20.83 % B. 66.67 % C. 8.33 % D. 4.17 %
14. A. 30.61 % B. 69.39 % C. 0 % D. 0 %
15. A. 2.17 % B. 4.35 % C. 69.57 % D. 23.91 %
16. A. 0 % B. 4.35 % C. 36.96 % D. 58.70 %
17. A. 0 % B. 2.17 % C. 34.78 % D. 63.05 %
18. A. 74.51 %
B. 25.49 %
19. A. 34.69 %
B. 36.74 %
C. 4.08 %
D. 24.49 %
20. A. 60.42 %
B. 16.67 %
C. 22.91 %

21.	A.	65.71	%	B.	34.29	%	C.	0	%
22.	A.	55.55	%	B.	44.12	%	C.	0	%
23.	A.	91.18	%	B.	8.82	%	C.	0	%
24.	A.	82.86	%	B.	17.14	%	C.	0	%
25.	A.	34.29	%	B.	57.14	%	C.	8.57	%
26.	A.	88.24	%	B.	11.76	%	C.	0	%
27.	A.	2.85	%	B.	74.29	%	C.	22.86	%
28.	A.	30.30	%	B.	69.70	%	C.	0	%
29.	A.	25.71	%						
	B.	62.86	%						
	C.	11.43	%						
	D.	0	%						
30.	A.	5.71	%						
	B.	80.00	%						
	C.	14.29	%						
	D.	0	%						
31.	A.	55.56	%	B.	44.44	%	C.	0	%
32.	A.	52.78	%	B.	47.22	%	C.	0	%
33.	A.	77.78	%	B.	22.22	%	C.	0	%
34.	A.	73.53	%	B.	26.47	%	C.	0	%
35.	A.	27.78	%	B.	66.67	%	C.	5.55	%
36.	A.	88.89	%	B.	11.11	%	C.	0	%
37.	A.	5.56	%	B.	72.22	%	C.	22.22	%
38.	A.	19.44	%	B.	77.78	%	C.	2.78	%
39.	A.	52.08	%						
	B.	47.92	%						
40.	A.	53.57	%						
	B.	39.29	%						
	C.	7.14	%						
	D.	0	%						
41.	A.	33.33	%						
	B.	47.06	%						
	C.	19.61	%						
	D.	0	%						
42.	A.	0	%						
	B.	30.00	%						
	C.	70.00	%						

21.	A.	64.29	%	B.	35.71	%	C.	0	%
22.	A.	78.57	%	B.	21.43	%	C.	0	%
23.	A.	92.86	%	B.	7.14	%	C.	0	%
24.	A.	64.29	%	B.	35.71	%	C.	0	%
25.	A.	35.71	%	B.	57.14	%	C.	7.14	%
26.	A.	100.00	%	B.	0	%	C.	0	%
27.	A.	7.14	%	B.	71.43	%	C.	21.43	%
28.	A.	28.57	%	B.	71.43	%	C.	0	%
29.	A.	20.00	%						
	B.	66.67	%						
	C.	13.33	%						
	D.	0	%						
30.	A.	13.33	%						
	B.	73.34	%						
	C.	13.33	%						
	D.	0	%						
31.	A.	53.85	%	B.	46.15	%	C.	0	%
32.	A.	61.54	%	B.	38.46	%	C.	0	%
33.	A.	84.62	%	B.	38.46	%	C.	0	%
34.	A.	69.23	%	B.	30.77	%	C.	0	%
35.	A.	30.77	%	B.	69.23	%	C.	0	%
36.	A.	92.31	%	B.	7.69	%	C.	0	%
37.	A.	23.08	%	B.	61.54	%	C.	15.38	%
38.	A.	30.77	%	B.	69.23	%	C.	0	%
39.	A.	53.85	%						
	B.	46.15	%						
40.	A.	71.43	%						
	B.	28.57	%						
	C.	0	%						
	D.	0	%						
41.	A.	31.25	%						
	B.	68.75	%						
	C.	0	%						
	D.	0	%						
42.	A.	0	%						
	B.	47.06	%						
	C.	52.94	%						

APPENDIX B

Questionnaire to Personnel Directors.

Answers to "Question 1 (open response)."

Question 1: From the point of view of an employer, what advantages are there to hiring college graduates, as compared to non-graduates?

Can adapt themselves more easily.

Knowledge, or where to go to find it.
Mental discipline.
Maturity.

More self confidence, flexibility and intellectual ability, motivates more easily, attitude more constructive and enthusiastic.

For engineering and accounting a degree is necessary to perform required job duties.

Better theoretical knowledge allows faster training.
College studies provide superior problem solving ability.

Desire to excel due to the investment in their career.

More promotable to higher level jobs.
Ability to take more responsibility and greater comprehension.

Graduates are more flexible with respect to assignments, travel and overtime.
More stability with graduate.

Possess greater immediate (learning) and long-range potential. This is the gamble! Many do, many don't.

Broader backgrounds generally.
 Greater in-depth knowledge of finance, accounting,
 economics.

Learn faster.
 Have greater and more ability.

Where jobs tend to be of a professional and/or executive
 nature the need for a degree may almost be a necessity,
 e.g., electronic engineering, tax accounting, etc. The
 successful performance level of a college graduate may be
 more assured than the non-graduate.

They have broader background knowledge and theoretical
 knowledge to draw from and can come up with several
 solutions to problems--a college student is easy for an
 employer to measure (success), grades and social
 activities and part time work can tell alot about what
 an employee can and will do.

In R/D work only the exceptional non-grad with long
 experience can equal the college graduate.

In our engineering work, they have much better formal
 training and faster advancement potential.

In the non-engineering fields college basically has
 taught them how to think, reason and discover better.

Thinking and decision making processes are more highly
 developed.

Our professional positions whether in operations, research,
 sales or administrative are becoming more complex and
 competitive each year and the college student who is
 trained in our specialty areas is equipped to make our
 company grow with the times and prosper.

Completion of BA or BS degree indicates ability to learn
 and "stay with" problems encountered in industry.
 Exposed to the business world their training enhances
 further development.

In general college graduates have proved they have the ability and are willing to work hard.

Also the college graduate through exposure to many courses, comes to the company with a more broad background than the non-college grad.

Skills, ability and knowledge.

Ability to make an analysis of the facts and then a decision.

Broader outlook and stronger motivation to succeed.

Provide future administrators and managers and to provide for future growth of the company.

To spur other equally capable but not as well educated employees to continue their education and to work up to their capabilities.

Better in advanced positions - as a general rule.

None.

In some areas, college training is virtually a necessity and even where this is not so it takes a non-graduate years to attain comparable skills.

College graduates are generally more cultured and able to move more comfortably within the higher corporate echelons.

They have met minimum intellectual and self-discipline requirements.

We must have at least 4 year college graduates for our professional categories such as engineering, chemistry, accounting etc.

We utilize large numbers of two year technical institute graduates in our sub-professional and technician categories.

Potential is much greater particularly in an engineering design/development atmosphere.

They have overall greater potential for advancement and are used to learning quickly.

Generally are faster learning in professional work, and reach higher level in corporation.

Ability to understand new concepts and to discuss administrative problems.
Generally exposed to creative thinking-more inclined to suggest solutions to problems.

Potential for growth.

Better problem solvers, ability to communicate superior.

College graduates are better prepared to assume management role in a short period of time.

Generally more mature/older/ and have a broader learning experience.

Our firm consists of CPA's and lawyers who receive their professional training in college.

Graduation many times is a requirement for professional licensure or registration.

More skilled-more creative-certain technical knowledge gained needed to perform task.

A better per cent pool in which to fish.

The college graduate has the skill level necessary for effective operation.

Have ability to progress, lead, and make decisions.

Availability.

College graduates bring to the job a greater measure of maturity - in addition exposure to certain skill areas and management science may enable the college men to be a more effective manager.

Better ability to grow, more alert.

The college graduate has greater ability to communicate. The college graduate has a greater general knowledge of a diversity of subjects that may prove of benefit to their employer.

Broader viewpoints - Better base to grow on. Better able to cope with changing world. Disciplined minds - learn faster.

Acquired technical knowledge sooner and can be applied much quicker to actual practice.

We have certain jobs, or areas of work which require a degree. We will not hire a college graduate into lower jobs.

The college grad/post grad has a much broader background usually than the non-grad. They usually have had more training and practice in thinking for themselves and in organizing themselves. Usually they have more purpose and direction and are more mature in their approach.

Faster growth potential. Broader background and knowledge. Assume a more responsible position at entry than non college graduates.

Maturity, broader insight, technical skills which are transferable.

College students have acquired a general knowledge of the business area through specific coursework. Graduates are generally more mature & require less direct supervision.

Tend to be the higher type individual desired for our business.

The value of education in adapting to change is substantial, particularly with changes in technology.

Better promotability.
Possess and are able to develop better communication skills.

Greater growth potential.

Broad general knowledge. Usually more sure of himself. Learning is a habit--he will not just learn to do - but will continue to gain knowledge.

Their management potential is generally greater. In the field of engineering, the formal training that they receive is necessary for them to perform analytical and design duties.

Main advantage is for Engineering, Scientific, and other professional employees.

Depends on: the level of position
the scientific or technical specifics--where professional backgrounds are required.
On the other hand many manufacturing and purely productive positions are better suited to the technical rather than the degreed individual.

Greater professional growth potential.

Degree level educational background essential for complex duties.

Being an engineering company--the graduate must have background to apply himself in a number of engineering fields before specializing.

College grads generally are more capable of performing well sooner.
They generally have greater potential for long range growth.

Broader scope in thinking and problem solving.
Greater awareness of individual and group dynamics.

Less in-plant training required for assignment to initial projects.

Generally these people will be better prepared to fit a high level position.
Motivation is generally higher.

Obvious--every advantage but I'm speaking only for scientific, engineering, or professionally oriented jobs.

Less training required.
Generally higher motivational level.

Sounder educational foundation.
More confidence and maturity.

The technology today requires we use only graduates.

Can absorb more information during training sessions which helps him assume responsibility more rapidly.
Can be moved from one area to another with a minimum amount of retraining.

College graduates have a broader background which helps their ability to grasp a complete experience vs only a part thereof.

In a challenging growth position requiring rapid learning, decision making, and the ability to communicate, the college graduate is preferred.

Management has more flexibility of assignments for college graduates.

APPENDIX C

Questionnaire to Personnel Directors.

Answers to "Question 2 (open response)."

Question 2: What are some of the disadvantages, if any,
to hiring college graduates, as compared to non-graduates?

Many do not realize they are working for a living.
Devote too much time in discussions that are not
productive.
Time costs money.
Are not as punctual as they should be which is a poor
example for others.

Sensitivity.
Require constant attention if on routine assignments.

Labor turnover results if a job does not utilize the
skills and knowledge acquired by the college graduate.

None.

Rising wages due to competition amongst employees.
Graduates expectation of needing to change employers
after a few years for better "all around" experience.

Over hiring for the job. Not starting a graduate in
challenging jobs.
Dissatisfied sooner & want promotion before they are
qualified or openings occur.

Very expensive in this competitive market.

Salary considerations--cause problems because of
escalating "fresh-out" salaries. Also not really
worth the \$ it takes to get them.
Lot of mobility--more apt to leave than non-college
graduates.

More mobile.
More expensive.

May be over qualified for a specific job.

Occasionally some graduates have a tendency to want to be in top level positions overnight. However this is a maturing process and it is usually, in most cases, overcome.

None.

None.

None in our professional areas-wouldn't consider college grad in skilled or semi-skilled areas.

Higher salary expense.
Permanency problems - training takes more time in management level supervision.

None.

At times college graduates enter a company with misguided impressions of what a business is all about.

Many times, it is difficult to motivate the graduate (e.g. his or her willingness to perform menial tasks necessary to the job).

Salary requirements.

They expect to move faster.

To a minimum degree it may lead to a higher turnover of employees, which is probably compensated for by greater innovation and leadership while employed.

Move to other jobs if advancement not rapid enough to their point of view.

Fewer of them.

For certain positions such as sales, we find fewer college graduates who are willing to stay in their jobs for extended periods--there we prefer a year or two of college.

The possibility of building in turnover - the college graduate will leave sooner if dissatisfied.

Non-graduates have more practical experience in most cases, but college graduates usually catch up very rapidly.

We rarely, if ever, would put a college graduate in a job that does not require such education.

Considerably higher salaries and potential mobility.

Their initial expectations are unrealistic.
They are slow to perform well in the initial stages.

Salary scale high for trainees.
Move from job to other job and/or graduate school.

Failure to accept less interesting positions or training as requisites to background for performing a job.
Salary demands inconsistent with level of ability and potential.

Limited opportunities for advancement.
More mobility, higher turnover.

None - provided job is structured/suited for a college graduate.

They are not willing to stick it out through the thick of things.

They become dissatisfied sooner.

We do not hire non-graduates except in secretarial and clerical positions since professional positions require college training.

More salary, sometimes change jobs or leave prematurely.

None, all things being equal.

None.

Turnover.

Expectations.

Turnover.

May block progress of others up from the "ranks."
It's expensive and turnover is high 50% in 5-7 years.

Too expensive, want too much and too fast promotion.

Individual reluctance to realize that he is in the kindergarten of the business world.
Our experience is that the average college graduate makes two or three moves prior to becoming a permanent part of any organization.

Finding challenging assignments for them in early years.
Meeting their aspirations.

College grads tend not to want to do the routine part of any job. They sometimes talk about what they want to do in cliches they've gotten from guidance officers.
Inflated egos--some feel the world owes them a living--they're a growing minority.

Often feel they are being put upon to work their way up.
All want management positions but few can identify what
they mean by management.

Starting salaries are not relevant to capabilities to
produce in the first year.

Require higher starting salaries.

In some cases, impatience to get ahead. Salary
requirement sometimes unrealistic. Some recent grads
seem to have early high goals and demands, yet do not
want to work for those goals.

Competition for them--their rose colored glasses--nobody's
world is the real world but theirs is less real than
thine and mind. Excessive turnover until they find they
have to produce to succeed.

Unless there is significant company growth, thus affording
college graduates an opportunity to realize their goal, it
is fruitless to hire a large number of graduates.

College graduates expect to be promoted as fast as
possible.

No real disadvantages unless not properly placed--placing
of college graduates is more difficult in terms of
matching background and experience to job requirements
and needs.

Salary requirement (expecially in engineering and technical
fields).
Job mobility - hazard of loss to company after training.

Too impatient--want rapid promotion beyond means.

Many college grads are extremely impatient.

Opportunity for advancement is desired sooner.
Slight tendency to criticize and complain rather than
implement and initiate.

Job goals.

If the position is routine we are better off hiring non-
college graduates.

Higher salary requirement.
Greater job mobility.

Have a tendency to want to progress (not in job, but in
projects) too fast - become frustrated sooner in
industrial environment--however it is good for management
to be pushed and challenged.

Finding them.
Prone to expect too much, too soon.

Have a tendency to become dissatisfied with a lower level
position. If the promotion does not come when he expects,
he'll be gone.

Considerably higher salaries just to "meet competition."

APPENDIX D

Question 15 asked the following: From your own point of view, what have been the advantages of a college education in your career?

Here are the responses of businessmen: (That is, here are the responses of those who are employed in business, who have only a Bachelor's degree, and who majored in business while undergraduates.)

good business background
well rounded education
necessity of having a degree

necessary training required
increase knowledge
increase earning potential

specific skills
well rounded
sexual potency

many opportunities would not have been available without the diploma
it has helped my ability to communicate with people

qualified me for jobs available to only a college grad
has qualified me to handle a higher level position
has affected the attitudes people have towards me

broadening of knowledge and perspective understanding of complexities of living

it allows one to mature and develop a sense of values in a stimulating and enriched environment

the advantages of a college education in my career are not plentiful enough to fill these blank spaces

none

learning basic theory & terminology of the trade
meeting people both in the same field + in other fields
getting me to think as an individual + look at both sides
of an issue

better job opportunities
flexibility in changing jobs
self-gratification

the theory taught on the college level gave me a basic
background for my profession
the liberal arts courses extended my general scope and
view of the world

overall ability to learn new methods
ability to understand new concepts from knowledge of
old concepts
everyday understanding of common ideas that can be applied
with knowledge to be profitable

the ability to communicate
the ability to analyze
a better rounded individual

none - other than in seeking employment where I was asked
for my education level

given me a broader firmer foundation upon which I have
been able to build a specific future

level of starting salary higher
advancement

career skill
opened doors to better positions

necessary to be considered for my position
improved ability to discuss and communicate
opened other avenues

knowledge to know where and how to obtain information
familiarization with the business community and the free
enterprise system
development and practice in spoken and written communication
practice in thinking, experimenting
development socially as an individual

as an entree into positions which are closed to non-college degree holders
it gave me the skills and tools which are needed for success in my field

ability to communicate with people in general
recognition of my own capacities and desire to learn in all areas
developed some perceptive powers, not necessarily the product of college experience, but in a small way, possible

a college diploma is the open sesame to many jobs

as a door opener for any executive position
specifically in my case it gave me tools to handle jobs
as a fresh immigrant in my middle twenties it helped me to integrate extremely fast in american business life

college courses have helped in giving me some specific skills
improved my communicative skills

broader outlook of general business world
I was able to select and reject different areas of business because of the wide selection of business courses

one becomes more self-dependent; educationally, you think for yourself

it was a prerequisite to the interview
established a level of awareness and communication which I would not have achieved otherwise, and without which I could not hope to succeed in an executive capacity.

building confidence
realizing that you have the ability to undertake a detailed assignment and complete it
learning how to research and prepare reports and studies

a key in acquiring a suitable position
it gives you a more rounded outlook in what you do
you are better prepared to meet challenges

the variety of courses gave me the chance to learn about areas I might not have explored on my own
it gave me self-confidence

gave me confidence to assume leadership
gave me insight into myself and my surroundings
prepared me for the career I now enjoy

the business part of the BBA degree was of little use -
the arts and english and science parts I've put to greater
use

of course, in all my views of things, a college education
is one of the most rewarding things in life. You learn
something new every day. One of the most rewarding times
of my life. Whether it has an advantage for you or not,
as for me I will always have a use for my college career
socially as well as in my business

development of ability to learn and adjust to changes
development of personality through contacts of various types

learning the essentials of my profession

prepared me for assuming greater business responsibility

Here are the responses of those who are employed in engineering or science, who have only a Bachelor's degree, and who majored in engineering or the sciences while undergraduates.

aid in my qualifications for job considerations, etc.
qualified me for state licensing

ability to branch out into related fields with the basic training received
foundation for my occupation
ability to advance in my occupation

ability to do a variety of tasks or change occupations
sets one at a higher level than those with only a H.S.
or incomplete education

absolute necessity. Company required college degree to start

first it makes available a wide range of occupational areas where one is liable to be interested in
second it allows me to think on a broader sense and with greater flexibility

starting position and salary were higher in the scientific field which was my major. However since I went into a completely different field when I first graduated, the fact that I had a B.S. was of no importance. Today a B.S. is not good enough to advance in the scientific field unless you excel in a specialty. Even a M.S. degree is of no great help. Large companies seek Ph.D simply as "window dressing" because I find that a great majority of Ph.D's are incompetants in the sciences.

the ability to think objectively and communicate at a technical level with people of the same background.
Higher salary for college graduates. Change job with an increase in salary in most cases. Advancement readily available for college graduates.

management positions in my department are only open to college graduates
my college education did not necessarily give me specific skills but instead gave me the knowledge of the approach needed for successful problem solving

to provide me with self assurance

develop the ability to think a problem through and stick to it even in the face of difficulties

provided a fairly broad base of general knowledge necessary to really understand and get along with people while not providing all the answers, it taught me where to look for them and to go about obtaining them

a college education has taught me how to learn on my own. This is more important than the actual material learned in college. In college I learned basic principles in physics, mathematics and engineering which I can use in almost any application. The basics are more important in college than applications. College broadened my outlook and personality (important in career).

given me specific knowledge which is needed in my profession exposed me to the way things are done in the adult world provided a degree with which to open employment doors

learning a specific body of knowledge
a degree as access to employers

the prerequisite aspect of having a degree
the acquisition of the ability to formulate problems and questions
the ability to effectively communicate

taught me the engineering basics from which to expand
gave me a broad knowledge and understanding concerning subjects other than engineering
gave me confidence in my ability to solve problems and a way of thinking which lends itself to solving problems

learning methods to attack problems
learning enough about related sciences to better understand my special job function
being made aware of other general fields of knowledge not related to my job function

basic preparation

knowledge of physical functions of materials and matter
exposure to various texts and sources of information
the ability to rely on my own resources

engineering degree (BCE) is required for my present position

acknowledgement of ability to learn
requirement for position held

technical background
opened job opportunities for which non grad would not
even be considered

good salary
faster advancement
professional status

got me in the door

learning process - understanding method of solving technical
problems
broadened scope of people and the universe
imparted certain desirable attitudes

career would not have been possible at all without college
degree
compared to others in lesser jobs in same fields income
is much higher
given me an outlet for creative energies

learning specific skills and specific knowledge

to pursue a specialized field
to reason and understand complex situations that might
occur on the job
to be a more diligent worker

the education I received at City was vocational, the
degree opened doors which ordinarily would have been
closed to me

degree was key which opened the door to the career I chose
in todays complex environment, specific skills and specific
knowledge have taken a back seat to the items of 10-13
above

the ability to see the bright picture
a sensitivity to other professions and their problems
to provide the tools and foundation upon which to build

mature thinking
getting started in industry
social position

briefly a college degree enabled me to obtain an adequately remunerative position in engineering the course work however has little bearing to my occupation but is of value in terms of items 11 & 13 to some extent

opportunity to obtain the position
ability to organize and express information
specific knowledge obtained in college which is required in the performance of job

meet legal requirements for professional advancement
prestige
helps to learn faster

basic knowledge
appreciation of other human beings

other than providing me with specific basic skills, college education has instilled an attitude of inquiry which is beneficial

eligibility for job title and promotions
incentive to further education - not necessarily through formal education

as a chemist it would have been completely impossible to do anything without a degree. With today's technical advances a B.S. is not good enough. Like money, the more people with it, the less it is worth.

it allows for an advanced step in starting with a firm
it allows for advancement faster
it taught me where to seek the knowledge required for my job

broad knowledge of business tasks
ability to think clearly and accurately
ability to make meaningful decisions on the job

the technical courses have, of course, been of prime importance in my career. arts and humanities made a more complete human being out of me. without these basic studies my job would have been impossible especially in the area of communication - both verbal as well as written

is a basic requirement (i.e. no degree - no job)
a broad brush insight into diverse areas

provided a springboard for the more specific learning skills required by my career

technical education
better equipped to communicate

brought thinking on a professional level
gave good exposure to necessary fundamentals required for career

prerequisite for job

confidence to tackle any problem and come up with a solution
history - what was done before, basic concepts etc.
tools to tackle a job - where to get information

has helped me analyze problems (both scientific and personal)
with a great deal more logic
I have learned to appreciate many of the arts

enabled me to do more satisfying and challenging work
broader outlook in general - cultivate tastes - music
literature etc.
attaining higher salary level

enhances opportunity for obtaining a better job
enhances opportunity for promotion within a profession

the college education gave me a very good technical base
from which I have been able to expand in related fields
better job opportunities

higher starting salary
better chance for advancement
to an extent provided a good basis for knowledge gained
by on-the-job experience and study

it gave me a trade

higher "rank" in our society
profession to make a good living with
less physical effort
a deeper and wider understanding of environment

able to be in a profession
able to enter at a certain level

having the degree has been the main advantage since without
it advancement to my present position would have been
impossible. two years ago I switched careers and am now
working towards a master's degree.

APPENDIX E

We now turn to the results found when studying those 53 business majors with bachelor's degrees who have classified their occupation as being other than a "businessman," and those 9 engineering and science majors who have classified their occupation as being other than an "engineer or scientist." The complete results for these groups (and a copy of the questionnaire) are to be found beginning on page 161. All of the respondents in both groups have classified their present occupation as being a "professional."

Is a business major who is now a professional in a different occupation than a business major who is now a businessman? Is an engineering or science major who is working as a professional in a different field than an engineering or science major who is working as an engineer or scientist? I am not sure we are talking about those who have switched fields, and I therefore have little faith in the ability of these particular results to tell us the value of education when one changes fields. "Professional" as a classification of occupation leaves much to be desired.

Looking first at the results of business majors working as professionals we find that 83 percent of the

business majors working as professionals found their business training most valuable (question 7), while 81 per cent of the business majors working in business also found their business training most valuable. The contribution of specific skills to the professional is a major contribution for 70 per cent (question 14) while it is a major contribution for only 46 per cent of those business majors who are now businessmen. Career skills are a major part of college education for 43 per cent (question 24) of the business majors working as businessmen while it is a major contribution for 65 per cent of those who are working as professionals. If we could be sure that a professional is in a different occupation, then these would be noteworthy results. Or if being a professional is the same as being a businessman we would modify our results by computing new averages. Since we are unsure as to where a professional fits in (if indeed all responses could fit into one category), we can do no more than note these results.

We now look at the 9 responses from science and engineering majors who are now working as professionals. The results for this group paint a different picture than the results from the above group. College made a major contribution in giving specific skills and specific knowledge according to 56 per cent in this group (question 14).

Eighty-one per cent of the science and engineering majors working as engineers or scientists said specific skills made a major contribution. Career skills were a major part of college education for 62 per cent in this group (question 24), the corresponding figure for those working as engineers or scientists is 80 per cent. We are still unable to work with the term "professional," and this plus the limited response in this group allows us to do little more than note these results.

This questionnaire asks for your candid opinion about college education.

Please do not write your name on the questionnaire. Do not mark more than one space on any question. Please return the questionnaire in the enclosed post-paid envelope.

IF YOU ARE NOT PRESENTLY WORKING (A HOUSEWIFE, FOR EXAMPLE) OMIT QUESTIONS 1, 2, 3, 7-20.

1. Do you own all or part of the business in which you work?
 - A. Yes, have my own business ()
 - B. Yes, own part of business ()
 - C. No ()
2. Classification of your firm
 - A. agriculture and mining ()
 - B. construction and manufacturing ()
 - C. services // wholesale and retail trade ()
 - D. finance ()
 - E. other () Specify: _____
3. Classification of your occupation
 - A. engineer or scientist ()
 - B. businessman ()
 - C. professional ()
 - D. skilled worker ()
 - E. semi-skilled worker ()
4. Level of your education: what is the highest academic degree that you have obtained?
 - A. Bachelor's degree ()
 - B. Master's degree ()
 - C. Ph.D. or Ed.D. ()
 - E. LL.B. or J.D. ()
 - F. M.D., D.D.S., D.V.M. ()
5. Undergraduate average
 - A. A- or better ()
 - B. B or B+ ()
 - C. below B ()
6. Classification of your undergraduate major
 - A. arts and humanities ()
 - B. the physical & biological sciences and engineering ()
 - C. social sciences ()
 - D. business ()
 - E. professional ()
7. Which area of college training do you find most useful in your occupation? Check one only.
 - A. arts and humanities ()
 - B. the physical & biological sciences and engineering ()
 - C. social sciences ()
 - D. business ()
 - E. pre-professional curriculum ()

(over)

8. Which area of college training has been least useful in your occupation?
Check one only.

A. arts and humanities ()
 B. the biological & physical sciences and engineering ()
 C. social sciences ()
 D. business ()
 E. pre-professional curriculum ()

9. Were the courses in which you received your highest grades the most valuable courses in relation to your occupation?

A. Yes ()
 B. No ()

Contributions of College Education

Questions 10-14, please answer as follows

A. college education has made a major contribution B. college education has made a minor contribution C. college education has made no contribution

College education, in your opinion, has helped in your employment by

10. making you a faster learner

A. () B. () C. ()

11. giving you the ability to make decisions

A. () B. () C. ()

12. giving you the ability to communicate with others
(speaking and writing)

A. () B. () C. ()

13. giving you greater knowledge and/or perspective

A. () B. () C. ()

14. giving you specific skills and specific knowledge

A. () B. () C. ()

15. From your own point of view, what have been the advantages of a college education in your career?

a. _____

b. _____

c. _____

16. Before undertaking your present position was a period of on-the-job training required?

A. yes, a period of over 1 year ()
 B. yes, a period of 6 months to 1 year ()
 C. yes, a period of less than 6 months ()
 D. no training was required ()

17. Are the same or similar positions being held, in your job assignment by non-college graduates?
- A. yes ()
 B. no ()
 C. don't know ()
18. If your answer to question 17 is "yes," then was the period of on-the-job training for the non-college graduate
- A. longer ()
 B. the same ()
 C. shorter ()
 D. don't know ()
19. If your answer to question 17 is "yes," then in the same or similar position does the non-college graduate earn
- A. a greater salary ()
 B. the same salary ()
 C. a smaller salary ()
 D. don't know ()
20. On the average, do non-college graduates in your firm advance
- A. faster ()
 B. slower ()
 C. no difference ()
 D. don't know ()
21. Did you meet your wife (husband) in college or through college activities?
- A. yes ()
 B. no ()
 C. not married ()
22. Did you meet your present group of close friends while in college, or through college activities?
- A. yes ()
 B. no ()
23. Were your present political opinions, or your political philosophy, formed while you were in college?
- A. yes ()
 B. no ()

Various aspects of college education: College education is not only one thing such as career preparation, but rather a combination of experiences. Thinking back to your college days, please answer questions 24-28 as follows:

- | |
|------------------------------------|
| A. major part of college education |
| B. minor part |
| C. no part of college education |

24. career skills
- A. () B. () C. ()
25. contacts leading to jobs
- A. () B. () C. ()
26. development of mind and personality
- A. () B. () C. ()
27. pursuit of good time (social activities)
- A. () B. () C. ()
28. wasted time
- A. () B. () C. ()

CONTRIBUTIONS OF COLLEGE EDUCATION - CCNY graduates of 1959
Summary - Business Majors with Bachelor's Degrees who have
 classified their occupation as being other than a "businessman."
 53 responses.

1.	A.	7.69 %				
	B.	11.54 %				
	C.	80.77 %				
2.	A.	0 %				
	B.	12.77 %				
	C.	4.26 %				
	D.	21.28 %				
	E.	61.69 %				
3.	C.	100 %				
4.	A.	100 %				
5.	A.	0 %				
	B.	44.23 %				
	C.	55.77 %				
6.	D.	100 %				
7.	A.	3.85 %				
	B.	0 %				
	C.	7.69 %				
	D.	82.69 %				
	E.	5.77 %				
8.	A.	20.41 %				
	B.	71.43 %				
	C.	2.04 %				
	D.	6.12 %				
9.	A.	53.06 %				
	B.	46.94 %				
10.	A.	52.00 %	B.	38.00 %	C.	10.00 %
11.	A.	46.94 %	B.	38.78 %	C.	14.28 %
12.	A.	61.22 %	B.	24.50 %	C.	14.28 %
13.	A.	83.68 %	B.	14.28 %	C.	2.04 %
14.	A.	69.38 %	B.	22.45 %	C.	8.17 %
16.	A.	42.85 %				
	B.	10.22 %				
	C.	4.08 %				
	D.	42.85 %				

17. A. 21.17 %
 B. 71.29 %
 C. 7.54 %

18. A. 27.28 %
 B. 36.36 %
 C. 0 %
 D. 36.35 %

19. A. 9.09 %
 B. 72.73 %
 C. 18.18 %
 D. 0 %

20. A. 4.88 %
 B. 65.84 %
 C. 17.08 %
 D. 12.20 %

21. A. 17.31 %
 B. 75.15 %
 C. 7.54 %

22. A. 19.76 %
 B. 80.24 %

23. A. 12.00 %
 B. 88.00 %

24. A. 65.38 %	B. 28.85 %	C. 5.77 %
25. A. 13.46 %	B. 36.54 %	C. 50.00 %
26. A. 68.63 %	B. 29.41 %	C. 1.96 %
27. A. 17.31 %	B. 44.23 %	C. 38.46 %
28. A. 1.96 %	B. 35.29 %	C. 62.75 %

CONTRIBUTIONS OF COLLEGE EDUCATION - CCNY graduates of 1959
Summary - Science and Engineering Majors with Bachelor's
 Degrees who have classified their occupation as being other
 than "engineer or scientist." 9 responses.

1.	A.	0	%			
	B.	0	%			
	C.	100	%			
2.	A.	0	%			
	B.	12.50	%			
	C.	12.50	%			
	D.	0	%			
	E.	75.00	%			
3.	C.	100	%			
4.	A.	100	%			
5.	A.	11.11	%			
	B.	11.11	%			
	C.	77.78	%			
6.	B.	100	%			
7.	A.	0	%			
	B.	88.89	%			
	C.	0	%			
	D.	0	%			
	E.	11.11	%			
8.	A.	11.11	%			
	B.	11.11	%			
	C.	44.44	%			
	D.	22.22	%			
	E.	11.11	%			
9.	A.	77.78	%			
	B.	22.22	%			
10.	A.	44.44	%	B.	33.33	%
11.	A.	11.11	%	B.	55.56	%
12.	A.	44.44	%	B.	44.44	%
13.	A.	75.00	%	B.	25.00	%
14.	A.	55.56	%	B.	44.44	%
16.	A.	22.22	%			
	B.	22.22	%			
	C.	22.22	%			
	D.	33.33	%			

17. A. 33.33 %
 B. 44.44 %
 C. 22.22 %

18. A. 33.33 %
 B. 0 %
 C. 0 %
 D. 66.67 %

19. A. 33.33 %
 B. 66.67 %
 C. 0 %
 D. 0 %

20. A. 0 %
 B. 71.41 %
 C. 0 %
 D. 28.59 %

21. A. 22.22 %
 B. 55.56 %
 C. 22.22 %

22. A. 33.33 %
 B. 66.67 %

23. A. 22.22 %
 B. 77.78 %

24.	A.	62.50 %	B.	37.50 %	C.	0 %
25.	A.	12.50 %	B.	37.50 %	C.	50.00 %
26.	A.	50.00 %	B.	37.50 %	C.	12.50 %
27.	A.	12.50 %	B.	37.50 %	C.	50.00 %
28.	A.	12.50 %	B.	25.00 %	C.	62.50 %

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