Accrediting Council for Collegiate Graphic Communications, Inc.

Site Visitation Team Report

for the

Digital Media Program

Information and Logistics Technology Department
University of Houston
Houston, Texas - USA

ACCGC Team Visit Dates
October 4-5-6, 2015

Table of Contents

The ACCGC Council

The Accrediting Council for Collegiate Graphic Communications (ACCGC) has been established as an independent voluntary, not-for-profit organization under Section 501 (c) (3) of the Internal Revenue Code of 1986, as amended (the "Code"). The Council is comprised of eleven educators and eight industry personnel who are or have been employed in the graphic communications field and elected for three-year terms on the Board of Directors. The ACCGC operates under its own bylaws and is dedicated to the improvement and recognition of collegiate level curricula in graphic communications.

The mission of the ACCGC is to provide viable, credible, and defensible accreditation standards that can be used to promote and encourage sound associate, baccalaureate, and graduate level educational programs in graphic communications. In the accreditation process, the ACCGC board members strive to stimulate the exchange of ideas between collegiate administrative and instructional personnel in academia and management personnel in the graphic communications industries. Professional educators and industry personnel, as representatives of ACCGC, review both qualitative and quantitative evidence obtained through the program self-study and facts substantiated by a three-member site visitation team in determining the accreditation status of the graphic communications program within a college/university.

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Associate Professor and Chair
Department of Graphics and Imaging Technologies
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Industry Representative:
Mr. James A. Workman
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Warrendale, Pennsylvania

Education Representative:
Mr. Mark A. Rzeznik
Associate Dean
Graphics and Engineering Technologies
Waukesha County Technical College
Pewaukee, Wisconsin

Itinerary of Site-Team Visit

October 4, 2015
5:00 PM Toured Main Campus and DIGM Facility
6:00 PM Dinner with Chair, Coordinator and Faculty
8:00 PM Arrived at Sugar Land Hotel

October 5, 2015
8:00 AM Advisory Board Breakfast (Working Meeting)
9:00 AM Toured Labs in Sugar Land
10:00 AM Observed Lecture and Lab
11:00 AM Department Chair Cline
12:00 PM Alumni and Current Students
1:00 PM Vice Provost Jones
1:30 PM Coordinator Waite
2:00 PM Librarians
3:00 PM Visit Lab
3:30 PM Dean Fitzgibbon
4:30 PM Evidence Room

October 6, 2015
8:00 AM Faculty
9:00 AM Lab Observation
10:00 AM Assistant Dean Carter
11:00 AM Ms. Bakach
11:30 AM Printing Services
12:00 PM Lunch with DIGM Faculty
1:00 PM Work Session
2:00 Concluded Meeting

University of Houston Information

The University of Houston System is a group of ten public institutions of higher learning in the Houston area that share common goals and are governed by a Board of Regents.

The UH System comprises of four Universities and six multi-institutional regional campuses that offer degrees in partnership with the universities. The University of Houston is the largest and most comprehensive institution in the UH System.

Enrollment: 42,722

Budget Data: $1.3 Billion

Number of Programs Offered: Undergraduate 120 Majors/Minors

Degrees Conferred: - 8000 Annually

Tuition: $5802 per 15 hours credit

Room & Board Costs: $4800 per semester

Student Body Make-up: Fall 2015
Men: 50.8%
Women 49.2%
Ethnic Minorities 71%

Regional Accreditation of the University of Houston

Members of The National Commission on Accrediting

College of Technology Information

The College of Technology is the universities most rapidly growing college. Founded in 1941, it is the 4th largest college in terms of student enrollment. The College is dedicated to offering state of the art, high quality, accessible, and affordable education.

Information and Logistics Technology Department Information

The Department of Information and Logistics Technology (ILT) prepares students for careers in business, industry, and government with programs closely linked to workforce quality and productivity for the region, the state, and the nation.

Digital Media Program Information

The Digital Media program prepares technologically-savvy graduates to develop, design, and manage established and emerging media that meets and even exceeds the visual communications needs of their clients. Upon completion of the program students would have the ability to specialize in an area of concentration for an in-depth focus of the students' interest.

ACCGC Accreditation Standards and Observations

4.1 Mission Statements and Learning Outcomes

Mission statements provide philosophical direction and relevance to the institutional mission. Learning outcomes provide instructional direction and a basis for assessment.

The Standard

The graphic communications program must have a clearly written mission statement aligned with the institutional mission. In addition, learning outcomes that provide a framework for curriculum and assessment must be specified.

ACCGC Visitation Team Observations

The site visitation team, upon evaluating the University of Houston self-study, and discussing the mission statements with the university administration and faculty, confirm:

1. The Digital Media program's mission is clearly articulated and is in concert with the mission of the Department of Information and Logistics Technology, the College of Technology, and the University.

2. "The University of Houston Digital Media program prepares technologically-savvy graduates to develop, design, and manage established and emerging media that meets and even exceeds the visual communications needs of the client."

3. The mission was not hastily thrown together, and was reviewed and approved by a sub-committee of the Advisory Board. How this mission is achieved—what general skills are developed in graduates—is also clearly articulated. Those skill descriptions will need updating as animation and app development classes take root in the updated curriculum.

4. In 2014, the DIGM Advisory Board approved new student learning outcomes and program outcomes based upon the faculty recommendation and analysis of results of previous assessment. They are as follows:

   Student learning outcomes

   1. Students will demonstrate research and written communication skills related to Digital Media. Students conduct research on a question developed during several semesters, (leveraging DIGM 2350, 2352, 3351, and 4372) and then, in DIGM 4399, complete a written report to disseminate their findings. The best papers in each class are submitted to peer review in applicable journals.

2. Students will demonstrate their ability to plan digital media projects and assign costs to each production stage.
3. Students will demonstrate skills related to their Digital Media Area of Emphasis.

5. The program faculty are beginning the development of a forward-looking plan to create a well-rounded graduate, coined a "transliterate producer." Leading the effort is a member of the Advisory Board whose professional specialty includes strategic planning. The plan is supposed to be refined and implemented in 2017. The plan calls for increasing the creative skills of Idea Generation and Visual Development, which based on comments from the program chair and instructors seems to have, so far, been intentionally de-emphasized so as not to compete with the university's design program. The plan will be refined and given substance in the next two years. Its implementation, as envisioned now, would result in a substantive program change.

6. There is a clear set of mission statements – for the institution, for the College of Technology, for the Department of Information and Logistics Technology and for the Digital Media Program.

7. The mission statements center around; student growth, research, lifelong learning, incorporating technology, and to producing new ideas and knowledge within their respective fields.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.2 Competency Alignment and Outcomes Assessment

Written, measureable competencies define the specific instructional content for courses within the graphic communications program and are aligned with the learning outcomes.

The Standard

The graphic communications program(s) has/have clearly defined competencies that are consistent with the mission statement and aligned with the learning outcomes. Evidence exists to verify that learning outcomes are measured on a regular basis.

ACCGC Visitation Team Observations

The site visitation team, upon evaluating the Digital Media Program self-study, and discussing the mission statements with the Dean, Department Chair, and Faculty, confirm:

1. The Digital Media program faculty have developed a set of learning outcomes appropriate to the discipline and validated by the advisory Committee.

2. Course syllabi clearly state the learning objectives for the course.

3. Measurement of the learning outcomes is being done with both direct and indirect measures. These measurements are providing data for the faculty to align curriculum, with the advisory board's leadership, to help improve the instruction in the Digital Media Program. For each of the outcomes, faculty devised direct performance standards that are not based on course grades, examination scores, or test grades. Outcomes are measured on rubrics, by external presentations by the students and external evaluation of projects by industry. They use of an alumni survey is also utilized to gather additional indirect evidence.

Evidence Found Supports Standard: __X__ Compliance; ____Partial Compliance; ____Non-Compliance

4.3 Governance/Administration

The administrative activities must be organized to support the overall goals of the academic unit. The administrative structure must be clearly defined with faculty involvement.

The Standard

The person(s) in the administrative/leadership role(s) of the graphic communications program must be able to promote the intellectual and academic cause of the educational unit.

ACCGC Visitation Team Observations

1. Content included in the self-study identified the administrative role and responsibilities of the department chair.

2. The current department chair, Dr. Ray Cline is supportive and actively involved in the implementation of the mission for the Digital Media Program.

3. Dr. Jerry Waite, program coordinator, was responsible for transitioning the move to the Sugar Land campus for the Digital Media Program and keeping all levels of administration informed of the benefits of the new campus.

4. The Administration of the University of Houston, represented by meetings with the administrators, are very supportive of the Digital Media Program and understand the role of the program for the Graphic Communications Industry.

5. Administrators are pleased with the move to the Sugar Land campus for the Digital Media Program. As the launch initial program at this campus, it has brought a positive light to the Digital Media Program.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.4 Financial Support

It is recognized that graphic communications programs often require more financial support than many other traditional academic programs. The budget should reflect funding for quality instruction, salaries, facilities, equipment, supplies, support services, travel, and professional development.

The Standard

The budget for graphic communications programs must be adequate to support program objectives and promote continuous program improvement.

ACCGC Visitation Team Observations

Content found in the program self-study, information supplied in the evidence room, and discussions with the college/university administrators affirm:

1. During fiscal year 2015, the budget for the department was $3,753,424. The Digital Media Program is one of four undergraduate programs in the department that receive funds from this pool.

2. Past fiscal year budgets have allowed the Digital Media Program faculty to update equipment and allow for the moving expenses incurred by the Sugar Land Campus move.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.5 Equipment and Facilities

The equipment should be of the amount, type, and quality representative of the industry to meet the mission, curricular outcomes, and competencies of the educational program. Safety and environmental concerns must comply with institutional regulations. Laboratory space should be adequate for effective and efficient instruction. All equipment should be well-maintained. Office and storage space should be sufficient to house faculty, supplies, and materials. The college/university and/or program library (learning resources) must be supplied with current publications and electronic media for graphic communications student and faculty use.

The Standard

The equipment and facilities must be adequate to fulfill the stated educational mission, learning outcomes, and competencies.

ACCGC Visitation Team Observations

Since 2014 all but one Mac Lab of the Digital Media program has been housed at the new University of Houston Sugar Land campus, about a 30 minute drive southwest from the Main campus near downtown. The campus is in an affluent and rapidly growing area. There are three buildings on the campus now, with expansion plans underway for a fourth building. It is anticipated that campus resources will continue to expand over the next several years. In an innovative partnership, the campus includes classrooms for the Wharton County Junior College and a library that is a partnership between Fort Bend County and University of Houston (it also serves as a public library for county residents).

The rapid growth of the Digital Media Program was a leading reason it was selected to be the first University of Houston program to relocate to the Sugar Land campus. As a result, there was considerable investment in new equipment coinciding with the move. In total, the Digital Media program has about 5,400 square feet of dedicated space, covering six dedicated laboratories and faculty offices. That's not sufficient space if the program continues to grow at its current rate, which is why there are discussions of program space being made available in the yet-to-be-built fourth building on campus.

For the most part, the facilities and equipment are impressive. Computers, digital cameras, camcorders, software, and related equipment are all relatively new and representative of what professionals are using. The department policy is to replace the Apple computers on a four year cycle, roughly in line with the length of the warranties. Some of the output equipment, such as the litho press and platemaker, is older but still effective for teaching purposes (although the platemaker is close to the end of its life and should be replaced, with consideration given to a device capable of imaging metal plates).

The photography studio is not ideal due to room limitations (low ceiling, no space for professional backdrop) and should be relocated when new space options become available.

One of the Mac Labs (room 102A) remains on University of Houston's Main campus due to the legal arrangement with Wharton County Community College that requires sophomore classes at the Sugar Land campus to be taught by WCTC. Procedural and political issues require Digital Media faculty to teach their own sophomore classes. This arrangement—one lab on the Main Campus and all other labs at Sugar Land Campus—is not ideal and inconveniences students that have to travel between campuses. In addition, the lab is cramped and not up to the physical standards of the other labs.

IT support for the labs is excellent. The College of Technology employs an individual who is the primary support for Apple computers in the Digital Media Program. The College IT director provides secondary support and is responsible for purchasing all computers, projectors, software, and providing advice with regard to room layout and setups. An Apple-certified engineer is employed by the university who is ready to assist with complex issues. In addition, there are qualified managers for each lab who report problems to the IT staff.

On the mechanical side, the image transfer lab manager can handle most problems that arise in his lab. The department contracts with repair technicians for more stubborn problems. The university's dedicated maintenance staff handles issues that range from plumbing to air conditioning.

As for library support, the students have access to a tremendous amount of online and on-site resources through the University of Houston Libraries and the Sugar Land branch library. The branch library staff have made book and periodical investments to make sure it has adequate resources on hand for Digital Media students. It's possible to request and have quickly delivered physical items from other university library systems to students on the Sugar Land campus.

During the team evaluation of the equipment and facilities, some safety issues were observed that should be corrected. First, there should be a first aid kit in the image transfer lab. A sign erroneously indicates there is one. Second, the students should wear safety glasses when working on the press. Safety glasses are required in industry when personnel are working around chemistry; asking students to wear them would be a wise precaution.

4.6 Staff Support Services

Office staff, technical personnel, and student assistants should be adequate to efficiently and effectively conduct the day-to-day activities of the academic unit. Technical support is essential in equipment-intensive graphic communications instructional laboratories.

The Standard

The unit must have sufficient support services to provide adequate assistance to meet program objectives.

ACCGC Visitation Team Observations

1. The team observed considerable interaction among the support staff and with both faculty and students.

2. The support staff members are located in main labs allowing students access to them as additional educational resources.

3. The faculty incorporate the support staff into the learning environment and the students thrive by having additional resources in the environment.

4. The office staff is located on the main campus, and through the use of sufficient communication technology is available for the faculty.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.7 Curriculum

It is imperative that the program reflects current industry trends and practices in graphic communications technology and management along with general education and courses from other related disciplines.

The Standard

Graphic communications programs must exhibit logical curricular diversity consistent with the program mission, learning outcomes, and competency statements.

ACCGC Visitation Team Observations

The team made evaluations based upon the syllabi provided, the university (online/printed) catalog, discussions with faculty, students, and graduates including advisory board/committee members.

1. The curriculum is comprised of general college courses in the freshman year, a base Graphics for Digital Media course in the fall of the sophomore year, a Digital Photography course, a Page Layout and Design course and a Web Design course in Spring of the Sophomore year and the courses based on a student's program track in the Junior and Senior years.

2. A wide variety of courses are both required and available as part of the Junior and Senior years. Students can choose courses from different tracks along with courses in their own selected track.

3. Courses are updated on a regular basis with input from industry personnel and the Advisory Committee members.

4. A binder is prepared and available for each course that contains the syllabi and learning activities for the course. The binders were very complete and the selected textbooks were relevant and up-to-date.

Evidence Found Supports Standard: __X__ Compliance; ____Partial Compliance; ____Non-Compliance

4.8 Instruction and Evaluation

The quality of instruction should be monitored to determine if high standards of teaching are exhibited. Evaluation of student work must take place in all courses.

The Standard

The graphic communications teaching faculty must maintain high quality instruction.

ACCGC Visitation Team Observations

1. The site visitation team saw evidence of student projects, a matrix of assessment, and samples of assessment tools for each course.

2. Student perceptions of the faculty were very high and many favorable comments were made with regard to the level of instruction and helpfulness the faculty provide.

3. Program faculty utilize online learning and are commended for their presentation of online material that the team observed for this visit.

4. Evidence was provided that showed courses were well thought out and developed to foster student learning.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.9 Internships / Practicums / Cooperative Study

Internships/Practicums/Cooperative Study should be realistic industrial experiences that contribute to knowledge about graphic communications.

The Standard

Industrially relevant practical experiences, with or without academic credit, are strongly encouraged but need not be considered a required part of the program.

ACCGC Visitation Team Observations

Internships are not required to graduate from the Digital Media Program and are not expected to be required in the future. The program coordinator feels that mandatory internships place an undue burden on some students that may already have jobs and can't afford to give them up for the internship. That said, the value of internships are clearly understood by the coordinator and faculty and they encourage the students to seek them. Based on a show of hands at the meeting with students and alumni and other information gathered, about 50% of students participate in an internship before they graduate. The majority of the students locate the internships with the help of faculty and do not register for DIGM 4396, the internship class. They work for the experience, money, and potential of being offered full-time work upon graduation, rather than academic credit.

One factor, apparently, why more students don't sign up for the DIGM 4396 course is that faculty members don't get paid for their time administering the internship (assisting students to prepare internship objectives, working with cooperating employers, evaluating student and mentor reports, and assigning letter grades). This likely reduces their enthusiasm and promotion of the course. Students also probably gravitate to the no cost internship option rather than paying for the academic credit, even though it may not save them much in the long run since they still need the prescribed number of credits to graduate. At least one student commented on the academic work that is required with the formal internship, when he can get the same experience without it.

The large advisory committee is a great source of internship opportunities and most committee members who run businesses said they had placed interns in the past. They reported positive experiences and expected to have opportunities for student internships in the future.

1. The formal Internship course has a nice flow, good learning outcomes, and gives the students an opportunity to work in Industry.

2. Content found in the program self-study was relevant and assured that students would receive valuable industry experience.

3. Records available to the team in the evidence room provided the team with a good course layout and learning plan.

4.Most students did not take the formal course. The students were gaining industry experience through informal internships. This system is working for the students and feedback from the advisory team was very positive concerning the students and how they balanced the needs of the employer and their academic responsibilities.

Evidence Found Supports Standard: __X_ Compliance; ____Partial Compliance; ____Non-Compliance

4.10 Industry Advisory Committee(s)

The advisory committee(s)/board(s) provides guidance for curriculum content and program direction.

The Standard

One or more graphic communications industry advisory committees/boards must be active.

ACCGC Visitation Team Observations

The Advisory Committee of the Digital Media program is a huge asset. Because of the program's history and the desire by the program coordinator to be inclusive, invitations are sent annually to industry leaders, association heads, faculty from community colleges, and program alumni. The process of determining who receives invitations is well documented. Many respond to the invitations—about 40 members are currently on the roster. Slightly more than half of the group routinely comes to meetings. There is no specific term of service, which explains why some members have served for over five years.

Meetings are held semi-annually and average 20 attendees. Agendas are established and notes are kept and distributed from each meeting. Judging from the day the ACCGC team met with the advisory committee, the enthusiasm that members have for the program is palpable. The committee members believe the program has made the proper changes to stay relevant with their employment needs, and they want the program to succeed. We heard members say the program was "a good value for the money" and "well rounded." Another member expressed his support for the program this way: "There is a chasm between interactive and traditional media, and this program integrates the two, producing graduates capable of understanding a variety of media."

The committee members believe that the Dr. Waite listens and responds appropriately to their input. They acknowledged their influence in the change from Graphic Communications Technology to the Digital Media program with its multiple media areas of emphasis. The weight of their opinion was instrumental, members said, in keeping the multicolor litho press when the press lab was moved to the Sugar Land campus. One member said that upon hearing the committee's input on an issue, Dr. Waite has "pivoted" at times from his initial leaning. Another committee member enjoyed his service because of the committee's "culture of team spirit and inclusiveness." Committee members have been involved in discussions on course content and sequencing and been invited into the classrooms.

Evidence Found Supports Standard: __X__ Compliance; ____Partial Compliance; ____Non-Compliance

4.11 Faculty: Tenure/Tenure Track, Adjunct, and Graduate Teaching Assistants

The strength and professional diversity of the faculty reflects the quality of the educational program. The ratio of tenure/tenure track and adjunct faculty should be appropriate to the program learning outcomes, competencies, and curricular structure.

The Standard

All faculty members must be academically and professionally qualified, as determined by the institution, with institutional responsibilities and expectations clearly defined. Faculty development should be continual.

ACCGC Visitation Team Observations

1. The team found that the faculty work very well together and the collegiality of the faculty is evident by the student perceptions of the program.

2. The faculty communicate openly and objectively to work together to develop their courses and serve students.

3. The team did not sense any division of faculty based on status of appointment.

4. The part-time instructors the team met have the same enthusiasm as the full time faculty for the subject matter taught.

5. Faculty expressed ways that they utilize research to partially fund travel to conferences and described opportunities that industry representatives have donated for their professional development.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.12 Faculty Evaluation

Evaluation of faculty provides feedback for instructional improvement, faculty development, and other contributions to knowledge and to the profession.

The Standard

All faculty members must be evaluated for instructional effectiveness, professional development, and service contributions.

ACCGC Visitation Team Observations

1. A formal review process for the timely evaluation of faculty is in place in the Information and Logistics Technology Department as directed by the vice-president of academic affairs.

2. Faculty work with Dr. Ray Cline to determine progress toward professional goals. Requirements for promotion and tenure are appropriate for a research-intensive institution.

3. Non-tenure track faculty work with the program director, Dr. Jerry Waite, to establish goals and work through a separate evaluation process.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.13 Student Records and Advising

Effective advising requires that student records be well organized, current, and maintained in a systematic and effective manner. Advisors should be cognizant of current curricular requirements and changes that affect the graphic communications curriculum. Pre-requisite course status must be monitored and strictly enforced. Student advisement is required on a regular basis.

The Standard

A system for maintaining records and advising students must be established and in use.

ACCGC Visitation Team Observations

1. An effective formal advisement process exists for students in the digital media program.

2. There is a College of Technology Academic Services Center available to provide advising services to students.

3. The use of faculty in the advisement process allows students to determine the correct path for the area they are pursuing.

4. The Digital Media program faculty have produced informational literature for students to utilize to see how each of the tracks work.

Evidence Found Supports Standard: __X__Compliance; ____Partial Compliance; ____Non-Compliance

4.14 Graduate Placement and Follow-up

Assistance to help students transition into their first employment positions is important to help assure graduates are placed in positions commensurate with the stated goals and objectives of the program. Follow-up studies should be used to assess program progress and assist in future development of the program. The types of employment opportunities and how well the students were prepared in the program for their current and past positions should be documented.

The Standard

Initial placement assistance is practiced and timely follow-up studies of graduates should be conducted.

ACCGC Visitation Team Observations

Digital Media students can take advantage of College of Technology resources—one career counselor (for 5,700 COT majors), semi-annual career fairs, and an online site for job and internship postings. Most Digital Media majors do not appear to find their first post-college job using these resources. The career fairs rarely contain companies recruiting DM majors, since the vast majority of employers are small- to medium-sized companies that don't have the resources or desire to be part of a career fair. The counselor isn't as knowledgeable in Digital Media employment opportunities compared to other areas (e.g., Construction Management) where large companies regularly approach the placement center looking for students.

Instead, as was the case at the time of the initial accreditation visit in 2009, Digital Media students are more apt to learn about job prospects because an employer contacts the program coordinator and other faculty members. The employer is directed to complete an online form that makes the listing accessible through the digital media page of the College's TechConnect site, and it is automatically cross-listed on the Digital Media program's Facebook feed.

Digital Media faculty seek information from soon-to-be graduates and recent alumni. The inaugural online survey to recent graduates was introduced in spring 2015. The survey was designed to ask respondents about their employment status and pay, their view of how well the program prepared them in 13 areas of skill and knowledge, their perception of instructional quality, support, and resources, and the extent that they believe the goals of the program were met in their case. This type of information is obviously very useful.

The challenge with any survey is the completion rate and that was true of this survey—19% responded, amounting to 10 students. Results were favorable to the program, although the potential of response bias means that people with strong positive or negative feelings may be overrepresented. Adjustments to the survey and how it is carried out may

help raise the response rate. For example, there is normally a correlation between survey length and response rates, so shortening the rather long questionnaire may help. A low-cost incentive (e.g., DG Media bumper sticker) may boost rates, as well. Other suggestions are to standardize the use of the survey, such as every two years to recent graduates that haven't responded, and to make sure the survey results are used for program improvement. For example, a target response could be set for each question, such that if the average response falls short of expectation it causes an examination of what can be done so future graduates have a different perception.

The Digital Media program faculty also conduct an annual survey of majors in their final semester before graduation. They gather perceptions of students' skills and knowledge in 22 areas—from print media, production techniques to sales, and sales strategies. The majority of students believed they had advanced skill/knowledge in many areas and functional skill/knowledge in others. We know that it is difficult for people to self-evaluate themselves; even so, this type of regular survey can be very helpful in spotting increases or decreases in how well students believe the program is preparing them. It is vital that the survey is used for program improvement and doesn't become simply a yearly exercise.

The team observed several different ways the students would find permanent positions. They are listed as follows:

1. The students in the College of Technology have access to a Career Counselor, the University Career Services website, and a website called TechConnect where perspective employers post job opportunities.

2. The College of Technology Alumni survey is a general questionnaire about undergraduate and graduate alumni seeking information on employment experiences as well as the quality of education received.

3. The Digital Media Program coordinator could administer a survey to graduating students in their final semester.

4. The Dean of the College of Technology requests that a survey of their alumni be conducted every two to three years for continuous monitoring purposes.

5. Faculty keep up with alumni using social media such as Facebook and Linked' In.

6. The Advisory Committee provides timely feedback on students, both intern and graduated students they employ.

Note: As with most academic surveys, the percent of response is not as high as they would like.

Evidence Found Supports Standard: __X__ Compliance; ____Partial Compliance; ____Non-Compliance

Faculty Meeting Overview

There were several opportunities for the site visitation team to meet with the UH DIGM Faculty. The team enjoyed a dinner and campus tour Sunday evening in which most of the faculty were present. The team observed faculty members in their respective classrooms and laboratories interacting with the UH students. The faculty were knowledgeable about the processes and procedure of the University. The faculty were very hospitable and allowed the team to ask additional questions outside of the formal meeting times. Observations from meeting

1. Faculty believe they are the ones working to build relationships with industry to place students. Without their help the digital media students would be left out of the career placement process.
2. The need for additional laboratory space.
3. The need for a continued procedure for updating computers and equipment.
4. Input on the layout of the new building at the Sugar Land Campus. (Loading Dock, Overhead Door, Video/photography studios, etc)
5. Pride that 35 % of students graduate with honors from the program.

Student Meeting Overview

The team spent an hour with current students and alumni of the program. During this time it was observed that the current students are concerned about the location and the time to travel to the new facility. Many suggestions were made concerning the campus in general. The students were very positive on the changes to the program and the faculty/staff. The majority of the students who were in attendance selected the University of Houston based upon the Digital Media Program. They believed the program was very beneficial and noted job requirements were including digital. One student even stated he found the University based upon the Digital Media Program being ACCGC Accredited.

Visitation Team Exit Report

At the close of the team visit to review the Digital Media Program at the University of Houston for re-accreditation, the team provided an oral report to the administration, faculty, and staff. The team oral report included these topics: appreciation, review of the ACCGC report preparation, challenges, strengths, and a timeline for completion.

Visitation Team Conclusions

The ACCGC Site-Visitation Team is pleased to provide the following conclusions:

1. The University, College, Department, and Digital Media Program mission and curricular outcomes clearly meet the needs of the State of Texas and the Graphic Communictions Industry.

2. Short and long range goals and objectives for the program are in line with the needs of the University, College, Department, Digital Media Program, and the Graphic Communications Industry.

3. The administrative role and responsibilities at the department and program level were conducted in a professional, congenial manner. The relationship between the administration and program personnel is strong and collegial.

4. The allocation of budget to the program has been used to transition the Digital Media Program from the main campus to the Sugarland Campus. A majority of budget purchases has been to move equipment and upgrade labs for the transition.

5. The facilities and laboratory equipment are up to date and operational.

6. The curriculum is consistent with the needs of the Industry. It is continuously being evaluated by the advisory council and faculty. The awareness to the needs of the Industry is allowing the faculty to bring this into the classroom. The program faculty are commended for continuing to adjust as technology changes and employers express the needs for new skills in entry-level employees.

7. The faculty were very enthusiastic about their respective disciplines inside the digital media program and worked together to communicate how the disciplines merge. The faculty have a great working relationship and the students notice.

8. Library (learning resources) support, career services, and student affairs/academic services provided for an exceptional opportunity for student success as they progress through the program.

9. The students are excited about the curriculum being offered and the opportunities to explore the numerous job possibilities that they are given within the Digital Media Program.

10. Dr. Waite has done a masterful job of assembling a powerful group of Advisory Board members and creating a culture in which they seemingly want to go out of their way to support the program. As evidence, there were 23 attendees at an 8:00 am meeting on the second day of the team visit. That's a remarkable turnout especially given that many members had to drive a considerable distance through Houston traffic to attend.

11. Because of this program, the faculty, college/university administration, industry support, and the high quality of the students, well-educated graduates are being made available to the graphic communications industry for both today and tomorrow.

Visitation Team Recommendations

The evaluation of the curriculum materials used in the program included a review of the university website, printed and on-line catalog, course syllabi, course credit, course descriptions, relevance of subject matter, textbooks, and instructional materials being used. During the duration of the review, several observations were found which suggest future attention. The ACCGC Site Visitation Team presents the following recommendations:

1. While the mission completely meets the ACCGC standard, it is suggested that an alternative be used to the phrase "meets and even exceeds." This verbiage was in vogue for a time as total quality management philosophy took hold in industry, but now it strikes the team members as trite and dated. Instead the team members suggest wording such as "that responds to and foresees" the visual communications needs of the client.

2. Faculty and administration should work through a vision exercise that allows the faculty to share input in the development of lab space and resources for new construction on the Sugarland Campus.

3. Development of a strategic plan for sustaining equipment in the program. A plan is currently in place for computers, however additional resources for future equipment acquisition should be included.

4. Explore the opportunities of additional tenure track faculty members to enhance the growth of the program area.

5. Explore the additional opportunities that the Digital Media Program has to allow for growth at the university.

6. Revisit lab safety policies and work toward a beneficial safety procedure for the Digital Media Program.

7. The make-up of the Advisory Committee should become more diverse, acknowledging that most students choose areas of emphasis other than print media. Yes, traditional graphic arts companies are expanding their services; however it would be wise to invite more professionals who specialize in other areas of program emphasis (video, animation, packaging, and soon, app development and simulation).

ACCGC Site-Visitation Team Summary of Program Compliance to Standards

C = Team evaluation found all criteria for the standard to be met.
P = Team evaluation found most of the criteria for the standard to be met, but there are weaknesses or deficiencies that need to be corrected.
N = Team evaluation failed to substantiate that the criteria for the standard to be met.

Standards	Evaluation
4.1	C
4.2	C
4.3	C
4.4	C
4.5	C
4.6	C
4.7	C
4.8	C
4.9	C
4.10	C
4.11	C
4.12	C
4.13	C
4.14	C

The ACCGC Site Visitation Team, having thoroughly reviewed the self-study submitted by the faculty and administration of the Digital Media Program, University of Houston; having made a fact finding visitation to the University of Houston campus; and upon completing our investigation, **unanimously recommends that the Accrediting Council for Collegiate Graphic Communications, Inc. grant full re-accreditation status to the Digital Media Program at the University of Houston, Houston, Texas.** Assuming approval by the full ACCGC Board of Directors during their annual meeting on September 25, 2016 in Orlando, FL, the re-accreditation will cover the period beginning September 1, 2016 through August 31, 2022.

Appreciation

The ACCGC Site-Visitation Team members are pleased to express sincere appreciation to all individuals involved in the preparation of the self-study and for making the official visit to the University of Houston campus a pleasant experience. Also, thank you for selecting the Accrediting Council for Collegiate Graphic Communications, Inc. as the accrediting agency to review your Digital Media program.

Philosophical Premises Underlying Successful Education in Graphic Communications

Central to effective graphic communications education are a number of premises that apply equally to education and training in the graphic communications industry of the twenty-first century. They are:

• Education does not take place in a block of time.

Whatever it takes at the university; four, five, six years or even more could represent the boundaries within which a block of education takes place. The time involved depends heavily on the individual being educated, the education or skills being developed, and the complexity of the subject matter under investigation. The four-year metaphor for a Bachelor's degree, for example, has fallen and continuing education of individuals already in industry is just that, "continuous." If a career is to remain viable, vital, and productive, ongoing education, training and re-training has to be defined and expected for nearly every position in the graphic communications on the management and production levels. Today's students in undergraduate baccalaureate programs must be made to understand this.

• The University is the last bastion of idealism.
It is the laboratory and its ability to create situations simulating industry that provides students with a window on their professional future. That future includes the expectation that they will propose and simulate ways to improve the industry by drawing on their university experiences. It is through tests and trial and error that students develop a practical understanding of what works and what does not work in achieving desired outcomes. A university providing the opportunity for students to experience ideal conditions, or conditions that are as close to ideal as possible, graduates people who bring some of that idealism to industry when they graduate and, hence, improve industry. They bring new ways of solving problems, and with each generation entering the field industry benefits from continuing improvement. Graphic communications laboratories should be designed to provide students with opportunities to experience some of the same idealism in a practical setting that is part of the best-run companies in the profession.

• Education is more than an Associate or Baccalaureate degree that prepares a person for an occupation.

Reading, writing, speaking, and overall communication skills are as important as technical skills in the graphic communications industry of the twenty-first century. Education and training in the graphic communications must address these issues on all levels. "Human" skills are increasingly what drive companies to success. More specifically, marketing, sales, customer service, and related training are as important, or even more important, than training to operate a piece of equipment. Equipment increasingly requires less human intervention and is run by microprocessors and other electronic devices. Hence, training in industry is moving more to preparing people to develop those business skills needed to

generate business and to keep equipment running. This must be focused on in graphic communications academic programs.

• Education is a service that must address the needs of undergraduates and industry professionals.

Viable academic graphic communications programs should be structured to address the needs of regular students and also industry professionals who require continuing education and training. Labs should be equipped with the type of technology used by industry, thus providing opportunities to simulate real business and production conditions.

• A viable educational program, such as a successful business, must have a well thought-out and flexible strategic plan.

All viable graphic communications programs should have a strategic plan addressing forecasts for curriculum reform, laboratory development, faculty and staff development, and related topics. Projecting six years ahead is not unrealistic and such thinking should be the basis for educating students and training industry professionals on what they will need to know in the future. The six years comes from the opportunity to reform curriculum every two years and then assuming that at least some students well graduate in four years, though some take longer.

New Skill Sets for the Graphic Communications Industry

So, in projecting six years ahead, what do we really prepare students with and what do we really train industry professionals for? From the philosophical premises previously noted come two categories of training needed to develop skill sets for employees of the graphic communications in the twenty-first century. They are mental or cognitive skills and physical skills.

Mental or Cognitive Skills

• Accepting change as a rule.

Traditionally, change was the exception in the graphic communications. However, it is now the rule. For example, it was about 430 years between the time Gutenberg invented the process of duplicating movable type and the invention of the linotype machine. It was another 56 years between the invention of the linotype and the practical application of phototypesetting. Hence, little happened to further the process of placing words on paper between these lengthy periods of time. Expecting to enter, continue, and complete a career today doing the same thing (as was possible for linotype operators and then strippers) is unrealistic. Today, technological change can occur daily and be unanticipated. The expectation of change must be addressed in education and training, and employees must adopt the notion that if they expect the unexpected, there will be no surprises. Expecting change requires a mindset that must often be developed. Resisting change is a natural tendency. But doing so inhibits professional growth in technologically dynamic field such as the graphic communications.

• **Analytical thinking and understanding systems.**

Systems concepts, file management, and workflow analysis has become the skill set required for aspiring managers in the graphic communications. For example, systems concepts involves standardizing and quantifying operations whenever possible to help insure consistent results, regardless if one person is working on a particular assignment or if 100 people are working on it. Being able to measure quality and measure results is all part of the outcome of systems concepts. This differs from the craft orientation of the graphic communications in past decades where each individual in the production flow used her or his own personal skill abilities in producing a job. This is what led to great variability in quality, time taken to complete a task, and other variations that are just not acceptable by today's standards and customer demands. Analytical thinking requires training as does understanding systems. Both are vital components of education in graphic communications academic programs and training in the modern graphic communications industry.

• **Understanding the relationship between people and technology.**

It seems that there is a certain mystique or special esoteric skill development necessary before one can run application software to achieve computer results or to assess problems on computers. This was not so with traditional equipment. For example, nearly any person with any level of training can get into a car and drive it from point A to point B. In past years, before the introduction of microprocessors to printing presses, nearly any press operator with some basic training could turn on a printing press and get it to work.

However, today there are some extremely bright and highly educated people who do not know how to navigate application software or figure out the basic procedural manipulations necessary to achieve certain computer results with such software. This is in spite of the fact that they have tried. More specifically, for example, preflighting has become a significantly important part of a digital workflow. However, learning preflighting software takes a particular type of person having the mindset to focus intensely on the various navigational procedures involved. While nearly any person can walk into any car and make it do what it is supposed to, not any person can get on a computer and operate it efficiently or even know how to operate it. Until such a time that running a computer application is as simple as driving a car, there will be a substantial amount of education and training necessary for students in graphic communications programs and operators in the graphic communications to use computers efficiently and profitably.

The range of time and training required in developing an understanding of computers and application software varies tremendously from individual to individual. In graphic communications, knowing how to select people with the mindset attuned to operating computers efficiently, to understanding navigational procedures to achieving desired results, and to solving problems efficiently is critical. It seems in the electronic arena, it is the ongoing "communication" between people and technology that helps to determine when a person has internalized procedural requirements and when a system is ready to cooperate in performing desired functions. These are vital understanding that must be built into academic graphic communications programs.

• Understanding contingency management.

Contingency management is the fourth of the management style evolution that has evolved from the days of authoritarian management of the early part of the twentieth century. It was then when effective management was thought to be achieved through one-way communication where those in authority dictated terms, and employees simply followed them. Authoritarian management gave way to human relations management in the post WWII 1940s that really took root in the 1960s. Studies of that era showed that operational efficiency was improved when employees were permitted to participate in decisions related to how they did their jobs. This was followed by the socio-technical management style of the 1970s and early 1980s. This was the era in which the impact that computers and other electronic devices would have on the workplace became clear. This management style suggested that in effectively run companies, management would have to delegate responsibility and authority to electronically savvy employees who knew more about technology and production than did their supervisors—a historical first in graphic communications. This gave way to contingency management of today.

Contingency management means that there is no one management style best suited for running a company all of the time. For a company to exist, survive, and grow, the applied management style must vary with changing times and particularly as they relate to changing economic conditions. In other words, when times are good and cash flow is plentiful, one style of management works best. Typically this is a time where there is great latitude in providing professional development opportunities for employees, on-the-job latitude for trials and experiments, flexible working hours, and a general loose and open air of management. On the other hand, during difficult economic times, as is facing some of companies of the graphic communications industry today, management styles must be tightened and become more rigorous. With diminishing cash flow comes diminishing freedoms on the job and fewer professional development opportunities and employees must be trained to expect this. They may not be permitted to attend seminars and conferences that they were permitted to attend in better times, and they may not have as much say in their working hours and conditions as they used to. That this becomes an expectation of the job, and not a disappointment of the job, necessitates education and training that is quite different from technical training. Such education must be reflected in our graphic communications academic programs.

• Creative cognitive skills as opposed to physical craft skills.

Physical mechanical skills are easily taught though becoming a diminishing requirement in the graphic communications. Presses virtually run themselves and imaging takes place from computer monitors directly to the printing plate or to the printing press cylinder. These are merely a couple of examples of where physical human skills have been replaced by technology. Imaging film and film processes are no longer an important part of the printing process whereas in the past it was the nucleus or core of the process. At printing plant producing a major national daily newspaper in full-color, press operators were observed sitting besides the press reading books while the press was running at over 30,000 impressions per hour. Basically, the press was being driven and controlled by microprocessors. Whereas in the past, the press operators, and many more than are required for presses

controlled by computers, would be all over the press while it was running to control ink feed, fountain solution, ink-water balance, register, density, and so on. Such physical skills have been replaced with the need for cognitive skills including workflow analysis, file management, preventive quality control, statistical process control, total quality management, and so on.

Being able to analyze and anticipate the most efficient, productive, and profitable workflow from the time a job comes in the front door of a company to the time it is delivered to the customer has become the fundamental skill set needed by employees in an effectively run graphic communications company. This includes the "micro workflow" that takes place in each department of the company involved in producing a job. An understanding of these transitions is needed in academic graphic communications programs in preparing students to understand the field that they are entering.

• Organizational communication skills.

Prospective employers of graphic communications students invariably point to communication skills as the most important attribute of entry-level employees right out of college. This involves reading, writing, and speaking skills, and also being sensitive to what is effective and appropriate upward, downward, and lateral communication skill. This applies to employees communicating to those above them, supervisors or management staff communicating to those below them in the organizational chain of command, and to people on the same level communicating to each other. However, communication audits of companies often reveals that this is where the major breakdowns occur leading to costly problems such as downtime, waste, misinterpreted instructions, and even animosity among employees that leads to insufficient communication required to get the job done properly. Organizational communication training is becoming increasingly essential in the graphic communications as technology dictates that no one person can complete a job by herself or himself and that teamwork is a required component of organizational efficiency. Effective and focused communication is the main ingredient for effective teamwork and is only learned through education and training.

• Marketing, sales, and customer service skills.

Again, technology has driven the need to enhance marketing, sales, and customer service skills. The graphic communications industry has been transformed to one in which labor intensity has moved front the "backend" to the "front end" of operations as a result of technology. For example, prior to the introduction of microprocessors and other electronic devices to printing presses, it took four to six people to run a four-color printing press of 38 inches or larger. There would be one person loading and watching the feeder of the press, one person between each of the printing units controlling ink keys, ink-water balance, and performing other tasks, and one person, usually the lead press operator, monitoring the delivery of the press and inspecting printed sheets for register, density consistency, color match to a proof, and so on. Today, one person can run the same press with built-in electronic controls, though two are typically used for safety purposes. Not only do the newer presses require fewer operators but they also produce at three times or more the speed of the non-computerized traditional presses. What this does is create an over capacity that

must be sold or else the press begins losing money for a company. Hence, when more is being produced with fewer people in the "backend" there must be more people educated and trained in the "front end" to market and sell this over capacity. Therefore, in the graphic communications company of the twenty-first century, there is the need for more trained marketing staff, sales people, estimators, and customer service representatives than ever in the history of the graphic communications. On the other hand, there is the need for fewer machine operators than ever before and this trend is expected to continue. Graphic communications academic programs must focus on the more service-oriented facets of the industry.

• Skills in practicing professional ethics.

Ethics in graphic communications has recently taken on an entirely new meaning and the issue will be in the forefront of defining business dealings for printers, publishers, customers, and vendors in the twenty-first century. This issue must now be part of education and training directed to graphic communications students as well as to employees at all levels of graphic communications companies.

Graphic communications industry ethics traditionally focused on matters of keeping promises to customers on deadlines, deliveries, and providing fair pricing. In other words, the matter of ethics had to do primarily with relationships between the service providers, such as the printers, and their customers. Today, however, printing has evolved from a provincial industry of thousands of small companies unlinked by any universal codes or standards of behavior. It has become a highly sophisticated and modern industry. Companies in the industry must now have the management savvy to deal with and define issues not typically associated with the printing industry. Some relate to employee loyalty, placing company interest above personal interests, dealings with competition, a wide range of customer services, democracy and equality in the work place, behavior of management and company executives, harassment, activities that are defined by local, state, and federal laws, and measures to prevent unethical behavior. Others include balancing business priorities with personal and community values, accurate record keeping, abiding by company and industry standards, trust and shared responsibilities, relationships with vendors, the work environment as it relates to health and safety, the highly visible issues associated with handling intellectual property, computers and Internet access, and the entire realm of freedom and access being provided by modern technology.

Unauthorized use of the Internet, photocopiers, company equipment, telephones, company mail including express mail, and taking home copier paper, pens, and related items, varies from company to company. However, such practices are clearly contrary to good ethical behavior but often difficult to track. Some companies take great efforts to track such behaviors, while others do not care if employees telecommute or work odd hours as long as the job gets done and goals are met. Clearly, a uniform standard of ethics for doing business in the graphic communications for the twenty-first century has not been established. Company representatives set their own rules, guidelines, and codes; some stringently and some loosely. Whatever the company policy is, it is prudent to include it as an essential part of employee orientation and training. The issue of ethics in the workplace should be addressed in graphic communications academic programs.

• Understanding laws and policies concerning intellectual property.

One of the most controversial and unresolved areas of new technology has to do with copyrighted material and related intellectual property in print and electronic form. The latest developments in copyright law are a direct response to changing innovative technologies. New technology allows digital conversion of images and text, creation of multimedia, and transmission of data to remote locations. These activities are often central to innovative and effective business dealings and critical to doing business in a highly electronic world. Where more materials are farther from the reach of those who need them, their availability will increasingly be subject to payment of a license fee.

As graphic communications becomes more reliant on networking and electronic communication, the mistreatment of intellectual property in most cases can lead to very serious consequences. One major supplier to the industry has been known to terminate an employee on the mere notion of disclosure or abuse of intellectual property. It is becoming increasingly common in the graphic communications for employees to sign an oath of secrecy that is taken very seriously. This has been common in certain printing industry segments for many years, such as in the financial and legal printing, and is now becoming common for all industry segments in which employees have access to intellectual property. Employee knowledge of the legal requirements and company policies regarding the use of intellectual property is an important component of graphic communications training today and should be addressed in graphic communications academic programs.

• Overall communication skills.

This requirement cannot be overstated and is worthy of some closing notations under the category of Mental or Cognitive Skills. Again, communication training means training people to "communicate" with technology and "training" technology to "communicate" with people, e.g., making sure that technical components are of the type that people feel comfortable with and are not intimidated by.

It also means educating and training people to communicate with people at all levels of the organization and "training" technology to "communicate" with technology, e.g., making sure that the components, connectors, and software needed for machines to "communicate" with machines are of the proper type and are properly configured. Perhaps most important it means training employees at all levels of the organization to communicate properly and effectively with the company's external constituencies including prospective and current customers, equipment and supply vendors, service personal brought in from the outside to help solve problems and to perform maintenance that cannot be performed internally. Feeling that one is being communicated to with respect, dignity, and sensitivity is the key to achieving goals expeditiously and with expected outcomes. Such communication capabilities are not innate. They often must be taught beginning in academic institutions having programs in graphic communications.

Physical skills

While the emphasis on training is clearly moving to the mental and cognitive facets of the graphic communications profession, there are still essential physical skills that must be addressed. However, some are quite different from those requiring focus in years past. Here are some.

• The ability to minimize waste.

Waste continues to cause major variability in printing profitability. And in spite of attempts to control it and anticipate it since the days of Gutenberg, it continues to be the main element often making the difference between a profit or loss on a printing job. The key contributor to this situation is paper waste that has become exacerbated in recent years by the rising cost of this most expensive disposable commodity used in printing. Paper accounts for between 30 percent and 50 percent of the cost of printed products. With faster printing presses, paper gets wasted faster (probably three times faster on electronically-controlled presses) than on the previous mechanical presses.

Additionally, some of the newer digital presses also encounter extreme waste due to the newness of the technology, and aspects of control is not yet known by users. In spite of predictions of a society using less paper, the trend is in the opposite direction with more paper being used than ever before. More paper used equates to more paper wasted. More paper wasted accounts for less profitability of printing jobs. This is a major problem of business survival in the highly competitive commercial printing industry. Education and training in anticipating, controlling, and preventing waste is key to business success in the graphic communications and should be taught in graphic communications academic programs.

• The ability to improve and maintain quality.

Products of the graphic communications industry continue to be viewed as a "necessary evil" for the most part by those purchasing such products. Printing, for example, and now digital non- print images purchased for advertising and marketing purposes represent expenses that buyers prefer not incurring. However, they have to in order to survive in a very competitive marketplace. When a product is considered a "necessary evil," those buying it want it at the lowest possible price, as quickly as possible, and at the highest possible quality. This is part of the dilemma that commercial printers have faced for centuries in trying to earn a decent profit.

Hence, the question is: What type of education and training is required to instill in employees of the graphic communications the knowledge and skills needed to accomplish this difficult feat of providing low prices, fast delivery, and high quality? The answer is knowing how to negotiate supply purchasing arrangements, in understanding workflow management, in knowing how to monitor production systems, in knowing how to perform quality monitoring and how to control systems, in knowing how to manage inventory, in knowing how to estimate jobs that may be used for multimedia, and in knowing how to put delivery mechanisms in place. The goal is to learn how to avoid backward movement caused by er-

rors, learning how to assure quality consistency, learning how to meet all customer expectations, and learning how to predict and control waste. Graduates of graphic communications programs having this knowledge are in a position to immediately contribute the corporate success.

• The control of electronic devices.

Education and training in the control of electronic devices is essential in nearly every facet of the graphic communications including prepress, press, post press, as well as in the production of non-print media such as Internet publishing, Web authoring, DVD and CD-ROM production, and so on. This differs greatly from the control of mechanical devices with their focus on manual dexterity and manipulations in some cases, and in maintenance (knowing how to fix mechanical items) in others.

The control of electronic devices encompasses microprocessor and circuitry analysis; being able to navigate through software applications; knowing how to create PDFs (Portable Document Formats); knowing how to compress files to expedite transmission; knowing how to move files from one application to another; knowing how to manipulate image resolution, contrast, brightness, and size; knowing how to do RGB/CMYK (Red, Green, Blue/Cyan, Magenta, Yellow, Black) conversions; knowing how to cross-platform electronic files; and so on. Education and training in these areas is substantially different from mechanical training and has become a vital component of education in the graphic communications.

• Knowledge of computer management and workflow systems.

Training in computer management and workflow systems involves learning about networking and how computers are interconnected with other technology in creating completely digital and seamless workflows. For example, it is not unusual for graphic communications companies to have departments with multiple computers, each of which are networked through a central server. This allows each computer to "talk" to each other and enables the easy movement of files from one workstation to another. Additionally, it has become common for computers, through servers, to drive prepress, press, and post press equipment such as computer-to-plate systems, digital on-demand and variable imaging printing presses, and even some finishing technology such as ink jet addressing systems. How these facets of the production workflow are interconnected or networked, from where and to where data flows, and how to capture data within the workflow to make changes and corrections, are vital parts of graphic communications education and training in the twenty-first century.

• Knowing how to "re-purpose" for multimedia.

"Re-purposing" is one of the newest words in the graphic communications vocabulary. It refers to creating or capturing an electronic image and manipulating it so it is suitable for multimedia applications. For example, an electronic image created for distribution over the World Wide Web has different requirements than an electronic image created for reproduc-

tion on a web printing press. Copy range (difference between highlight and shadow density), sizing, resolution, and other physical properties of the image must vary for optimal results in both media. Preparing electronic images for "burning" onto a DVD or CD-ROM has yet other requirements, and preparing images for proofing on ink jet or laser printers has yet others. Knowing how to repurpose images for these applications and others requires substantial training in understanding electronic image construction, native formats, differences between ppi (pixels per inch), spi (spots per inch), dpi (dots per inch), and related structural components of electronic images. These aspects of repurposing should be taught in graphic communications academic programs.

• The ability to improve job handling practices and productivity.

It seems that as smooth as graphic communications production may appear, there is always room for an upward spiral of improvement. Intelligent graphic communications management today includes ongoing assessments of efficiency including how a job is handled in every cost center or production department of a graphic communications company. Being able to make such an assessment requires an in depth knowledge of job handling requirements and options in each production department. This used to be a fairly simple matter prior to digital workflows and performing production through software applications.

A person trained in mechanical production routines would easily be able to spot inefficiencies by merely walking through a department and observing manual routines. However, digital technology and software applications have made invisible those routines that influence production efficiency. It takes a special type of education and training in software and digital workflow analysis to become sensitized to areas in which efficiency can be improved. This is no easy task; it must be planned and carried out within the established curriculum.

***Summary and Conclusions**

In summary, graphic communications involves the processes and industries where imaged products are created, developed, produced and disseminated through the utilization of incorporating words and pictorial images to convey information, ideas, and feelings. Graphic communications includes the family of market segments embracing the technologies of printing, publishing, packaging, electronic imaging, and their allied industries.

The graphic communications industry is complex and involves thousands and thousands of people who possess creative skills, technical skills, sales skills, and management skills. This is an industry that began when humans first started scratching symbols and illustrations on rocks and cave walls. It has continued over the years because people have found that they must have images, in one form or another, to survive and improvement their standard of living. Graphic communications will continue for as long as there are people occupying planet earth. It's almost as essential as life itself!

(Credit for writing the initial draft of this ACCGC Philosophical Statement is given to Dr. Harvey R. Levenson, Chair of the Graphic Communication Department, California Polytechnic State University, San Luis Obispo, CA and a former nine-year ACCGC Board of Directors member.)