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By Dr. Ted Bensen and Dr. H. Naik Dharavath

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By Dr. Ted Bensen and Dr. H. Naik Dharavath

Dr. Ted M. Bensen is a professor at the University of Wisconsin-Stout and is the program director for the Graphic Communications Management degree program. He earned a BS and MS from UW-Stout in Industrial/Technology Education and a Ph.D. from Iowa State University in Industrial Education and Technology. He is an active presenter in workshops and seminars for printing industry professionals and graphic communications educators. His professional interests include digital prepress workflows, digital asset management, color management and leadership. Dr. Bensen is active in many professional associations in the fields of graphic communications, education and industrial technology.

Dr. H. Naik Dharavath is an Assistant Professor of Graphic Communications Management at the University of Wisconsin-Stout. He received a Bachelor of Science in Graphic Communications Technology from Rochester Institute of Technology (1995), a Master of Technology in Graphic Communications from Arizona State University (1998), and a Ph.D. in Applied Science and Technology Education from University of Wyoming (2002). He teaches Graphic Communications/Electronic Publishing and Postpress/Distribution Operations Management courses. In addition to teaching, he advises the UW-Stout TAGA Student Chapter. His research interest in Graphic Communications Technology includes Print Manufacturing Management, Curriculum Development, Print Quality Management and Workforce Education, Training and Safety. Dr. Dharavath received an Educational Grant award from Gravure Educational Foundation in 1999, and he has also received GATF/PGSF Graduate Fellowship award for 4 academic years (1997 - 2001).

Introduction

Graphic communications technology is a generic label that utilizes several techniques by which words, graphics, and designs are produced on paper, fabric, and metal or other suitable substrates with the use of inks or pigments. These techniques are also known as "graphic arts," or printing. The field of graphic communications technology has had its place in the history of the University of Wisconsin-Stout. The university has been teaching graphic communications since 1912, and has been preparing graphic communications managers since 1956. The graphic communications management (GCM) program is the largest in the Midwest and one of the largest in the nation, preparing graduates for productive careers in the printing and associated industries.

Childress & Gillispie (1999) stated that the graphic communications industry offers a host of career opportunities including management, sales, technical, art, customer service, and more. Graphic communications graduates from a technical or community college qualify for an entry-level or a technician position in industry. Similarly, graduates of a four-year or university-level graphic communications program qualify for entry-level supervisory management-trainee or middle-management positions (Flecker & Groff, 1998).

The University of Wisconsin-Stout's graphic communications management program prepares its students to be managers who are leaders, motivators, and communicators, and who can deal with business issues ranging from policy information to production efficiency. To accomplish this, the program includes course work in general and professional education, as well as focused technical courses in the program.

For many decades graphic communications management was offered as a concentration of the Industrial Technology Bachelor of Science degree at UW-Stout. In 1997, when it was approved as a separate Bachelor of Science degree program, a major curriculum revision was completed. While periodic course revisions have taken place in the interim, no significant changes had been made to the program since 1997. In the spirit of UW-Stout's commitment to continuous improvement, the program is undertaking a comprehensive curriculum review and possible revision. The fact that a growing pool of graduates of the existing program are now working in the industry and could be surveyed for their feedback made this research both feasible and meaningful.

Review of Literature

In the United States, graphic communications has evolved into a major industry and has become more efficient through new technologies, and its content is constantly changing due to rapid advancements and trends that are taking place in industry. Printing Industries of America (PIA) reports that the graphic communications industry is the third largest industry, employing

over 1.2 million people in more than 46,000 establishments and selling over $160 billion of products to print product users (PIA, 2002). Graphic communications has been a part of educational institutions since its invention in the 14th century, and continues to meet the needs of a progressive industry (Daily, 2000). At present, graphic communications educational programs are part of several vocational- and technology-based educational programs and curriculums.

According to several published reports, the printing and publishing industry is in desperate need of qualified and skilled workers at every level. Dailey (2000) stated that jobs in the desktop publishing area of the industry were expected to grow 74 percent from 1996 to 2006. As the graphic communications industry begins to replace older technology with new, digitally-driven technologies for the purpose of efficiency in print production, profit gain, and to meet the demands of the various market segments, the type of employees' skills also needs to change.

Lewis (1996) stated that, like other manufacturing industries, the graphic communications industry also requires trained and educated employees to keep the industry growing profitably. Currently, the United States printing industry is going through a radical reorganization of its workplace due to technological developments in every segment of the industry (Faiola, 1997). Due to these changes, there has been an increased demand for an educated and skilled workforce with up-to-date technical competencies. This demand is due to technological changes in digital prepress, management practices, color management, and digital printing areas of the industry (Lewis, 1996).

New technology is often difficult for many older industry workers to adopt, especially with the rapid changes that have occurred over the past ten years in the industry. In recent years, because of a national concern over the content of the curriculum and quality of education that post-secondary educational institution students are receiving, there has been a greater demand in performance assessment of educational programs in order to determine the quality of the education being provided (Zargari & Hayes, 1999). Marshall (2000) stated that, two common goals of technology-based educational programs across the country are to increase enrollments and to offer a curriculum that is both current and relevant. Zargari & Hayes (1999) stated that the alumni survey can be used as an effective tool for soliciting opinions from graduates about the quality of the completed program curriculum contents.

McGourty (1999) stated alumni surveys are becoming a popular method for soliciting feedback about the quality of their academic programs. He also stated that the alumni surveys measure self-reported perception, recollections, and attitudes of alumni who have graduated from an academic program. Wilson (2001) stated that the graphic communications industry is in a constant technological flux, and industry input is needed to make sound curricular decisions for technology-based educational programs to meet employers' expectations and to increase graduates' technical competency.

Many factors impact a graduate's success at the workplace. Some of the primary factors, however, are the nature and content of the education the student receives, as well as the various educational and industrial experiences encountered by the students over the course of his or her education. In the past ten years, many graphic communications programs across the country have been forced to revise their curriculums contents due to technological changes (Faiola, 1997). This reconsideration includes alumni perception and industry input about the nature and content of the curriculum. Mosley (2001) stated that nearly 70% of technology based companies cite a lack of skills for workers as a barrier to growth. Technical institutions, community colleges, and post-secondary institutions are expected to train and educate students for careers in technical areas (Mosley, 2001).

The perceptions of alumni and industry about the content of the curriculum can be utilized in the planning for a revision of the curriculum. Modern graphic communications education can prepare an individual to cope with industry advancements (Faiola, 1999). Graduates with modern graphic communications education and skills are, and will be, in greater demand than ever before in one of the largest industries in the United States. Closing the assessment loop with input from graduates and industry is one method of program validation.

Purpose of the Research

The purpose of this research was to determine the perceptions of the University of Wisconsin-Stout (UW-Stout) graphic communications management (GCM) alumni on the quality of the GCM curriculum. The results would be analyzed and used in the planning for a revision of the curriculum. The following questions were investigated.

1. How satisfied were alumni with the GCM program?
2. How important were courses from the different components of the curriculum (technical, professional and general education)?
3. How effective was the sequencing of courses in the program?

The scope of the research was limited to the GCM program at UW-Stout, and the findings were not expected to be generalizable to other populations. The research methodology, instrument design, and statistical analysis were all selected in alignment with the purpose of the research with full awareness of the aforementioned delimitations. It is quite likely, however, that similar institutions or programs could be expected to find this study meaningful and useful.

Research Method

This research utilized a descriptive research method. The target population for this study consists of UW-Stout GCM alumni who graduated from 1998 to 2002. The UW-Stout Alumni office provided a total of 117 current addresses of GCM alumni. In order to elicit

information for this study, a four-page survey questionnaire was developed to obtain the perceptions of the target population on the importance of the GCM curriculum. The UW-Stout GCM faculty and the GCM program director reviewed the instrument and it was piloted with GCM juniors and seniors during the fall semester of 2002. Subsequently, 117 survey questionnaires were mailed to GCM alumni. Four weeks after the first mailing, follow-up surveys were mailed to non-respondents. A five part Likert-type scale was used throughout the survey questionnaire.

Data Analysis and Research Findings

Of the 117 survey questionnaires that were mailed to GCM alumni, a total of 51 were returned. This represents a 43% return rate. Data was generated from the returned surveys. Descriptive statistical methods were used to analyze the data. Analyzed results are presented in the following section.

Program Satisfaction

The mean scores (maximum 5) and the standard deviations associated with the eight statements about the program satisfaction are compiled in Table 1. Of the eight statements, four statements received mean scores ranging from 4.02 to 4.27. The remaining four statements received mean scores extremely close to the "very satisfied" rating of 4.00, with the lowest rating being 3.92. This indicates that the GCM alumni are very satisfied with their experience in the GCM program. The alumni were particularly satisfied with the teaching they received, the required cooperative work experience, and the overall quality of the program. The relatively small values of standard deviation indicate relative agreement among respondents. The item addressing satisfaction with advising was the only item with a standard deviation above 1.00, indicating greater variety of opinion among respondents on that item (see Table 1).

Importance of Curriculum Components

This section presents the perceptions of alumni on the degree importance of courses required by the program in different curriculum components (technical, professional/ management and general education). The mean scores and standard deviations of technical components courses are compiled in Table 2. The mean response to all but one of the fourteen items exceeded a value of 3.00, meaning that those courses were perceived to be either moderately important, very important, or extremely important. Six courses received mean scores in excess of 4.00, between very important and extremely important. The only course rated below a value of 3.00 was GCM-362 Screen Printing, which is an elective course taken by only a small percentage of GCM students.

The mean scores and standard deviations about the importance of courses in the professional and management component of the program are compiled in Table 3. Of the nine courses in the professional component, three courses received mean scores ranging from 4.35 to 4.74. Respondents recognized INMGT-400 Organizational Leadership, GCM-480 Customer Service/Production Coordination and GCM-X49 Graphic Communications Co-op as being very to extremely important. The only rating below 3.00

Table 1. Satisfaction with the Program

Items	M	SD
How well did the program prepare you for employment	3.98	0.58
How well did the program promote your intellectual development	4.02	0.40
Satisfaction with overall program quality	4.27	0.39
Satisfaction with advising	3.92	1.05
Satisfaction with teaching	4.14	0.39
Satisfaction with lab activities/assignments	3.96	0.44
Satisfaction with facilities and technology/equipment	3.96	0.54
Satisfaction with cooperative work experience	4.18	0.79

5 = Extremely Satisfied; 4 = Very Satisfied; 3 = Moderately Satisfied; 2 = Unsatisfied; 1 = Very Unsatisfied

Table 2. Technical Component Courses

Courses	M	SD
GCM-101 Introduction to Graphic Communications Management	3.33	1.21
GCM-141 Graphic Communications/Electronic Publishing	3.87	0.75
PKG -150 Packaging Fundamentals	3.32	0.78
GCM-151 Electronic and Conventional Prepress	3.91	0.63
GCM-266 Press Systems	4.17	0.44
GCM-270 Postpress Operations	3.92	0.62
GCM-356 Color Electronic Prepress	4.20	0.65
GCM-362 Screen Printing	2.80	1.52
GCM-363 Package Printing	3.48	1.18
GCM-367 Reproduction Measurement and Control	3.46	1.19
GCM-443 Graphic Communications Practicum	4.52	0.51
GCM-445 Publication Production	4.38	0.48
GCM-446 Digital Imaging	4.04	0.69
GCM-475 Cost Estimating	4.02	0.81

5 = Extremely Important; 4 = Very Important; 3 = Moderately Important; 2 = Little Important; 1 = Not Important

was received by INMGT-300 Engineering Economy, indicating that respondents perceived it to be less than moderately important. The greatest variability in responses was seen in GCM-495 Graphic Communications Seminar.

The mean scores and standard deviations about the importance of courses in the general education and science component are compiled in Table 4. Of the eleven courses in this program component, two courses received mean scores above 4.00. Respondents indicated SPCOM-100 Fundamentals of Speech and ENGL-415 Technical Writing were very important courses. The low rating and extremely large standard deviation of responses to ENGL-111 Honors English I may be due to the very low number of alumni that took the class. It is also noteworthy that all three science courses were rated below 3.00 or less than moderately important.

Course Sequencing

The mean scores and standard deviations of responses to the effectiveness of course sequencing are shown in Table 5. Alumni of the program perceived the sequencing of graphic communications courses was very effective.

Free Responses

In addition to the survey items that gathered interval data, the respondents were also asked to provide free responses to some items. The respondents were asked for suggestions of curriculum topics in both the graphic communications technology area as well as the professional business/management area. Though those responses are not addressed here, they will be reviewed by the GCM faculty to see if topics could be added to existing courses as they are revised, or whether complete course additions to the curriculum should be considered.

Conclusions

The conclusions of this study are based upon an analysis of the data and major findings. The responses of UW-Stout GCM program alumni indicate that they were very satisfied with their experience as students in the program. All criteria assessed – preparation for employment, intellectual development, overall program quality, advising, teaching, lab activities, facilities and equipment, and the required industry co-op work experience – received ratings above or very near the rating of very satisfied.

Table 3. Professional/Management Component Courses

Courses	M	SD
INMGT-120 Quality Concepts	3.59	0.96
INMGT-200 Production Operations Management	3.82	0.83
INMGT-300 Engineering Economy	2.86	0.98
INMGT-400 Organizational Leadership	4.52	0.37
BUACT-201 Financial/Managerial Accounting	3.29	0.80
BUMKG-330 Principles of Marketing	3.53	0.87
GCM-480 Customer Service/Production Coordination	4.35	0.93
GCM-495 Graphic Communications Seminar	3.70	1.16
GCM-X49 Graphic Communications Co-op	4.74	0.36

5 = Extremely Important; 4 = Very Important; 3 = Moderately Important; 2 = Little Important; 1 = Not Important

Table 4. General Education and Science Components Courses

Courses	M	SD
ENGL-101 English Composition	3.67	0.78
ENGL-111 Honors English I	2.81	2.64
SPCOM-100 Fundamentals of Speech	4.18	0.53
ENGL-415 Technical Writing	4.02	0.85
CHEM-115 General Chemistry	2.86	0.80
PHYS-231 General Physics I	2.72	0.94
PHYS-231 General Physics II	2.80	1.00
STAT-130 Elementary Statistics *or* STAT-320 Statistical Methods	3.08	0.82
MATH-121 Mathematics II	3.15	1.02
ECON-210 Principles of Economics	3.17	0.96
MEDIA-304 Elementary Photography	3.23	1.41

5 = Extremely Important; 4 = Very Important; 3 = Moderately Important; 2 = Little Important; 1 = Not Important

Table 5. Course Sequencing

Sequencing	M	SD
Graphic communications management courses	4.23	0.48
Professional and management courses	3.90	0.43
General education and science courses	3.41	0.91

5 = Extremely Effective; 4 = Very Effective; 3 = Moderately Effective; 2 = Ineffective; 1 = Very Ineffective

Since the planned program curriculum revision would address course revisions and course requirements in the program, the alumni importance ratings of individual courses were extremely valuable. In general, the courses required by the program received ratings of moderately important or better. Many courses in the technical component and the professional/ management component were rated between very important and extremely important. Elective courses received lower importance ratings, but this may be due to the smaller number of respondents who had taken the course or the lack of application of elective course content to the career path chosen by those graduates.

Specific areas of concern to be addressed are the low importance ratings of the required science courses as well as Engineering Economy. The generally high ratings indicate that alumni of the program were very satisfied with their experiences, found the coursework they completed to be important to their career preparation, and found the courses to be effectively sequenced.

The results of this study allow the faculty of the graphic communications management program at UW-Stout to review the curriculum with greater confidence and knowledge about the perceived value of the component courses in the program. Based on input from alumni, the GCM advisory board, and other industry contacts, there are many suggestions for adding courses to the curriculum. These suggestions will be weighed against the strong positive feedback regarding the current course requirements of the program.

References

Childress, V.W., & Gillispie, C.C. (1999). Preparing for a Career in Printing and Publishing: An open letter to advisors and students. Visual Communications Journal 1999. University of Houston, Houston, TX: 1-5.

Dailey, D. W. (2000). Graphic Communications Education: Where is it Headed in the New Millennium? Visual Communications Journal 2000. University of Houston, Houston, TX: 1-4.

Faiola, A. (1999). The Graphic Communications Curriculum for the next millennium. Journal of Technology Studies, Fall 1999. Bowling Green State University, Bowling Green, OH: 47-49.

Flecker, S.A., & Groff, P.J. (1998). Careers in Graphic Communications: A Resource Book. Sewickley, PA: GATF Press.

Lewis, T. (1996). Impact of Technology on work and jobs in the Printing Industry: Implications for Vocational Curriculum. Journal of Industrial Teacher Education 34, (2), 7-28.

Marshall, J.A. (2000). Focus on Industry Success. Journal of Industrial Technology, 16 (3), 1-5.

McGourty, J. (1999). Improving Academic Programs by Capitalizing on alumni's Perceptions and Experiences. 29th ASEE/IEEE Frontiers in Education Conference, San Juan, Puerto Rico.

Mosley, I.T (2001). Computer Management Information Systems and Computer Production Skills Need by Industrial Technology Graduates as Perceived by Universities and Companies. Journal of Industrial Technology, 17 (1), 1-6.

Print and Graphic Scholarship Foundation. (1999). Careers in Graphic Communications: A Counselor's Guide. Pittsburg, PA: GATF Press.

Printing Industries of America (2000). About the Industry. [Online]. Available: http://www.printing.org/ [2002, January 13].

Wilson, D.G. (2001). Needs Assessment: Implications for Graphic Communications Education. Visual Communications Journal 2001. University of Houston, Houston, TX: 1-6.

Zargari, A. & Hayes, M. (1999). An Analysis of Industrial Technology (IT) Programs in Meeting Students Needs: A Survey of IT Alumni. Journal of Industrial Technology, 16 (3), 1-5.

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