Extending the Boundaries of Hospitality Education

by
Michael L. Kasavana

To date, hospitality management educators have struggled to modify generic software or adapt vendor-designed industry systems as a means of bringing hospitality information systems to the classroom. Specially-designed computer-based courseware can enhance learning while extending the boundaries of the traditional hospitality classroom. The author discusses the relevance of this software to the hospitality curriculum.

The ease of implementation of instructional software in hospitality education classrooms is changing. For many years, academicians have sought to offer students insight and experience into hospitality information systems through a variety of hardware and software configurations. There appears to be a need for increasingly better software, not only to assist in acquiring basic skills, but, to solve problems, develop critical-thinking skills, communicate ideas, and aid in decision making.[1]

Experts have identified three primary categories of software appropriate to the field of education: curriculum development, administration, and instruction.[2] The areas of curriculum development and administration lend themselves well to automation, and the role and potential for computer assisted instruction (CAI) are quite high.

Computer-assisted instruction has been in existence for more than 20 years[3]. Researchers have found computer-assisted instruction to teach at least as well as line teachers, or other media, and that there is a savings in the time it takes students to learn. Studies have shown that students respond favorably to individualized instruction available through computer-based courseware.[4] While educators have endorsed the principle of individualized instruction, they have, in general, done relatively little to implement it. In addition to allowing students to work at their own pace and other benefits, the power of computing may be the best means by which to create truly individualized instruction.[5] Some experts claim the computer's importance to education is based primarily upon its ability to provide opportunity for human interaction.[6]

Computer assisted instruction can also increase efficiency and effectiveness of the educational process. Experimentation indicates that computer-assisted learning frequently occurs at a more rapid rate than conventional teaching methodology.[7] In fact, one researcher found

FIU Hospitality Review, Volume 10, Number 1, 1992

that by connecting software engineering concepts with psychological principles, teaching effectiveness increased while student benefits were significantly enhanced.[8]

Educational Technology Improves Efficiency

The principal role of educational technology is to help improve the overall efficiency of the teaching/learning process. In education, efficiency can manifest itself in many ways, for example, increasing the quality of learning or the degree of mastery, decreasing the time taken for learners to attain desired goals, increasing the capacity of educators in terms of numbers of students taught, without reducing the quality of learning, and reducing costs, without affecting quality.[9]

Learning with computers typically is denoted by computer-assisted instruction and usually involves simulation. Leaning about computers ranges from elementary computer awareness to advanced study of computer science, including programming and data structures. Such courses tend to present technical material through computer history lectures or limited exposure to programming language.[10]

Technical specialists have identified the microcomputer as the single most important factor leading to expansion of educational courseware. There appears to be universal agreement that the microcomputer has had a major impact on the field of instructional technology.[11] The field of educational technology involves the compatible integration of the science of learning with the art of teaching. Hence, educational technology aims to improve the quality of learning systems through orientation to efficiency in learning by the individual student.[12]

Initial exploration of CAI led many to conclude that educational computer applications could be placed into one of three major classifications: tutor, tool, or tutee.[13] More recent research has led educational technology experts to agree that instructional computer usage can be divided into three application areas: drill and practice, tutorial and dialogue, and simulation and games.[14] Drill and practice sessions involve computer programs which provide repetitive opportunity for students to pair stimuli with appropriate responses. Tutor and dialogue applications deal with computer programs which carry the burden of instruction by providing most of the instructional events, while simulations provide an experience designed to give the illusion of reality.

Traditionally, the principal role for computers has been in the area of drill and practice. The bulk of educational software currently in use is based on the behavioristic paradigm which views learning as a matter of establishing connection between stimuli and response (drill and practice). It has been noted that with the drill and practice approach learning tends to be viewed as simplistic and lacking in emphasis on problem-solving skills.[15]

FIU Hospitality Review, Volume 10, Number 1, 1992

In tutorial and dialogue applications, the computer carries the instruction burden of guiding a student to the achievement of a specified set of objectives. In tutor applications the computer performs a teaching role by presenting information to the student and seeking a response. In turn, the computer evaluates the student's response according to specific criteria. In addition, the computer also determines what to do next, based on its evaluation of the student's response. In order for a computer-based tutorial lesson to be better than a book, it must be interactive and sensitive to the needs of the learner. The responses elicited need to be directly related to the skills to be learned.[16]

Many specialists consider the instructional algorithm as a valid educational technology principle. In this algorithm new information is presented, questions are posed, and the student's response is evaluated. If the student response is incorrect, the identical question is generally repeated to the student with optional help or remediation available, on-line.[17]

A simulation is a representation or model of some real object, system, or phenomenon. There are several reasons why simulations are valuable classroom supplements. First is the fact that there is less risk in a simulation than in reality. Second, training costs are reduced since learning takes place in an alternate environment. Third, simulations are more convenient and therefore minimize negative effects of time. Fourth, simulations have the ability to focus on specific aspects of phenomena, and last, simulations are repeatable.[18] Simulations are designed to develop problem-solving skills and to allow students to form hypotheses as well as engage in discovery learning.[19]

Computers in Hospitality Education Are Functional

While some portions of the hospitality management curriculum have made computers the focal point of instruction, in the past hospitality educators have had limited alternative approaches for implementing software in courses. One involved the development of generic software templates resembling industry specific applications, while another revolved around procuring vendor-designed industry systems and adapting modules to classroom-related subject matter. There are at least three approaches to computer software utilization in the hospitality classroom: modification of generic software, adaptation of vendor-designed system software, and specially designed courseware.

The development and/or modification of generic software (typically spreadsheet, database, and word processing programs) by hospitality educators can be quite time consuming. The fact that the instructor is required to model a flexible, realistic industry application

FIU Hospitality Review, Volume 10, Number 1, 1992

within the framework of a rigid programming option may result in unnecessary complexity or convoluted logic. Frustration occurs when students uncover shortcomings of the exercises or become disenchanted by the lack of sophistication in programming. After developing a series of generic software exercises, educators typically develop interest in linking applications and/or in integrating parts of several assignments. This desire, coupled with an inability to achieve results, usually convinces instructors that modified generic software may not be the most effective means by which to implement software in the hospitality curriculum.

The modification of generic software has been popular based upon availability of standardized programs and an instructor's ability to access and design exercises approximating industry application software. The restrictive parameters associated with such modifications, together with an inevitable limitation of integration, typically render generic software inflexible in long-run situations. Problems often encountered in the modification of generic software are a lack of consideration for the importance of instructional design, and the fact that modified applications tend to focus primarily on computer programming abilities.[20]

Although few educators have the time, budget, or expertise for in-house development of classroom applications software, there are a myriad of effective courseware packets. Too often, the success or failure of CAI is a matter of knowing what you are buying, not whom you are teaching or who is doing the teaching.[21]

Training Should Focus on Learning Software

Unfortunately, most computer training, both pre-service and in-service, focuses inappropriately on learning how to operate computers. Effective training should focus on learning to use and teach with appropriate software, not on programming.[22] From time to time, computers in education have been perceived as special, regardless of whether the machine was the subject or means of education. Since computers in education are perceived as different, a separate case for staff, funds, equipment, and curriculum slots is usually necessary. What is needed, perhaps, is an integration of classroom teaching and computer-assisted instruction.[23]

The fact that vendor-designed systems may be donated or offered to schools at reduced costs is a strong incentive for installation. The reality of maintenance costs, system support, software enhancement, problem set design, and the like must be balanced against the attractiveness of such applications. If the available software does not fit into the lesson that the educator is presenting, then either the lesson will be modified to accommodate the software, or the computer will not be used. Experts warn that germane software lessens the ever-present danger of discussion drifting away from the topic and towards

FIU Hospitality Review, Volume 10, Number 1, 1992

the computer itself.[24] The goal is to fit the software to the course, not the other way around.

The adoption of courseware developed to supplement a specific textbook may be most effective. Students will have fewer problems understanding terminology, software logic, and problem sets when text exhibits and illustrations are built into the courseware that accompanies the book.[25]

Consider a companion set of courseware designed to accompany a front office textbook. As the student completes the reading of course materials, he/she is directed to insert the accompanying diskette into a computer and run the appropriate exercise(s). The fact that the theme, terminology, and procedures mentioned in the text are paralleled by the software reinforces the concepts presented in the text while exposing the student to a set of exercises modeled from industry specific software. In other words, the instructor can reap the benefits derived from industry application software without the hassles of self-developed or modified software packages or assignments.[26]

Student Assignments Can Be Individualized

Students report higher levels of motivation and confidence in coursework when exercises employ like terms and processes to those described in their text. Another dimension of courseware is the ability to make each student's assignment uniquely individual.[27] Randomization of data across a series of assignments ensures that each student be responsible for his or her own work. Efficient courseware goes a step further. The courseware is designed to assign the student work assignments and to request answers to questions. The student typically is allowed more than one chance for a correct response.[28] Once the limit of incorrect responses is achieved, the computer can then print the proper solution to the problem under study, using the student's personalized data set. At this point, the computer evolves from being a creative assignment generator to supplementing course instruction by detailing correct solution steps.[29]

In addition to text augmentation, other types of assignments that work best in the form of courseware are those that involve a series of procedures (hotel guest cycle or food service guest cycle), repetitive practice of standardized procedures (Uniform System of Accounts and costing of standardized recipes), and the simulation of business trends/cycles (yield management and menu management).[30]

Vendor-designed systems, whether donated to the institution or purchased at reduced cost, offer unique computing options and are usually preferred to modified generic software. An effective adaptation of vendor-designed systems to classroom situations is not always easy to achieve. Problems arise in the development of course-related exercises based on time-dependent systems and/or complex file maintenance schemes. In addition, should operational problems develop, donated or discounted systems may be slow to receive vendor

FIU Hospitality Review, Volume 10, Number 1, 1992

attention or service. Vendor software enhancements and upgrades, sometimes included with industry systems, might require educators to alter their system-dependent course materials, thereby necessitating a course overhaul.[31]

Student Pacing Affects System

By comparison, development of problems for solution on a vendor-designed property management system may require that all students complete the assignment prior to a system update.[32] Alternatively, consider the case in which a student incorrectly enters an earlier checkout date (month and day) than checkin date on a reservation record. The computer system, without recognizing the student's date reversal, may process and evaluate an entire year's worth of room availability data. Failure by some students to complete portions of an assignment on time may hinder the class' ability to move forward.

Similarly, an electronic cash register system exercise may await class input prior to production of management reports. Failure by members to complete portions of assignments can likewise hinder class progress. In any case, the customization of vendor-designed system features to sensible classroom assignments, capable of enhancing the learning experience, may be much more complex than they're worth. Considered together, continuous system operations, costs, and instructor involvement may be a much greater investment than originally envisioned. It is also important to note that whenever classes are not meeting (during holidays and term breaks) a vendor-designed system will continue to rely on real-time processing, not idleness.[33]

Traditionally, there have been three criteria for educational software evaluation: examination of documentation, evaluation of support services, and evaluation of instructional software. Each evaluation is conducted from both an instructor and student perspective.[34]

Extensive research on staff development supports the finding that for effective computer usage, the following conditions must be present: training is focused on the use, rather than on operation; training goals are tied to specific curriculum and teaching objectives; training occurs over a period of time, providing follow-up and long-term support and availability; and use must immediately follow or overlap with training.[35]

Students Can Be Motivated to Learn

The use of instructional technology can motivate students to learn while individualizing course assignments and problem sets.[36] The fact that each student receives a unique set of data tends to encourage students to take coursework seriously and to meet the challenge of competition with the computer. The likelihood of two students

FIU Hospitality Review, Volume 10, Number 1, 1992

receiving identical data sets from well-designed courseware is highly improbable.

In the development of expert system utilization in hospitality education, research has shown that humans are inconsistent in their decision making.[37] Just as expert systems help diminish the variance across decision maker, so too can hospitality courseware render educational models more consistent in application. Unlike generic software and vendor-designed systems that feature data (raw facts) and information (processed data), effective courseware contains a knowledge base for evaluation of responses and monitoring of student progress. Hence, courseware possesses many of the qualities common in artificial intelligence applications. Educational specialists claim that courseware is really an intelligent tutor. In fact, some argue, that courseware is different from artificial intelligence (AI) in that AI focuses on emulating intelligence, while computer-aided learning focuses on student learning, regardless of how much the machine knows.[38]

Educational specialists have predicted that the computer will occupy an important role in the teaching of almost all subject matter. For this to be the case, some experts warn that significant developments in teacher training, software production, and equipment provision are needed in order for integration to occur throughout the curriculum.[39]

In addition to courseware, innovations in hardware can also contribute to a more enhanced classroom environment. The use of graphic scanners can offer a unique medium for incorporating art work (clip art, line drawings, etc.) into written or displayed assignments, presentations, newsletters, and even examinations. Graphic scanners differ from optical scanners in that they not only "read" a document, they interpret its pixels (dots per inch) and can "write" graphics to text documents. The addition of either a hand-held scanner, flatbed scanner, or 35mm slide scanner can greatly enhance courseware materials. Some scanners are capable of merging or linking together multiple scans.

Future Involves Voice Recognition

Prognosticators point to future advancement in two instructional technology areas: verbal synthesis, and interactive video and CD-ROM.[40] Voice recognition, an interactive verbal response system that automates speech, is becoming more attractive as an add-on to courseware materials. The evolutionary development of voice synthesis, coupled with recent technological advances in speech storage capacity, has changed verbal recognition from a smart voice messaging technology to an intelligent courseware component. With the right courseware, hospitality students can gain insight into both E-mail (electronic document transfer) and V-mail (electronic voice messaging).

FIU Hospitality Review, Volume 10, Number 1, 1992

A new and complex technique that is beginning to receive attention in educational technology is hypermedia. Although not currently affordable as a desktop alternative, hypermedia relies upon a compact disc (CD) for digitally-encoded, optically-readable information. By relying upon compact discs as its platform, hypermedia is capable of storing audio, visual, and textual materials. In essence, hypermedia combines the best of graphical scanners, verbal recognition devices, and text generators. It is anticipated that once feasible, hypermedia will revolutionize courseware technology.

Intelligent courseware should allow the learner to ask questions freely. In other terms, courseware could be based upon a natural language dialogue between instructional software and learner.[41]

Perhaps the most effective means for students to gain an appreciation for computer usage in the hospitality industry is through the implementation of courseware, which provides a creative, dynamic alternative to traditional software exercises and/or structured problem sets. Effective computer courseware should cover a subject in sufficient depth, offer a dynamic alternative to classroom or text presentation, and assist in the development of problem-solving skills.

Courseware is aimed at improving the skills of students and teachers, not so much through a series of drills, but via short case studies involving industry specific software. In order to gain support and usage, courseware must be of significant value. A major objective involved in the implementation of courseware is to help students understand classroom imparted information in terms of real-world application.

The use of instructional technology can motivate students to learn while individualizing course assignments and problem sets. The fact that each student will receive his or her own unique set of data tends to encourage students to take the work more seriously and to strive to compete against the computer.

With respect to simulations, computers can be powerful instructional aids that serve as catalysts for creative thinking and problem solving. Perhaps not many conclusions can be based upon classroom trials to date since hospitality educational software is still in its infancy process of integration. Courseware can, however, significantly impact efficiency in the teaching/learning process.

References

[1]Sylvia Charp, "Editorial," *Technical Horizons in Education Journal*, (October 1990), p.6.

[2]Lawrence A. Tomei, "Small Computers in the Classroom: Selecting Hardware and Locating Software," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), pp.102-103

[3]Maryse Quere, "Expert Systems: Towards CAI of the Future?," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), pp.159-163.

FIU Hospitality Review, Volume 10, Number 1, 1992

[4]Linda M. Harasim, ed., *Online Education*, (New York: Praeger Publishers, 1990), p.10.

[5]S. Wills and R. Lewis, ed., *Micros Plus: Educational Peripherals*, (North Holland, Amsterdam, 1986), p.48.

[6]C. K. West, J. A. Farmer, and P. M. Wolff, *Instructional Design: Implications from Cognitive Science*, (Englewood Cliffs, NJ: Prentice-Hall, 1991), p.30.

[7]Douglas Sloan, ed., *The Computer in Education: A Critical Perspective*, (New York: Teachers College Press, 1985), p.36.

[8]Larry C. Christensen, "Software Engineering and Psychology of Learning (Abstract)," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), p.157.

[9]Richard Venezky and Luis Osin, *The Intelligent Design of Computer-Assisted Instruction*, (New York: Longman Publishing Co., 1991), p.132.

[10]David Woodhouse, "Course Integration," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), pp.67-73.

[11]Tomei, *op. cit.*, p.103.

[12]J. D. Hartley, "Computer-Based Support Systems for Learning and Technology," *Trends in Computer Assisted Education*, Oxford: Blackwell Scientific Publications, (1987), p.15.

[13]R. P. Taylor, ed., *The Computer in the School, Tutor, Tool, and Tutee*, (New York: Teachers College Press, 1980), p.66.

[14]Venezky and Osin, *op. cit.*, p.146.

[15]Hartley, *op. cit.*, p.6.

[16]Venezky and Osin, *op. cit.*, pp.153-154.

[17]Hartley, *op. cit.*, p.11.

[18]Venezky and Osin, *op. cit.*, pp.63-64.

[19]R. M. Gagne, W. Wager, and A. Rojas, "Planning and Authoring Computer-Assisted Instruction Lessons," *Instructional Software: Principles and Perspectives for Design and Use*, (Belmont, CA: Wadsworth Publishing Co., 1984), pp.57-67.

[20]J. H. Dustman, "Evaluation of Student Performance Using the Microcomputer," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), pp.135-138.

[21]Tomei, *op. cit.*, p.103.

[22]G. Fisher, B. Hunter, and D. Rawitsch, "Issues and Planning for Effective Computer Use," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), p.104.

[23]Woodhouse, *op. cit.*, p.72.

[24]Dustman, *op. cit.*, p.137.

[25]Tomei, *op. cit.*, p.103.

[26]Dustman, *op. cit.*, p.138.

[27]Venezky and Osin, *op. cit.*, p.25.

FIU Hospitality Review, Volume 10, Number 1, 1992

[28]Hartley, *op. cit.*, p.7.

[29]Venezky and Osin, *op. cit.*, pp.8-9.

[30]Tomei, *op. cit.*, p.103.

[31]Dustman, *op. cit.*, p.138.

[32]Michael J. Hannafin, *The Design, Development, and Evaluation of Instructional Software*, (New York: MacMillan Publishing Co., 1988).

[33]N. Hoffman and P. Skidmore, "Developing Courseware for Schools in Western Australia," *Computers in Education; Proceedings of the World Conference on Computers in Education*, (1985), pp.109-114.

[34]Tomei, *op. cit.*, p.103.

[35]Fisher, Hunter, and Rawitsch, *op. cit.*, p.104.

[36]Charp, *op. cit.*, p.6.

[37]John Bowen and David Clinton, "Expert Systems: Implications for Educators," *Hospitality Education and Research Journal*, (1988), pp.175-183.

[38]Quere, *op. cit.*, p.160.

[39]Woodhouse, *op. cit.*, p.72.

[40]Venezky and Osin, *op. cit.*, p.300.

[41]S. Otsuki and A. Takeuchi, "Intelligent CAL System Based on Teaching Strategy and Learner Model," *Computers in Education: Proceedings of the World Conference on Computers in Education*, (1985), pp.463-468.

Michael L. Kasavana is a professor in the School of Hotel, Restaurant and Institutional Management at Michigan State University.

FIU Hospitality Review, Volume 10, Number 1, 1992