We are too small to do that: Challenges and opportunities of computer graphics education in small art departments

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Abstract

As more institutions of higher education search for ways of integrating the computer graphics technology into their existing art programs, smaller art departments in particular have found many challenges and obstacles. From curriculum design and pedagogical concerns to finding necessary resources and promoting the program, implementing computer graphics programs requires painstaking endeavors. While many issues of program developments are universally applied to any sized art programs, smaller departments more often face stiffer challenges from limited financial resources to the lack of qualified faculty to inadequate facilities. In order to overcome such obstacles, small art departments are required to assess the needs clearly and utilize the available resources more carefully than larger programs. This panel addresses the unique academic environments and approaches for developing computer graphics programs in small art departments. It also invites an open dialogue of educators on the issues and concerns of implementing computer graphics technology in small visual art programs.

1 Introduction

The field of computer graphics is one of the most thriving areas in our society. More and more students show interest in the field as they find the uses and applications of computer graphics in their everyday lives. Arts Wire Current, the online newsletter of the New York Foundation for the Arts (NYFA), clearly illustrates the academic developments in the article, "Electronic arts/new media departments flourish across the country" (2001). The article points out that most universities either support a department that has a special interest in the electronic arts or at least offer some courses in the area. New facilities are being built to accommodate more students along with wide-ranging curriculum and collaborations. Developing a new academic program, however, is difficult. Adapting computer graphics technology for small visual art programs requires more resourceful and inventive approaches for many reasons. From limited financial resources to a limited number of students, small institutions and art departments generally face more challenges than their larger counterparts. The panel shares a unique perspective on computer graphics education in various educational settings including issues, concerns, challenges, and opportunities.

2 Levels of Development

Despite the danger of oversimplification, the developments in the field of computer graphics education can be categorized into three groups. At the minimal developmental stage, some basic introductory computer graphics classes are offered. These courses often serve as a part of foundation curricula for other art majors such as general art, graphic design, and photography. No dedicated faculty and facility solely for the computer graphics program are available. The second level is more of a certificate program, which provides several computer-related art classes in conjunction with closely related programs such as graphic design, fashion design, digital photography or film and video. At this level, the programs can establish designated computer labs for computer graphics and independent supporting structures including faculty and staff. The third and most developed programs offer specialized degrees in the field of computer graphics. Some programs turn themselves into independent academic departments offering a set of diversified and specialized curricula such as 3D computer animation, interactive multimedia, digital video, web, and game design. Both undergraduate and graduate programs are available under the various titles and degrees. However, it is clear that not every school does or can develop a program to the level of a specialized academic department. Depending on the goals and available resources, each institution should decide the kind of programs it will provide.

3 Common Challenges

In the field of computer technology, new technologies keep on coming and existing technologies are continually transformed. Consequently, the learning for new technology never stops. In the midst of searching for the most recent technology, the art-making process for which computer technology is originally intended can easily become secondary. In the traditional studio art courses, the objectives go beyond the mere learning of the medium to the knowledge for creating works of art including creative visual thinking, expression, analytical problem-solving ability, story-telling ability, and developments of aesthetics. For the computer graphics program, understanding the balance between technical proficiency and artistic creativity is critical. Art educators should ask the question of when learning ends and creation begins.

In addition, the curricula and structures of the programs should be flexible to adopt new technology. The panel of "Approaches to teaching introductory computer graphics" at SIGGRAPH 94

(1994) emphasized the findings of the Undergraduate Faculty Enhancement Workshop in Computer Graphics sponsored by the National Science Foundation (NSF) and the ACM SIGGRAPH Education Committee. There were widely differing viewpoints on the content and methodology in terms of teaching introductory computer graphics courses. The metamorphic ability of computer technology suggests the interdisciplinary approaches for developing the program, branching out into other disciplines, including computer science, engineering, robotics, music, dance, architecture, telecommunication, and performing arts. In fact, many leading universities and colleges have already established inter- and multidisciplinary programs in order to lead the field.

Another critical issue of developing a computer graphics program is providing theoretical and historical understanding of computer technology in the field of art and design. The roles computers have as art media should be thoroughly examined. However, the history of utilizing computer technology is relatively short and recognizing the computers as a legitimate art medium is even shorter.

4 Challenges for Small Art Department

The development of computer graphics programs requires a significant amount of resources. While the cost of individual hardware and software is much less than ever before, the financial burden on the academic institutions for establishment and maintenance of computer facilities has not been lightened. Small academic institutions naturally have limited resources. It is far riskier for the smaller institutions to develop programs that may constrain their finances. Without economically sound and justifiable causes, small institutions of higher education will hesitate to jump on the bandwagon of computer graphics.

Required resources for computer graphics programs are not limited to hardware and software. For the smaller institutions, finding and recruiting qualified faculty and staff becomes harder than ever in the field of computer graphics. It is not easy for academic institutions to find talent fluent enough to teach specialized courses in addition to foundation courses as there are plenty of opportunities other than academia that have lured potential faculty to more lucrative industries. Schools often find only a handful of applicants who are qualified for a vacant faculty position (Bravaco et al, 2001).

The field of computer graphics is constantly experimenting with new ways of using computers for art and design, branching out into other disciplines. There is a strong necessity of collaboration among various disciplines in order to develop a successful program. Smaller institutions, however, mean a limited number of students and available academic programs. Thus, it is much harder for smaller institutions to explore more inter- and multi disciplinary computer graphics programs.

5 Opportunities for Smaller Institutions

Developing a computer graphics program can be an attractive investment in smaller institutions as the field catches more attention from the students. Many small academic institutions rely heavily upon the tuition and student fees of the students for

their funding. The increase in student enrollment has become one of the top priorities. In addition to the objectives and goals of providing a quality professionally oriented academic program, the program development can offer a balance between investment and performance. The investment is the required resources such as faculty, facilities, and equipment. The performance would be the number of students enrolled in the program. An advantage for smaller institutions may be less bureaucratic processes over larger counterparts that often have to go through various committees and authorizing bodies.

6 Conclusion

As computer graphics has become a vital component for visual art programs, small art departments in higher education constantly seek to establish meaningful computer graphics programs. The future of these institutions partially depends on how successfully they adopt new technology into the curriculum. It is an opportunity to grow as well. There is an urgent need for more research, dialogue, and publication about computer graphics education in small art programs. This panel shares the practical and theoretical issues of computer graphics education and encourages educators and researchers in the field of art to take a close look at the small colleges and universities that are often ignored in the horizon of academic research and literature of computer graphics education.

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