

Computer Literacy Topics: A Comparison of Views within a Business School

ABSTRACT: Teaching students computer literacy is a critical task in business schools because of the growing reliance on computers in business organizations. However, the emphasis on literacy topics varies among the different discipline areas in business schools. To have a better perspective, this study investigated computer literacy skills and concepts perceived necessary by both faculty and students in different discipline areas of a business school. Although there appeared to be variations in the importance of literacy topics among different discipline areas, the results of this study showed that productivity software skills were considered most important by both the faculty and the students.

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INTRODUCTION

As computer information systems are being utilized at an increasing rate in all levels of business organizations, attaining computer literacy has become a necessity for business managers. This substantial growth in information systems and the growing need for computer literacy for managers has presented a tremendous challenge to business schools. In order to prepare students to deal with the computer information age, most business schools require at least one computer literacy course.

Unfortunately, there is no globally accepted definition of computer literacy as of yet, and the scope and orientation of the training required to achieve literacy has not been resolved [15]. In an effort to establish a comprehensive definition of computer literacy [5], some authors attempted to design all-inclusive computer literacy assessment batteries [5,7]. While it may be theoretically meaningful to develop an all-inclusive computer literacy smorgasbord [5,7], it is not reasonable nor practical to expect business majors to have a complete range of computer related skills. In addition, most business schools have limited resources in terms of budget, faculty, computer equipment, and the number of course offerings. A more practical way of defining computer literacy for business

majors may be a "personal needs" approach [5,11]. The "personal needs" approach recognizes the diverse needs for computer knowledge and skills of individuals in different professions. According to this definition, an individual who is able to use the computer to satisfy the personal needs of his professional area is computer literate.

Numerous articles have been written on introductory computer courses offered in business schools. Some of these studies focus on the perspectives of students or graduates [8] toward the courses. Other studies discuss important factors associated with course design [3,4,12,13] or course contents [1,6]. However, there has been little research which assesses the "personal needs" of all business school members for the design of the computer literacy course.

PURPOSE OF THE STUDY

Typically, a computer literacy course in a business school is a service course required for all business majors. The course is designed to support and complement other courses. Therefore in designing a literacy course, three objectives must be met [4,13]: (1) Teaching students relevant, important, and current computer concepts and skills; (2) integration with other courses; (3) contribution to the effective overall curricula. In order to design a literacy course which

meets these objectives, it is necessary to assess which computer knowledge and skills are deemed important by the constituent members in business schools.

First, it is important to assess the "personal needs" of business majors, because the literacy course should be designed to be relevant and meaningful to the student body. However, students' "personal needs" in regards to computer knowledge may or may not be congruent with faculty members' "personal needs". Students expect to use the knowledge and skills gained in the literacy course in future courses and in the work environment, while experienced faculty may have a more comprehensive view of the business curriculum and managerial applications than do students. In addition, "personal needs" for computer knowledge and skills may differ among discipline areas.

The purpose of this study is to examine and compare the computer literacy "personal needs" of various business school constituents. More specifically, the study examines the overall importance of computer literacy topics as perceived by faculty and students. Further, the study examines the varying perceptions among discipline areas. The perspectives of students and faculty within each discipline area are also examined. The investigation identifies a set of literacy topics common to

Table 1. LITERACY TOPICS FOR BUSINESS MAJORS

Topic No.	Description
1	History and evolution of computers
2	Computing systems, including microcomputers, mini- and mainframe computers
3	Computer hardware components including CPU, I/O, storage
4	OS - Operating systems software and concepts
5	File concepts and file organization techniques
6	Telecommunications and distributed computing
7	Information Systems - Transaction processing, MIS, DSS, and Expert Systems
8	Database concepts and principles from a user perspective
9	Modeling Concept (formulating mathematical models)
10	System Development
11	Program design and development
12	Common programming languages
13	Computer security, crime, ethics, and the law
14	Impact of computers on people and organizations
15	Career opportunities in information processing
16	"hands on" exercises with word processing packages
17	"hands on" exercises with spreadsheet packages
18	"hands on" exercises with database management packages
19	"hands on" exercises with BASIC programming
20	"hands on" exercises with MS/DOS commands

Table 2. NUMBER of FACULTY AND STUDENT PARTICIPANTS WITHIN DISCIPLINE

Discipline	No. of Faculty	No. of Students	Total
Accounting (ACCT)	10	16	26
Computer Information Systems (CIS)	14	39	53
Finance (FIN)	11	28	39
Management (MAN)	8	31	39
Marketing (MKT)	5	27	32
Administrative Office Systems (AOS)	12	23	35
Total	60	164	224

all members in a business school as well as other sets which are unique to each discipline area.

The study will help business schools more effectively allocate limited resources. For example, instructors may assign high priority to the topics considered important by all disciplines. Depending upon the distribution of the student body, remaining time and resources may be allocated to other sets which are unique to discipline areas. Further, the investigation will help instructors design a literacy course that is more relevant and can be more fully integrated with other courses in the business curriculum.

CURRENT TOPICS OF COMPUTER LITERACY

Since it was first introduced in the 1960's, the definition of computer literacy has dra-

matically changed [2]. In the beginning, a computer literate was one who could program using a language such as FORTRAN, BASIC, or COBOL. However, rapid changes in computer technology, including the development of microcomputers and software packages, have substantially altered the concept of computer literacy. The repertoire for a computer literate has expanded tremendously. Currently, a typical business school textbook for a computer literacy course covers an array of topics as shown in Table 1.

METHOD

The survey was conducted in the business school of a midwestern university. One hundred and sixty four (164) business majors and sixty (60) faculty members participated in the study. Students were from all levels of the business school and had finished at least one computer literacy

course. Students and faculty were from six discipline areas: Accounting (ACCT), Administrative Office Systems (AOS), Computer Information Systems (CIS), Finance (FIN), Management (MAN), and Marketing (MKT). The participants by major are shown in Table 2.

The students and the faculty were asked to assess each topic listed in Table 1 on a 10-point Likert scale ranging from 1 = "unimportant" to 10 = "very important" according to their perception of the importance of the topic to their discipline area. The specific research questions sought from the survey were:

(1) What are the most important computer literacy topics within a school of business?

(2) Is there agreement between the students and the faculty members as to the importance of the literacy topics?

(3) Is there agreement among disciplines as to the importance of the topics?

(4) Furthermore, is there agreement between the students and the faculty within each discipline?

RESULTS AND DISCUSSION

To address the first research question, the literacy topics were ranked by overall mean. Five topics emerged as most important: 17 ("hands on" exercises with spreadsheet packages), 16 ("hands on" exercises with word processing packages), 20 ("hands on" exercises with MS/DOS commands), 18 ("hands on" exercises with database management packages), and 4 (operating systems software and concepts). The means and the rank of the topics are given in Table 3. To address research questions two through four, the two types of respondents (faculty and students) and the six disciplines (ACCT, CIS, FIN, MAN, MKT, and AOS) were arranged in a 2 X 6 factorial. For each literacy topic, the data were analyzed for significant differences in type of respondent, discipline, and in the interaction between type of respondent and discipline.

Faculty vs. Student Views

Faculty and students agreed on the importance of four topics: 17 (spreadsheet), 16 (word processing), 20 (MS/DOS), 18 (database skills) ($p > .10$). Of the remaining literacy topics, there were some discrepancies in their views. The literacy topics which yielded significant differences between faculty and students are reported in Table 4. For each topic where faculty and student means differed, students rated the topic more important than did faculty. This discrepancy may have been due to the fact

that the students were actual participants in the course rather than a third party evaluating the course, and their perceived "personal needs" of the topics may have been higher than those of the faculty.

Views Among Disciplines

For two of the most important topics, 20 (MS/DOS) and 18 (database skills), there was agreement across disciplines of the degree of importance ($p > .10$). However, for several of the literacy topics there was disagreement among the disciplines as to the importance of those topics. For topics 17 (spreadsheet), 16 (word processing), FIN department ranked the topics as extremely important whereas AOS and CIS ranked the topics as less important ($p < .01$). For topic 4 (OS), 2 (computing systems), 13 (computer security), the rankings are reversed with AOS reporting the topic as more important than FIN ($p < .05$). For 14 (impact of computers) and 15 (career opportunity), AOS and CIS gave the higher rating than the other departments. For the topic 7 (information systems), ACCT and CIS rated it higher than the other departments.

The literacy topics yielding significant differences among disciplines are reported in Table 5.

Faculty vs. Student Views Within Discipline

Faculty and students within each discipline agreed on the importance of three of the most important topics, 16, 20 and 18 ($p > .10$). As to the remainder of the topics, faculty and students within certain disciplines reported divergent views; and on most of these topics, students put higher rating than faculty. However, in AOS, faculty rated the topics 4 (OS), 6 (telecommunications), and 13 (computer security) more important than did the students ($p < .05$). The AOS department is mainly concerned with practical application and implementation of office systems, and the integration among different systems and computer security are a great concern for the faculty. The literacy topics yielding significant differences between faculty and students within discipline are reported in Table 6.

CONCLUSIONS

Students' views must be an integral component in the design of the literacy course if the course is to be accepted by students as interesting, important, and relevant; students' "personal needs" seem to be based on what they consider as the knowledge and skills necessary to their success in future

Table 3. LITERACY TOPICS RANKED BY OVERALL MEANS

Topic No.	Description	Mean ¹
17	"hands on" exercises with spreadsheet packages	8.8
16	"hands on" exercises with word processing packages	8.7
20	"hands on" exercises with MS/DOS commands	8.1
18	"hands on" exercises with database management packages	8.0
4	OS - Operating systems software and concepts	7.6
2	Computing systems, including microcomputers, mini- and mainframe computers	7.0
5	File concepts and file organization techniques	7.0
8	Database concepts and principles from a user perspective	7.0
3	Computer hardware components including CPU, I/O, storage	6.9
19	"hands on" exercises with BASIC programming	6.9
14	Impact of computers on people and organizations	6.7
15	Career opportunities in information processing	6.7
6	Telecommunications and distributed computing	6.6
12	Common programming languages	6.6
11	Program design and development	6.5
13	Computer security, crime, ethics, and the law	6.3
7	Information Systems - Transaction processing, MIS, DSS, and Expert Systems	6.0
10	System Development	6.0
9	Modeling Concept (formulating mathematical models)	5.6
1	History and evolution of computers	4.5

¹10=very important, 1=unimportant

Table 4. LITERACY TOPICS YIELDING SIGNIFICANT DIFFERENCES BETWEEN FACULTY AND STUDENTS

Topic No.	Description	Means ¹	
		Faculty	Student
4	Operating systems	7.1	7.8 ³
2	Computer systems	6.4	7.2 ²
3	Computer hardware	5.9	7.3 ²
19	Basic "hands on"	5.7	7.3 ²
15	Career opportunities	5.2	7.2 ²
12	Languages	5.3	7.1 ²
11	Program design	5.5	6.8 ²
7	Information systems	5.5	6.2 ³
10	System development	5.1	6.4 ²
9	Modeling	4.5	6.0 ²
1	History	3.7	4.8 ²

¹ 10=very important, 1=unimportant
² Faculty and student means differ at $p < .01$
³ Faculty and student means differ at $p < .05$

courses and presumably in the industry. On the other hand, faculty members are expected to be aware of the expected computer needs of the industry in their specific areas and thus are assumed to base the curriculum on those expectations. Thus, faculty members' views toward the literacy course are important for effective curriculum design, since the literacy course should complement other courses and provide the foundation necessary for each area. In addition, since the literacy course is required by all business majors, the differing

needs of each discipline must be taken into consideration.

Faculty and students in all disciplines regarded application knowledge of productivity packages as most important. Thus, it appears more appropriate to allocate a major portion of the literacy course to teach these application skills and knowledge.

Of the remaining literacy topics, there were some discrepancies in their views; on these topics, students rated the topic more important than did faculty.

As expected, there were significant dif-

Table 5. LITERACY TOPICS YIELDING SIGNIFICANT DIFFERENCES AMONG DISCIPLINES

Topic No./ Description	17 - Spreadsheet "hands on"	16 - Word Processing "hands on"	4 - Operating Systems	2 - Computing Systems
Means/ Discipline	9.8 FIN ² 9.2 MAN 8.9 MKT 8.8 ACCT 8.4 AOS 8.3 CIS	9.6 FIN ² 9.3 MKT 8.9 MAN 8.2 ACCT 8.1 CIS 7.9 AO	8.2 AOS ³ 7.8 MKT 7.7 ACCT 7.6 CIS 7.4 MAN 6.9 FIN	7.9 AOS ² 7.6 CIS 7.3 ACCT 7.2 MKT 6.5 MAN 5.6 FIN
Topic No./ Description	3 - Computer Hardware	14 - Impact of Computers	15 - Career Opportunity	12 - Languages
Means/ Discipline	7.7 CIS ² 7.4 MKT 7.4 AOS 6.8 ACCT 6.3 MAN 5.8 FIN	7.1 CIS ³ 7.0 AOS 6.8 MAN 6.6 ACCT 6.4 MKT 5.8 FIN	7.6 CIS ² 7.5 AOS 6.7 MAN 6.4 MKT 5.8 ACCT 5.4 FIN	7.6 MKT ³ 7.1 CIS 6.9 AOS 6.1 MAN 5.8 FIN 5.7 ACCT
Topic No./ Description	13 - Computer Security	7 - Information Systems	1 - History	
Means/ Discipline	6.9 AOS ² 6.8 CIS 6.3 ACCT 6.1 MKT 5.9 MAN 5.7 FIN	6.7 ACCT ³ 6.4 CIS 6.4 MKT 6.2 MAN 5.5 AOS 5.2 FIN	5.4 CIS ² 4.7 MKT 4.5 AOS 4.2 ACCT 4.0 MAN 3.8 FIN	

¹10=very important, 1=unimportant
²Discipline means differ at p<.01
³Discipline means differ at p<.05

ferences among disciplines on several topics. For instance, spreadsheet skills and word processing skills were regarded very important by FIN department while they were regarded much less important by CIS and AOS. CIS and AOS both considered the topics of computing systems, impacts of computers, career opportunity, computer security very important, while FIN considered them much less important. CIS and ACCT both regarded the topic of information systems more important than the rest of the other disciplines.

When students' views and faculty members' views were compared within each discipline, there were significant differences on several topics, including spreadsheet, operating systems, impact of computers, career opportunity, telecommunications, computer security. Students put higher rating on all these topics except on three topics; in the AOS department, the faculty showed significantly higher rating on operating systems, telecommunications, and computer security.

The topic of program design and development has been an integral part of the literacy course for many years in business schools. This orientation may have to be changed. Usually program design and coding requires a great deal of time and effort and cannot be taught effectively in a short time period. One alternative way of covering the topic may be to have a program-oriented course as an elective for business majors. The rest of the topics, whose importance vary depending upon discipline areas, can be covered using various strategies and varying degrees of time and resources. Consideration must be given to the distribution of majors in a class as well as the nature of the students.

It is necessary to emphasize that our immediate task is, at this point in time, to establish a basic computer literacy curriculum which can accommodate the "personal needs" of the various areas within the business school efficiently, mainly due to the fact that the resources of business schools are limited. Yet, there may be some who consider this definition of "computer literacy" to be too narrow in its emphasis on technical skills rather than on intellectual/conceptual content. However, we believe that certain intellectual/conceptual aspects of computer literacy cannot be learned effectively with one introductory computer course; it must be accomplished through subsequent courses which both reiterate the basic knowledge and at the

Table 6. LITERACY TOPICS YIELDING SIGNIFICANT DIFFERENCES BETWEEN FACULTY AND STUDENTS WITHIN DISCIPLINES

Topic No./ Description	Discipline / Mean ¹ / Faculty or Student			
17 - Spreadsheet "hands on"	AOS 9.0 Stu ² 7.2 Fac			
4 - Operating Systems	ACCT 8.8 Stu ³ 6.1 Fac	CIS 7.9 Stu ³ 6.8 Fac	AOS 9.1 Fac ³ 7.8 Stu	
14 - Impact of Computers	FIN 6.7 Stu ³ 3.7 Fac			
15 - Career Opportunity	ACCT 7.3 Stu ³ 3.5 Fac	FIN 6.2 Stu ³ 3.5 Fac	MAN 7.3 Stu ³ 4.3 Fac	MKT 6.9 Stu ³ 3.6 Fac
6 - Telecommunications	ACCT 7.5 Stu ² 4.9 Fac	AOS 8.3 Fac ² 6.2 Stu		
13 - Computer Security	FIN 6.4 Stu ² 4.0 Fac	AOS 8.9 Fac ² 5.9 Stu		
1 - History	ACCT 5.5 Stu ² 2.3 Fac	FIN 4.4 Stu ² 2.1 Fac		

¹10=very important, 1=unimportant
²Faculty and student means differ at p<.01
³Faculty and student means differ at p<.05

same time introduce more sophisticated applications of computer technology in specific discipline areas; i.e., with each successive encounter with computers, not only do one's technical skills become more polished, but one's perspective and intellectual understanding of what it means to be "computer literate" also develop and become more clearly defined.

Lastly, it should be pointed out while the industry needs and faculty expectations may be similar from one school to another, some of the conclusions made from the study may be in fact environmentally specific. Thus, it would be beneficial for individual business schools to undertake a similar analysis of their own faculty and students in order to come up with a computer literacy curriculum which could accommodate their own immediate environment.

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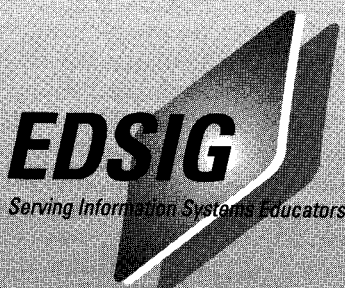
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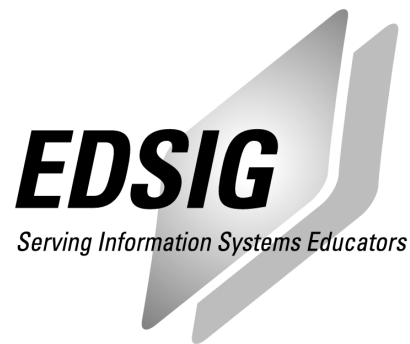
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