Running Head: Student-Centered, Cooperative, Project-Oriented Activities for Business Classes

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Abstract

The problem that this study dealt with was to determine the student-centered, cooperative, project-oriented activities that might be employed in the 21st century business classroom. This study used a Delphi instrument to determine the general needs for the preparation of business and information systems educators for the 21st century. Twenty-three experts nominated by the National Association for Business Teacher Education (NABTE) contributed to the data. The study consisted of three rounds of a Delphi instrument transmitted over the Internet telecommunications network. An instrument was developed from the responses generated by the first round, the second round involved rating the statements, and the third round was used to determine consensus on items.

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It has long been recognized that occupational educators must be involved in curriculum development that considers jobs for tomorrow and what the changing work place will demand (Marshall, 1993). Due to the need to teach computer applications in our schools and the rate at which technology advances are developing new uses for computers, it is important for our curriculum planners to have timely information pertaining to the future computer competencies needs of teachers. “Educators are facing tremendous challenges in identifying, developing, and designing a curriculum that will prepare undergraduates for work in the next century” (Hunt & Perreault, 1999).

Problem and Purpose

The problem was to determine the student-centered, cooperative, project-oriented activities for business classes needed by business educators for the 21st century. The purpose of this study, therefore, was to determine the general needs for the preparation business and information systems educators.

Based upon the past models of competencies that are cited in the literature needed by business teachers, the following question guided the research:

> What student-centered, cooperative, project-oriented activities are necessary for a business and information systems educator to effectively integrate into the classroom, and will provide them with those fundamental skills and attitudes that can enable them to both apply and adapt their skills to the twenty-first century?

Theoretical Perspective

The theory used in this study to explain the development of curriculum was developed by Robert Mager (1962), who provided a programmed text that demonstrated how to specify instructional objectives by behavior observable in a learner. Known as the "father of criterion-referenced instruction," Mager offered steps involved in defining outcome, accomplishment, and competence (Stoneall, 1992). It is Mager's theory of performance-based objectives that supports defining competencies needed by business and information systems teachers.

The theoretical definition of competencies was important to this study for guidance. John Raven (1984) described the word competency in the following way:

> The word "competency" is used to encompass a motivated pattern of knowledge, skills and abilities deployed to undertake a valued activity. Because values and motivation are so important it is not possible to substitute "knowledge," "skills," or "attitudes" on their own for this word (p. 402).

Procedures

This study was completed in four phases, the first of which involved identifying a national panel of experts followed with three rounds of communication using a modified Delphi instrument over a period of nearly two years.

The term Delphi comes from a reference to the oracle at Delphi, a place in ancient Greece through which it was believed that the gods answered questions and gave advice concerning the future. In research, the Delphi technique is an organized research methodology for correlating views and information pertaining to an area of strategy and for allowing respondents with such views an opportunity to react and assess differing viewpoints. The technique was introduced in 1958 through "Project DELPHI" which was sponsored by the United States Air Force and directed by the Rand Corporation to obtain the most reliable consensus of a group of experts concerning predictions of alternate national defense futures (Dalkey & Helmer, 1963, p. 458).

Three characteristics distinguish the Delphi technique from other methods of group interaction: (1) confidentiality, (2) iteration with controlled feedback, and (3) statistical group response. Because the originator of the original input statement was not identified in the study, the opinion was not associated with a particular person, and with confidentiality assured, the panelists had more freedom to alter opinions and were not swayed by the credentials of fellow participants. The number of rounds of review of responses depends upon a consensus of the panel, therefore, though the study was designed for three iterations, a third would not add value if consensus was met during the second round. The statistical account used in this study was the provision of the median score for each item during second round of the panel along with the individual panelist's rating for comparison.

Initial identification of the pool of experts used in this study was based on the following criteria: (1) active professional involvement in business education and (2) active in publication and/or presentation of computer-related educational research in the area of information systems.

A nomination form was mailed to each of the National Association of Business Teacher Education (NABTE) affiliated schools, from which one prospective panel member was identified and nominated from these criteria by representatives from each prospective school. From 97 nominations, 49 prospective panelists were selected after an extensive review of their related research and presentations. These prospective participants were invited first by electronic mail and telephone contact and then through correspondence of a written agreement. Among the prospective panelists, 25 agreed to participate in the study. After the panelists received the instructions for the first round of the study, two members withdrew from the panel due to time constraints, bringing the final number of panelists to 23 participating experts. Table 1 illustrates the demographic characteristics of the Delphi panel used for the study.

Table 1: Characteristics of the Delphi panelists.

NABTE Region Served	Gender		Degree		Faculty Rank		
	Male	Female	Ed.D.	Ph.D.	Assistant Professor	Associate Professor	Professor
Eastern	2	0	2	0	0	1	1
Mountain Plains	1	3	3	1	2	1	1
North Central	3	6	2	7	0	6	3
Southern	4	3	5	2	1	3	3
Western	1	0	1	0	0	0	1

Data Collection and Analysis

The data collection of the study involved three rounds of communications. The first round of communication included a cover letter and the instructions needed to complete the iteration. These items were transmitted both by telephone facsimile and electronic mail to all participants on the same day. To develop the second round instrument, the responses of the first round included statements, which were compared for similarity and collapsed into a survey containing statements representing the collective views of the panelists concerning competencies needed by information systems educators in the year 2001.

During the second round of communication, the experts used in the study rated the importance of each competency according to a 5-point scale. A rating of 1 indicated that the panelist felt the item was not important, 2 that the item was somewhat important, 3 that the item was moderately important, 4 that the item was important, and 5 that the activity was very important. The panelists were also encouraged to make comments to explain their answers.

An electronic mail version of the second round was sent to each of the panelists along with a telephone facsimile of the same questionnaire on the same day. Although the communication did not include return postage or a mailing via the United States Postal Service, nine panelists chose this method of return. Eleven panelists replied via facsimile and the remaining three replied using electronic mail.

The third round of the procedure involved a communication of the instrument in revised format, which provided each panelist's previous response along with the median of the collective responses given by the panel. The inclusion of the group and individual responses from the previous round provided each panelist an opportunity to modify the rating of each item based upon the group response.

Descriptive statistics including the Pearson product-moment correlation coefficients and the number of responses for each rating given for both the second and third rounds of communications were used. The correlations indicated a consensus of the panel for statements about future computer competencies that may be included in teacher education curriculum. Additionally, composite scores were calculated for each item in the second and third rounds by adding the individual responses. With 23 panelists, at least 60%, or 14 panelists, needed to rate an item as 5, or very important, for that item to be considered in consensus. Therefore, a composite score of 69, or (23 x 60% x 5) or greater indicated that the panel was in agreement about the importance of that particular item.

Findings

Table 2: Competencies needed by information systems educators for student-centered, cooperative, project-oriented activities.

(Rating Scale: 4.5 to 5 = Essential; 3.5 to 4.4 = Important; 2.5 to 3.4 = Moderately Important; 1.5 to 2.4 = Somewhat Important; =1.4= Not Important.)

Activity	Description Statement	Median	Composite
1	Build a spreadsheet program to track individual student grades. Each student can track his/her grades throughout the semester.	4	83
2	Develop a budget to track moneys earned through salaries and/or allowances and to allocate expenses for a semester. Use "what if" projections to show the effect of increases to earnings and expenses.	4	88
3	Use a database program to develop a personal address book for storing names, addresses, and phone numbers of friends, relatives, acquaintances, etc.	4	86
4	Use some self-discovery techniques. Allow students to discover what they can do with special software programs. They can then share with the class or other students in a group.	4	92
5	Have students handle arrangements for a class speaker or field trip.	4	80
6	Assigned reports from current periodicals, newspapers.	4	93
7	More practical application business and industry field trips are needed so students can see the broad range of applications and opportunities available to them.	4	87
8	Ask students to work in teams to solve large software-related projects. Teams are to plan solutions for group critique, assign tasks to team members, monitor work completion, plan final presentation of the results.	4	100
9	Ask students to make oral individual or panel presentations or discussions (using appropriate technology) on topics, some topics assigned, some topics chosen by students Require handouts, overhead transparencies, etc. . .	5	108
10	Ask students to work in cooperative work sites to complete projects planned with a supervisor and a teacher-coordinator. The job may be paid or unpaid.	4	97
11	Ask students to role play work situations. Some of these should require report preparation and presentation, such as would be done in employment settings for committee briefings, performance reviews, or proposal presentations.	4	91
12	Ask students to critique project solutions prepared by other student teams. Feedback is to be constructive, not the basis for course grades.	4	92
13	Real-life case studies (actually conducted in business settings) journalizing (recording events) to encourage reflective learning.	4	89
14	Interactive forums, organized by students, in which students generate issues and engage classmates in discussion on relevant topics, at a level which uses critical thinking ability.	4	96
15	Socratic questioning techniques.	3	73
16	Focus on process, rather than product in projects.	3	76
17	Focus on construction of meaning as opposed to skill development.	3	77
18	Use computer-assisted instruction effectively as independent learning.	3	79
19	Guide students in preparation of portfolios depicting their school learning and experiences.	4	95

20	Use of interactive technologies to develop portfolios.	4	90
21	Communicating with experts via Internet.	4	95
22	Use of multimedia and/or virtual reality simulations to build "real world" experiences (without negative consequences) and to simulate discussions with "experts" in the field.	4	91
23	Brainstorming techniques.	4	88
24	Teach lessons that integrate academic content and display a cooperative effort with academic teachers so that learning can be reinforced in other classes.	5	107
25	Have students complete reports and other class materials using groupware.	3	78
26	Set up an electronic conference for discussion of issues appropriate for specific classes.	4	83
27	Encourage students to exchange information by remote mail and appropriate LISTSERVS with other business education students at other schools (and colleges and universities).	4	90
28	Office simulation (canned or self-prepared) involving an entire class, or smaller groups of students that incorporates inter-skill and inter-personal relationships in achieving specific tasks.	4	87
29	Accounting activities performed by groups of students with each student playing a role in reaching the goals established by the instructor. Each student must play a part in orally responding about his part of the assignment.	3	75
30	Groups of students preparing a marketing strategy for a product of choice, with each student taking responsibility for a specific portion of the marketing plan and orally reporting on its development and proposed implementation. (These productions should be complemented with graphically enhanced written documents and multimedia treated oral presentations.)	4	87
31	Groups of students preparing a newsletter for publication using desktop publishing skills. Each student within the group must assume specific responsibilities for a portion of the task. The final product represents their collective effort.	4	89
32	Groups of students produce a business report incorporating word processing, spreadsheets, graphics and database management. Each group of students will be responsible for cooperatively developing the topic and assuming particular tasks. Individual student assignments will be self-assigned, but be dependent upon each other. The final product represents their collective effort.	4	97
33	Teacher lecture, student assignment in books, workbooks and tutorial books.	3	*62
34	Video/hands-on instruction. (View and learn from interactive videos.)	4	83
35	Adopt a teacher/Adopt a business. (Receive credit for typing tests, generating a merged mailing list, etc.)	3	*61
36	Practice sets. (i.e. banking and business simulations.)	3	70
37	A group project in which an evaluation of a business problem is performed and recommendation is made regarding technology solutions.	4	90
38	Students should be able to perform project management activities. This activity includes identifying tasks and milestones needed to complete a project. Project management software can assist students in this activity.	4	88
39	Establishing and managing a store to serve the faculty and/or the students and/or the community.	3	71
40	Surveying local businesses for entry-level competencies for equipment/software use.	3	70

Conclusions

Based on the findings of this study, the following conclusions can be made:

1. The Delphi procedure may be effectively used in researching consensus for program planning needs of the future in information systems education programs. Consensus was reached in three rounds indicating further rounds would not have shown significant change.

2. The panel of experts used in this study believed the two most important activities for business and information systems classes is 1) “ask students to make oral individual or panel presentations or discussions (using appropriate technology) on topics, some topics assigned, some topics chosen by students” (Item 9 in Table 2), and 2) “teach lessons that integrate academic content and display a cooperative effort with academic teachers so that learning can be reinforced in other classes” (Item 24 in Table 2).

3. The data found adds 40 statements to the universe of competencies for business information systems educators that Mager’s theory of performance-based objectives supports for defining competencies.

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