The Constant Evolution of an Introductory Computer Course: A Course in Flux

Ronald J. Kizior
ISOM Dept. - Loyola University Chicago
Chicago, IL 60611

Abstract

The content of material in the basic computer concepts course in many schools has changed over the years for many reasons. One of the predominant things that has been occurring is the shifting of topics from the university level down to high school and even grade school level. What then should be covered on the university level? What is appropriate? We have found that many of our students have some spreadsheet and data base skills already, but they are lacking some basic knowledge concerning the concept of what is a business process. We have changed the "focus" of the course, and have introduced lectures and software in order to cover this important concept. This article will explain what was done, the models used, and the software used to exemplify what students should know about "the business process".

Keywords: Curriculum, intro course, business process model

Introduction

The material in the basic required computer course for our school's business majors has definitely evolved over the years. Going back some twenty-five years, I can remember when the course was a combination of computer concepts and programming using a language called "Ittran". This was a time-sharing language developed by the Illinois Institute of Technology. This language was basically a Fortran language modified and simplified by the IIT faculty to be used by business students. Over time the PL/1 language replaced this Ittran language. Eventually the PL/1 language was dropped in favor of spreadsheet, database and word processing application packages. Then the word processing application was dropped from the course, and we currently have just Excel and Access. These changes have been caused by several facts: (1) the basic change in and development of technology itself, (2) the inclusion of computer technology course material in earlier stages of education. Numerous topics that were once discussed on the college level have filtered their way down to the lower academic echelons of high school and even grade school. Because of this evolutionary process, this has freed up a certain amount of time on the collegiate level, which can now be used to focus on topics dealing with MIS rather than on basic computer concepts. Because of this change in emphasis and the introduction of new technology, i.e. the Internet

for future courses during their junior and senior year what ever their major might be. Therefore, we changed the "*focus*" of the course two years ago.

and e-commerce, it was felt that a new paradigm should be included in this introductory course.

Recognizable Differences

The names of these introductory type computer courses differ from school to school. For as many schools as there are, there are just as many different course titles for a course of this nature. I think this is something that we can all agree upon. Other differences that we are all aware of are that some schools teach on a quarter system, while others are on a semester system. There are also other differences that might occur if this type of course is taught in a junior college, as compared to a four-year college or university. Aside from these recognizable and accepted differences, there is also another difference, which I call *focus* or emphasis.

Change in Focus

This change in focus that has occurred in my school regarding this intro course has definitely evolved over the years. The forces that have caused this changed were enumerated above: change in technology (e-commerce), introduction of material at a lower academic level, and a realization that some of the students in the business school were deficient in the basic concepts of "what is a business". Putting these elements together and realizing the background of the students, we felt it was necessary to change the focus of the course and to up date it. We also wanted them to be better prepared

What is the New "focus"?

What the faculty at my school realized a few years ago, was that when we changed the emphasis away from "Computer Literacy" to a "Intro to MIS",

some of the students were having a problem grasping the idea of what is a "business process". The current structure of our introductory course has three components: Intro to MIS, Excel, and Access. In order to try to remedy the situation, we look at several texts in the MIS area. There was no ideal text. We finally agreed on using the O'Brien text "Management Information Systems", 4th edition. (O'Brien 1999) In our search process for choosing a book, we came across a model that we liked in an MIS book by Steven Alter (Alter, 1999). This text had a complete chapter dealing with the "Business Processes". Although we liked the model, the rest of the book may have been too rigorous for the undergrad. It seemed more appropriate for MBA students. But it was the model that caught our eye and the one that we have incorporated it into our presentations along with some special software.

Models Used

To supplement the material that is found in the second chapter of the O'Brien book, we introduced the "Business-Process" model show in figure 1. The over all theme that is stressed here is more properly entitled "Work-Centered Analysis". The students were grasping the skills of Excel and Access, but were having a little problem with the concept of a business process. Figure 1 seems to reinforce the basic computer model that we have all used of the years, namely   **I → P → O.** By introducing this model at the beginning of the semester, the students are better prepared to handle other topics, which are discussed later in the book, such as E-Commerce and Supply Chain Management. Another important topic that is stressed at this time is that of 'Transaction Processing". The whole idea of information flow from the very beginning of a business process to the final product, along with the idea of what happens when you sell that product, is able to be better assimilated by the student by first realizing the steps that an organization has to go through in order to produce a product and then sell that product. The faculty felt that by the student having this exposure to these topics now, they would be able to better relate to future courses whether they be accounting, finance, marketing or even IS majors. We felt this provided an excellent link or bridge to the various functional majors.

A second model used is shown in Figure 2. This tries to put in perspective how information technology and information systems relate in regard to the total enterprise and business environment. Once these two models are explained then the students are introduced to the final "Work Centered Analysis Framework" model as shown in Figure 3. Each of the six elements
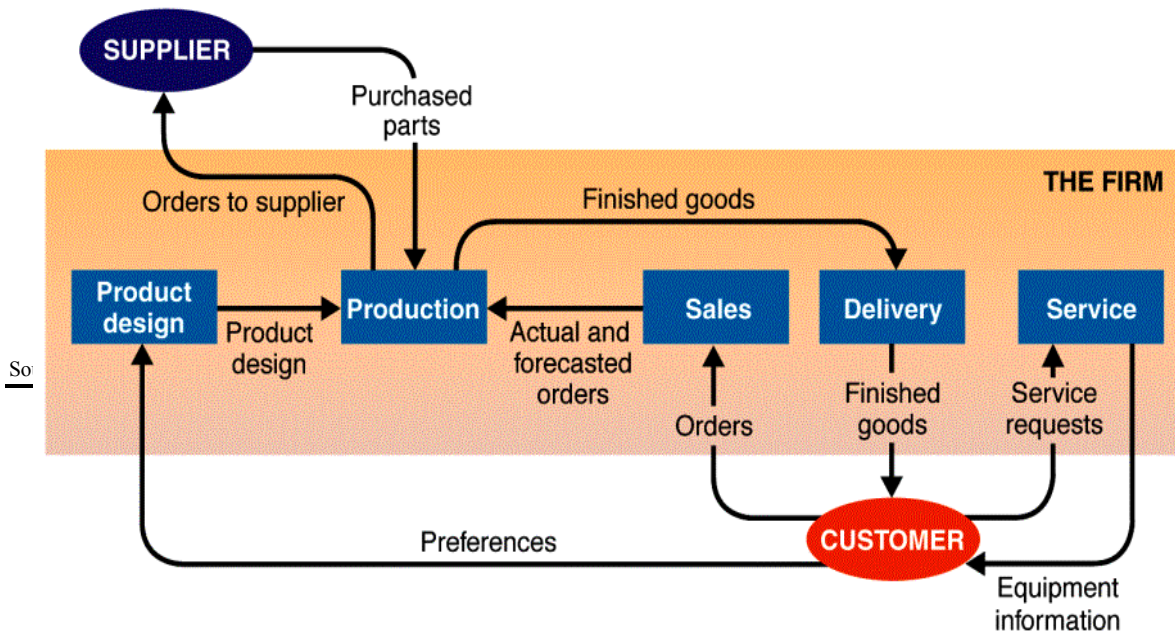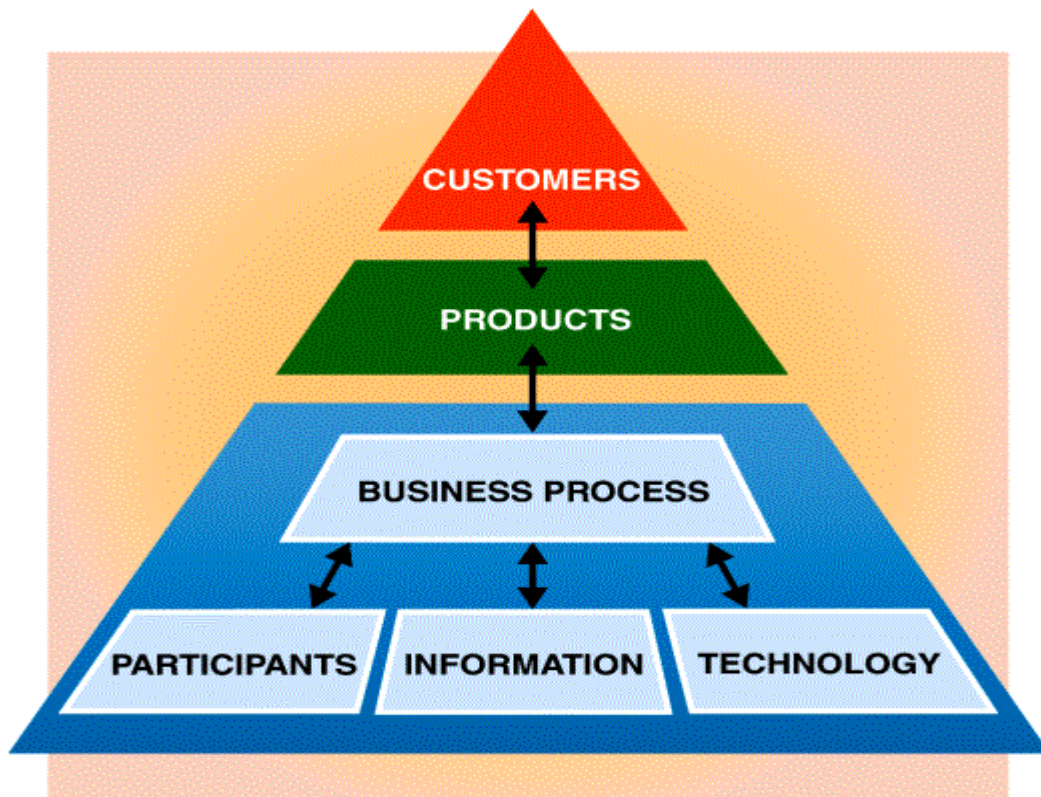

Figure 1
Source: Alter: Information Systems, 3 ed. p. 38.
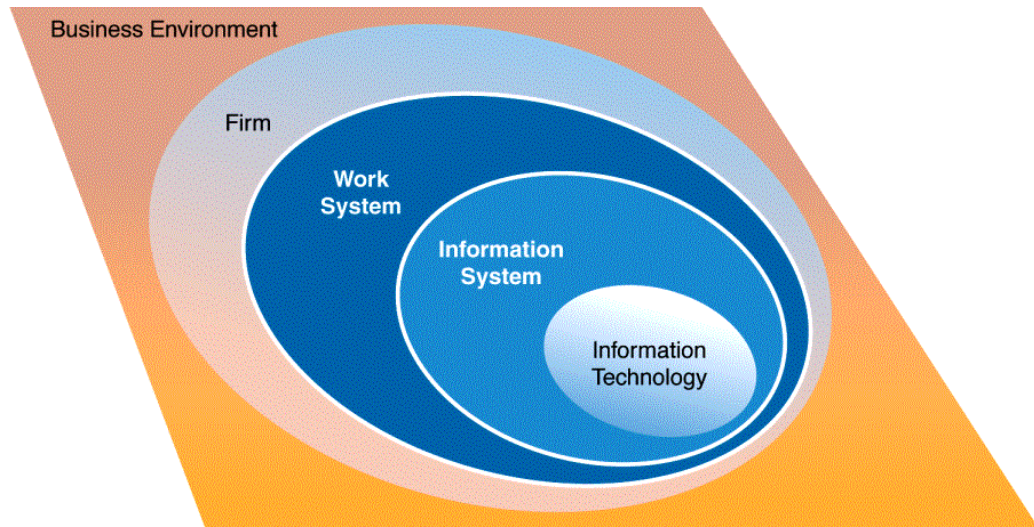
Figure 2

Source: Alter, *Information Systems,* 3rd ed. p. 43

Figure 3

Source: Alter, Information Systems, 3rd ed. p. 45.

in the model are explained thoroughly and then validated by the example of a real business and how each of the six elements would be defined in regard to company X's business and product. To reinforce this model and to make sure that the students are grasping these ideas, they were given an assignment, where by **Work Centered Analysis (WCA) Framework**

WCA is composed of six major elements.

they have to go to a business web site, research the company, its products, etc. and then fill in for each of the six elements those factors that are appropriate to the company at hand.

CUSTOMER
Manager who needs to hire an employee
Applicant who receives responses about a job application
Government agency that receives reports about compliance to equal opportunity guidelines

PRODUCT
List of applicants who fit the criteria
Selected data items about each applicant
Automatically generated rejection letters

BUSINESS PROCESS
Major Steps:
•Define the criteria for selecting applicants
•Receive résumés
•Scan résumés and extract data
•Select applicants meeting criteria and forward their résumés to the hiring manager
•Send out rejection letters
•Track the hiring process
•Store applicant data for future searches
Rationale:
Instead of finding appropriate candidates by searching through paper résumés, extract the information on the résumés and do the search automatically.

PARTICIPANTS
Human resources
Employees
Manager doing the hiring

INFORMATION
Description of job opening
Scanned résumés converted into a database format
List of qualified applicants

TECHNOLOGY
Résumix software
Scanner
Unidentified computers

Once the students try to digest the above generic company, a more known company is used to exemplify these six components. McDonalds Corporation was used as a well-known example, and how would these six elements were described in terms of McDonalds.

The following described those six elements:

Work Centered Analysis for McDonald's

•**Customers**
 -Adults
 -Kids
 -All ages

•**Product:**
–Hi Volume
–Hi Quality
–Rapid Delivery
–Assumes standard product
•Transaction Processing
–One system at registers
–Another system at grills
–Registers and grills operate
   asynchronous with inventory buffer
–Cannot process custom orders
•Participants
-Employees
-Store mgr
•Information
-Sales by product
-Inventory levels
-Sales by hour
•Technology
–Cooking; Grills
–Inventory: Stockpiles of complete product

Software Reinforcement
In order to visually show the student the relationship of data between departments and various functional units, we decided to use a small business accounting package. This package is called BusinessWorks Gold and is produced by Sage. We have found this to have a very user friendly GUI, and provides sufficient amount of complexity, in order to get the point across to the students. In the March 2001 issue of the Small Business Computing magazine, various accounting software packages were evaluated in the "Buyer's guide section". This article rated each software package in terms of: reliability, compliance, ease of use, scalability, quality of service, and cost. The rating scale as follows: 100-90 must buy, 89-80 Good product, 79-70 we have reservations. We were rather pleased see to see the results of this independent study, since we had chosen the software almost two years ago.

Accounting Software	Rating
Sage BusinessWorks GOLD	92
AccountMate Small Business Pak	90
ACCPAC Small Business 4.2A	88
Peachtree Compelte Accountint 8.02	80
QuickBooks Pro 2001	80

Table 1

Source: Smith, Victoria Hall, "Accounting 2.0", Small Business Computing, pp. 55-60.

Getting to know the Package

A short lecture is given showing the students were they could find this software on the system, and a brief explanation of the GUI that they will work with when the application opens. A few handouts showing a couple of the reports that can be generated by this software, as well as something basic as the chart-of-accounts for the demo company called "Bike Works Intl" is passed out to them. The main GUI is composed of nine buttons:

General Ledger   Accounts Payable
Accounts Receivable   Inventory Control
Order Entry   Payroll
Job Cost   Mailing Labels
System Manager

It is important to point out to the students that as a user points to each of the nine buttons, the options on the menu bar automatically change, and the list of reports available under each button automatically changes. The students are rather impressed at first with the number of report formats that can be created using this software. The first assignment in connection with the software is shown in **Appendix A.** This assignment does several things. First, it encourages such concepts as writing across the curriculum. Second, allows the student to show his/her previous knowledge in writing a business memo. 3. It forces the student to look at all of the options, except for the system manager, in order to realize the connection between the various modules, and the capabilities of each. It also makes them get into some costing calculations. A second assignment shown in **Appendix B** gives the student a little more direct hands on activity with BusinessWorks and for a more detailed directive of activities.

Verification of Curriculum Change

There was no attempt by any of the faculty to quantify whether this change was better. Due to the fact that two of are current faculty are former Anderson Consulting employees with over 12 years of experience each, we felt that verification of this nature was not necessary. Also one of these two faculty members is also regarded as our "Executive in Residence". They bring to our department a wealth of business experience as well as a rigorous academic background. It was basically through their insight that we unanimously agreed to make this evolutionary change.

Further Evolutionary Changes

The faculty members are please with this change, but we have had further discussion on even doing more changes. Our next possible change would be to eliminate entirely the material on Excel and Access from this course. This might very well necessitate a name change of the course, but until that happens we will stay with the current name. It must be noted that not all faculty agree with this latest possible change. One faculty member is currently experimenting this year with attempting to do something along this line. He felt that on the collegiate level, the emphasis should definitely be on MIS and not on basic computer concepts which are currently be covered on the grade school and high school level.

Conclusion

The faculty of the ISOM department strongly believe that this approach will better prepare our students in a much more realistic manner for the business world, no matter what their eventual area of concentration might be. We believe that the focus of introducing the student to the business process is important and definitely helpful to the student in the long run. It is also beneficial to all of the business students regardless what their eventual major will be. This is something basic and relates to all of the functional areas.
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References

O'Brien, James A., *Management Information Systems*, 4th Ed., Irwin McGraw-Hill, 1999.
Alter, Steven, *Information Systems – A Management Perspective*, 3rd Ed., Addison-Wesley Publishers, 1999.

APPENDIX A   **247 Computer Concepts**
Application Software Assignment

Revised 4/7/2001

Objective: This assignment introduces you to the basics of application software. Through the example of Businessworks it covers intended market, scope of the software, pricing and support materials.

Assignment: Gather basic information on the fit of a Businessworks, a real application software package, to a fictional business. Record your findings in a short memo. This is pass/fail grading.

Background: You are the new Manager of MIS for ACME.

ACME is a distributor of musical products serving retail music stores, and large schools. ACME has 35 employees. All items are shipped from one warehouse. 2000 different items are in stock. All current order and inventory processing systems are manual.

A previous attempt at creating a custom order processing system for ACME has been abandoned. The custom system proved to be too large and expensive, and ACME cannot afford the essential maintenance programmers. Your boss now wants to investigate the use of packaged software. The boss has learned that many of Acme's competitors use Businessworks.

Activities for this lab:

Visit and browse WWW.daceasy.Com, the web site for Businessworks.

- Locate the Businessworks product section
- Browse the vendor provided on-line material
- Read at least the Order Entry and Inventory Control Module descriptions

If available, load and run the Businessworks demo CD. Execute the Order Entry and Inventory product demonstrations.

Record your initial conclusions: Write a short one to two page memo to your boss. Answer these questions:

Would the ACME employees find Businessworks easy to use? Why?
Does Businessworks include features that might address Acme's processing needs such as:
    Handling customer orders?
    Maintaining inventory levels?
    Creating purchasing documents?
    Invoicing customers?
    Maintaining accounting records?
    Creating an EDI link to UBC (United Box)?

Can ACME run Businessworks on its current computers? 10 of the computers are 200 Mhz Windows 98 machines. 10 of the computers are older Power Macintosh computers.

Approximately how much will the software cost? The "INC On-line" product review summarizes the pricing plan for Businessworks. Since this is early investigation, an answer is appropriately made in terms of ranges: $1,000-$10,000 or $10,000 to $100,000 or over $100,000.

Appendix B   **ISOM 247**
                                    Businessworks Assignment
Goal: The goal of this assignment is to give you hands on experience with a real application software package.

Scenario: You are the new VP of Management Information Systems (MIS) for a small toy manufacturer, General Toys (GT). You have several ideas about how to improve customer service. Order processing is handled using a hodgepodge of spreadsheets and paper transfers of information passed through various departments at GT. Fast moving inventory is often out of stock. Customers often complain about late deliveries. You know a transaction processing system will improve order processing.

You have done a survey and found that Businessworks (BW) is the most popular accounting and order-processing package used by small manufacturers in the U.S. You are excited about the possibility of bringing BW to GT. However, your boss must be briefed about automated order processing before you proceed.

Your Assignment. IF you would prefer to process one order all the way through the BW flow, than execute this alternative:

- Log on using the Company ID Bikeworks International sample data
- Using Inventory Control/ Reports / On-hand select at least two products currently stocked in the warehouse
- Select Order Entry, enter and print a customer order using "Maintain Sales Order". Use the new button on the bottom of the screen to create a new order. Use line items to add products.
- Print a pick ticket using OE/ Orders / Pick Tickets by entering the customer order
- Invoice the order using OE/ Invoices / Select Orders to Invoice
- Print the invoice using OE/Invoices/ Post and Print Invoice
- Print an inventory report that shows the selected products were shipped by using Reports/Transaction Register
- Print the customer statement by selecting Accounts Receivables/ Statements/ Print Statement. On the printed statement verify that the initial order is now being billed.

Alternative assignment: Print selected forms and reports that you can use to brief the boss. For each of the following job positions, you must identify a key BW window(s) or reports that would support order processing at GT. Print the window or report that depicts the processing.

- Log on using the Company ID for Bikeworks International sample data
- Customer order clerk (enters customer order information into GT's order processing system).
- Warehouse Picking clerk (retrieves product from inventory using a pick list).
- Accounts Receivable clerk (creates an invoice for the customer).
- Accounts Receivable clerk (creates a monthly statement for the customer).