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Are business students computer literate?

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ABSTRACT

In the modern world, a person without a computer knowledge will be considered a "crippl-ed" person. The knowledge of computer is crucial for business managers, however. A com-puter literate person is one who understands the computer technology, can use the computer, and is able to understand its limitations.

Realizing a need for computer literacy, colleges and universities require students to take at least a course in computer. This trend started in 1980 and now most students could be con-sidered computer literate. This paper summarizes the results of the surveys in 1985, 1987, and 1992 of the students in the introductory course in computer. The survey found that more and more students know more about computers, the software, and their applications. The survey shows that the percent of students who know different software has consistently increased since 1985.

INTRODUCTION

It is no secret that in developed countries computers are used in every walk of life. The uses vary from banking with an automated-teller machine or placing an order for merchan-dise at a store to interacting with a mainframe. The trend indicates that the lack of a reasonable ability to interact with a computer could "cripple" a person. In other words, "Those who do not understand computers will be socially disadvantaged" (Shahabuddin, 1991). Regardless of whether anyone else can use computers, the ability to use the computer is crucial for business managers. Therefore, it is essential that the citizens of developed countries be literate in the computer and that business managers be educated in the use of computers.

Generally, literacy means the ability to read and write, and computer literacy means the ability to work with a computer in addition to the ability to read and write. The skill could range from just the ability to locate and press a key on a keyboard when instructed to do so to the ability to write instructions for a computer to perform complicated tasks. Obviously, the higher level skill requires more training. Fortunately, many citizens need only basic skills such as the ability to read and follow instructions and the ability to locate and press a key on a keyboard when directed.

Wong et al. (1986) say that computer literacy has three elements: awareness, skill, and knowledge. They define awareness as the ability to know the capability, advantage, limitations, and effects of the computer. Skill is defined as the ability to program or use software. Knowledge means understanding the technical working of software and hardware and how the systems function internally. They define computer literacy as the synergistic combination of the three components. The definition, however, is too broad and need not apply to all business managers except those who are directly supervising an MIS or a data processing department. Some of the components of the definition could be included when defining business computer literacy. According to Cooper (1992), "An awareness of how computer technology affects a manager's job is an important requirement necessary in the development and maintenance of basic career competence . . . . They cannot abdicate this power to MIS managers who often have little understanding of corporate strategies."

Regardless, business managers need to have a functional knowledge of the computer. Functional knowledge is defined as the ability to read a software manual and apply the software to the person's area of expertise. This definition does not require that a manager know how to write a computer program, design a system, or have in-depth knowledge of hardware.

The modified definition is similar to the definition of computer literacy by Gallagher and Gauntt (1985). They define computer literacy as "the knowledge necessary to use computers to solve business problems." They list six levels of knowledge, with each level involving greater depth. They suggest that management accountants should achieve all levels of knowledge. Obviously, some accountants may need to achieve all levels, but not every manager needs to learn all levels. Thus, a narrower definition, as suggested in this paper, is more appropriate for business computer literacy.

Due to the lack of computer literacy in many organizations, unproductive use of computer software has risen tremendously. According to *Computerworld* (1990), one thousand management information system (MIS) managers indicated that "one-third of all computer programs in office environments are cast aside by users six months after purchase." It further reports that the reason for the problem is that line managers are unprepared for the onslaught of the computer. Most often managers compete and buy hardware and software without any commitment to either take the time to learn them or find uses for the systems. This is all due to the lack of awareness and functional knowledge. Thus, they are business computer illiterate.

Obviously, the task of educating business managers falls on educational institutions. To educate students in computers, many universities encourage students to take a course called Computers in Society. This course is usually taught by faculty in many departments. The textbook used in this course usually contains topics such as "computer history," "computer components and software," and a computer language.

In addition, many business schools require students to take a course in data processing/MIS. While required of all potential business students, this course also is open to any student regardless of major. Topics commonly taught in this course are spreadsheet, word processing, computer hardware, and computer applications. The emphasis is on teaching students to become proficient in the use of spreadsheet software, word processing software, and the general understanding of computer applications in business.

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While universities were moving in the direction of educating students in computers, a similar attempt was in progress in high schools. Previous surveys (Shahabuddin, 1991) have indicated that many students had basic knowledge of computers before taking the computer course at the universities. In addition, those who were majoring in business were likely to take both the university suggested course as well as the computer course required by the business school.

In order to ascertain a trend of the level of understanding of computers by the students, a survey was conducted of all students enrolled in the "Computers in Business I" course in the winter semesters of 1985, 1987, and 1992 in the College of Business at Central Michigan University (CMU). The results of the surveys of the years 1985 and 1987 have already been published (Shahabuddin, 1991). This paper discusses the results of the 1992 survey as well as compares the results with the last two surveys.

RESEARCH METHODOLOGY AND HYPOTHESIS

A questionnaire was given to 209 potential business students taking the introductory Computers in Business course in the winter semester of 1992. The same questionnaire had been given to 557 students in 1985 and to 442 students in 1987. All potential business students must take this course prior to admission to the College of Business. This course is one of the common body of knowledge (CBK) courses used by the college for meeting the American Assembly of Collegiate Schools of Business (AACSB) core requirements. A student intending to major in business regardless of the specific major must take this course or a similar course approved by the university. Only a basic knowledge of accounting and mathematics is required prior to taking this course. No previous knowledge of computers or a computer course is required.

As found in the previous survey, since many high schools and universities offer courses in computers, it is likely that the Computers in Business course could have a mix of students with a variety of backgrounds in computers. This variation creates for the instructors a problem in deciding whom to teach and at what level.

My research questions are:

1. What is the mix of students in the course? Has it changed since 1985?
2. Are students learning more about computers in high school?
3. Are students more "educated" in computers?

ANALYSIS

To understand the trend in computer literacy, it will be appropriate to summarize the results of the 1985 and 1987 surveys. In the previous survey, 56.1% of the students knew a computer language. Of those, 48% knew BASIC, 3% knew FORTRAN, 1.7% knew COBOL, and 5.9% knew others. Among them, 4.8% learned it at another college, 17.2% learned at CMU, 33% learned at a high school, and 1.1% learned at home. Of those surveyed, 69.1% had taken a computer-related course before taking the Computers in Business course. Of them, 7.7% took

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the course at another college, 34.1% at CMU, and 26.1% at a high school. Of those who had taken a computer-related course, 39.9% had taken an introduction to data processing course before taking the current introductory computer course.

The 1985 and 1987 surveys also found that 69.1% had taken a computer-related course and 48% knew the BASIC language before taking the current course. Among these students, 74.2% were sophomores, 21.0% were juniors, and 4.5% were seniors. Of those surveyed, 58.09% of the sophomores, 57.54% of the juniors, and 30.77% of the seniors knew a computer language. 72.01% of the sophomores, 68.39% of the juniors, and 47.69% of the seniors had taken a computer-related course. 40.50% of the sophomores, 42.92% of the juniors, and 27.69% of the seniors had taken a course in data processing. 58.04% of the students majoring in business and 48.38% of the other students knew a computer language. 50.71% of the students majoring in business and 36.12% of the others knew BASIC. 70.74% of the students majoring in business and 63.23% of the other students had taken a computer-related course before. Among students responding to the survey, 83.5% were majoring in business.

In the 1992 survey, 58.4% knew a computer language. Of them, 46.9% knew BASIC, 1% knew FORTRAN, 2.4% knew COBOL, and 8.1% knew other languages. Of them, 6.2% had learned the computer language at another college, 11.5% at CMU, and 34.3% at a high school. 91.3% had taken a computer-related course before. Of those students, 16.1% took the course at another college, 31.6% at CMU, and 39.7% at a high school. Of those who reported taking a computer-related course, 62.7% of the students took an introduction to data processing course before taking the current computer course.

Of the students who knew a computer language (58.5%), 56.5% of the sophomores, 61.1% of the juniors, and 61.11% of the seniors knew a computer language. 85.71% of the sophomores, 71.43% of the juniors and 72.72% of the seniors knew the BASIC language. Of the 91.31% students who had previously taken a computer-related course, 90.3% of the sophomores, 92.42% of the juniors, and 94.11% of the seniors answered yes. In addition to gathering this information, this survey asked questions about the knowledge of spreadsheet and word processing, the ownership of a computer, and the ability to use a computer. Responses to these questions indicated that 86.8% of the students knew a spreadsheet software. Among them, 68.9% knew Lotus, 2.9% knew Quattro, 1.9% knew Excel, 1.9% knew SuperCalc, and 11.2% knew other software. Those who knew spreadsheet software included 85.59% of the sophomores, 85.49% of the juniors, 94.4% of the seniors. 76.1% of the students knew word-processing software. Among them, 5.7% knew WordStar, 55.5% knew WordPerfect, 3.3% knew Word, and 11.6% knew other software. 81.35% of the sophomores, 77.77% of the juniors and 77.77% of the seniors knew word processing. 27.8% of the students owned computers; 26.37% of the sophomores, 31.74% of the juniors, and 38.88% of the seniors owned PCs. 15.3% of the students indicated that they can use a computer without any difficulty, 72.7% indicated that they can use a computer with some difficulty, 3.7% cannot use a computer, and 1% indicated that they do not need to use a computer. 13.91% of the sophomores, 18.3% of the juniors, and 27.77% of the seniors could use a computer without any difficulty. 81.74% of the sophomores, 75% of the juniors, and 72.7% of the seniors could use a computer with some difficulty.

57.07% of the students majoring in business knew a computer language in comparison with 80% of the other students. 94.9% of the students majoring in business and 5.1% of the other students could use a spreadsheet. 95.5% of the students majoring in business and 4.5%

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of the other students knew word processing. 28.04% of the students majoring in business owned a computer compared with 55% of the other students. 14.20% of the business students and 66.67% of the other students could use a computer without difficulty. 80.87% of the business students and 33.33% of the others could use computers with some difficulty.

The results so far indicate that more students in 1992 knew a computer language compared to students four years previous. Consider the following table:

Table 1. Percent of Students Knowing a Computer Language and BASIC

| Class Year | Computer Language | | BASIC | |
	1985 and 1987	1992	1985 and 1987	1992
Sophomore	58.09%	56.45%	52.30%	85.71%
Junior	57.54%	61.19%	40.56%	71.43%
Senior	30.77%	61.11%	24.62%	72.72%

The table indicates that almost in each class level, the percentage of students who know a computer language has risen. Further, the increase in the percentage of students who know the BASIC language has gone up drastically. The increase is more pronounced among the seniors. For example, the percentage of seniors who report knowledge of a computer language went from 30.77% to 61.11% since 1985 and 1987, and the percentage of seniors who reported to know BASIC went from 24.62% to 72.72% during the same period. This indicates clearly the awareness of the need for knowledge of computers as students go through college.

This is further indicated by student response regarding completion of a computer-related course. Consider the following table:

Table 2. Percent of Students Who Have Had a Computer-Related Course Before Taking This Course

Class Year	1985 and 1987	1992
Sophomore	72.01%	90.32%
Junior	68.39%	92.42%
Senior	47.69%	94.11%

This table indicates that there is greater appreciation for taking a computer class. This attitude change is obvious in each class level. It is more pronounced in the senior level, where the percentage of students who reported having perviously taken a computer class jumped from 47.69% to 94.11%. This trend is further supported by a dramatic change in the percentage of students who had taken the Computers in Society course. Consider the table on the following page:

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Table 3. Students Who Reported Having Taken Computers in Society Course

Class Year	1985 and 1987	1992
Sophomore	42.05%	65.32%
Junior	31.60%	51.56%
Senior	23.07%	55.55%

The table shows that many students are taking the university suggested course in computers. In the case of seniors, the rate has more than doubled. This change in attitude indicates more appreciation for the computer as students see a need for the use of computers.

Of those who reported knowing a computer language, their answer to the question where they took the course is a further indication of interest in the computer. The results are:

Table 4. Percent of Students Reporting Where They Learned Computer Language

Class Year	1985 and 1987			1992		
	College	High School	Home	College	High School	Home
Sophomore	17.7%	39.66%	1.8%	19.1%	67.64%	8.8%
Junior	36.8%	20.75%	.9%	17.1%	53.65%	7.3%
Senior	21.6%	6.16%	3.1%	36.4%	36.36%	18.2%

This table indicates that more and more students are learning to use computers in high school. For example, the percentage of sophomores who reported learning a computer language in high school jumped from 39.66% to 67.64%. Notice that seniors who were unable to take a language course in high school either learned at home or at a college. All these numbers indicate a desire on the part of the students to become computer literate.

Students were asked whether they had taken a computer-related course and where they had taken it. The responses are summarized in Table 5 on the next page.

Once again, it is obvious that many more students are taking computer-related courses in high school. This all indicates an appreciation and a need for knowledge of the computer.

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Table 5. Percent of Students Reporting Where
They Took Computer-Related Course

Class Year	1985 and 1987		1992	
	College	High School	College	High School
Sophomore	39.3%	31.5%	48.1%	51.9%
Junior	52.3%	14.2%	66.1%	33.9%
Senior	38.5%	9.2%	43.8%	56.3%

The trend in this appreciation for the knowledge of computers is further shown by the following table:

Table 6. Comparison of Students Majoring in Business and Nonbusiness

Computer Course	1985 and 1987		1992	
	Business	Nonbusiness	Business	Nonbusiness
Computer-Related	70.74%	63.22%	90.9%	100.0%
Intro. Data Processing	40.64%	37.42%	61.9%	80.0%
Computers in Society	39.32%	35.48%	60.5%	50.0%
Know Computer Language	58.00%	48.04%	57.1%	80.0%

Table 6 summarizes the student responses of business majors and nonbusiness majors. The percentage of students from each group who have had a computer course is summarized in Table 6. For example, in 1992, 90.9% of those students who were majoring in business also took a computer-related course before taking the current introductory computer course; this compared to 70.74% in 1985 and 1987. Among the business students who had taken a similar course (introduction to data processing), the percentage of students increased from 40.64% in 1985 and 1987 to 61.9% in 1992. Further, the percentage of students who reported taking Computers in Society rose from 39.32% in 1985 and 1987 to 60.5% in 1992 among business students despite the fact they have to take Computers in Business as a requirement for admission to business school. This increase among business students is a further indication that they want to take as many computer courses as possible.

The number of students who knew a computer language and had taken computer-related courses is summarized in Table 7 on the following page.

In 1985 and 1987, 48.8% of all respondents knew a computer language and had taken a computer-related course compared to 57% in 1992. Notice that the percentage of students in 1992 rose in each course. The trend is further obvious from data in Table 8.

Table 7. Percent of All Students Who Knew Computer Language and Had Taken a Computer-Related Course

Computer Course	1985 and 1987	1992
Computer-Related	48.8%	57.0%
Computers in Society	23.9%	38.3%
Data Processing	28.1%	40.9%

Table 8. Percent of Students Who Knew Computer Language and Had Taken a Computer-Related Course

Computer Course	1985 and 1987	1992
Computer-Related	87.1%	97.5%
Computers in Society	50.2%	69.7%
Data Processing	42.7%	66.4%

This table summarizes the response of only those students who knew a computer language and had taken a computer-related course. For example, in 1992, 97.5% of the students who knew a computer language also had taken a computer-related course compared to 87.1% in 1985 and 1987. 50.2% had taken the Computers in Society course compared to 69.7% in 1992. 42.7% of the students had taken Introduction to Data Processing compared to 66.4% in 1992. In order to determine how many of the students reported having taken computer-related courses and took either the Computers in Society or a data processing course, Table 9 was created.

Table 9. Percent of All Students Who Have Had Computer-Related Course and Type of Courses

Computer Course	1985 and 1987	1992
Computers in Society	36.3%	61.7%
Data Processing	34.7%	58.8%

This table summarizes the responses of all the students who indicated that they had taken a computer-related course and the types of courses they had taken. Among them, in 1992, 61.7% had taken the Computers in Society course, and 58.8% had taken Introduction to Data Processing compared to 36.3% and 34.7% respectively in 1985 and 1987. It seems that more

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of the students either took Computers in Society or data processing or both. The following table summarizes the number of students who took both Computers in Society and Introduction to Data Processing:

Table 10. Percent of All Students Who Had Taken Introduction to Data Processing and Computers in Society Course

Computer Course	1985 and 1987	1992
Computers in Society and Introduction to Data Processing	22.7%	43.7%

This table summarizes the responses of only the students who indicated that they had taken both the Introduction to Data Processing and Computers in Society courses as a percentage of all students who filled out the questionnaire. For example, among all the respondents, 43.7% of all the students had taken both Introduction to Data Processing and Computers in Society. The table indicates that more and more students are taking both courses. On the other hand, among those students who indicated that they had only taken the Introduction to Data Processing course, the results are:

Table 11. Percent of Students Who Had Taken Introduction to Data Processing

Computer Course	1985 and 1987	1992
Introduction to Data Processing	56.9%	67.9%

The table summarizes the results of only those students who had taken Introduction to Data Processing.

CONCLUSIONS

As for the students learning about computers in high school, it is obvious from Tables 4 and 5 that more and more students are taking computer courses in high school.

The surveys indicate that more students who have had computer-related courses also are taking the Computers in Business course. In 1992, 90.32% of the sophomores surveyed had taken a computer-related course before taking this course compared to 32.01% in 1985 and 1987. In addition, in 1992, 85.41% of the sophomores reported that they knew the BASIC language compared to 52.30% in 1985 and 1987. Thus, many students have had a varied background in computer use before taking the Computers in Business course.

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All the results indicate that more and more students are taking as many computer courses as possible. This is indicated by all the results, but it is seen more clearly in Table 11. 67.9% of the students took both Introduction to Data Processing and the Computers in Society course. Table 8 also indicates more interest in computers. 97.5% of the students took a computer-related course in 1992 compared to 87.1% in 1985 and 1987. These are clear indications of the interest and desire to be knowledgeable in computers.

Obviously, educational institutions are providing opportunities for students to learn about computers, and, fortunately, students are taking advantage of the opportunity. As a result, more and more students are taking courses in computers. This is a good sign. However, how often they use this knowledge and for what purpose is not clear from this study. But the survey does show that as the class level changes, the percentage of students reportedly having difficulty using a computer decreases. Consider Table 12.

Table 12. Percent of Students with Different Level of Efficiency in Computer and Class Level

Class Level	Without Difficulty	Little Difficulty	Cannot Use	Need Not Use
Sophomore	50.0%	61.8%	57.1%	—
Junior	34.4%	29.6%	42.9%	—
Senior	15.6%	8.6%	0	—

Table 12 indicates that among students who reported having little difficulty in using computers, 61.8% were sophomores, 29.6% were juniors, and 8.6% were seniors. Obviously, as the class level increases, the percentage of students reported to having difficulty in using the computer decreases. The same conclusion can be drawn for the results in the column labeled "cannot use" the computer.

The same conclusion can be arrived when the number of students in class level is compared to all the students who participated in the survey. Table 13 summarizes the results.

Table 13. Percent of All Students with Different Level of Efficiency in Computer and Class Level

Class Level	Without Difficulty	Little Difficulty	Cannot Use	Need Not Use
Sophomore	8.3%	48.7%	2.1%	.5
Junior	5.7%	23.3%	1.6%	.5
Senior	2.6%	6.7%	--	--

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Thus, results indicate that students are learning more about the computer and the ability of students to use the computer increases at each level.

REFERENCES

Cooper, C. H. & Kliener, B. H. (1992). Basic computer literacy needed by all managers. *Industrial Management and Data Systems, 92*(1), 23-25.

Defeating computer illiteracy. (1990, December 3). *Computerworld, 24*(24), 116.

Gallagher, M. C. & Gauntt, J. E. (1985). Computer literacy is a professional responsibility. *Management Accounting, 66*, 8-10.

Shahabuddin, S. (1991). Computer literacy in busines schools. *International Journal of Computer Application Technology, 4*(2), 99-104.

Wong, W., Konar, E., & Kraut, I. (1986). Computer literacy: With ASK you receive. *Personnel Journal, 65*, 83-86.