Developing an Internet and Multimedia Technology Certificate Program

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Abstract

This paper describes the process of developing a new thirty-credit Internet and Multimedia Technology certificate program, and highlights activities from the first year of the program at the Essex Campus of the Community College of Baltimore County (CCBC-Essex). First year growth, student progress, and difficulties encountered are described.

Keywords: Internet, multimedia technology, program growth, learning community, NSF-ATE

1. BACKGROUND

In a November 30, 1997 article, *The Washington Post* indicated that the Maryland and Virginia area employed approximately 260,000 computing technology workers, and had approximately 25,000 vacancies. Multimedia and Internet Technology is at the core of radical changes in communications, business, entertainment, education, and art. Maryland businesses are expanding their global markets through the Internet and need employees trained to create customer interfaces. The 1998 Maryland Plan for Postsecondary Education set ten goals described as critical by the Maryland Higher Education Commission (MHEC). Goal Four is, "Postsecondary education should contribute to the economic development of the State and the needs of employers and their workforce." (MHEC 1998) Many 4-year colleges offer degrees in Computer Science, Computer Information Systems, and Graphics Design, but in 1998 there were no Maryland degrees in Multimedia or Internet Technology.

2. I/MMT CERTIFICATE PROGRAM CREATED

In 1995, CCBC-Essex developed two General Education courses, Internet Literacy and Multimedia Technology. Topics in the Multimedia Technology course are discussed in another article (Sorkin 2000). These became cornerstones for the development of a thirty-credit certificate program in Internet and Multimedia Technology (I/MMT) that prepares students for entry-level employment, and provides opportunities for upgrading technical skills, and for further education through articulated programs. Students in the program choose one of two options: Internet Specialist or Multimedia Specialist (Mento 2000). Students in the Multimedia Specialist option learn to design and develop interactive computer materials for advertising, publishing, animation, and education. They learn computer screen design techniques with courses in art and digital imaging, and produce interactive programs without programming by using authoring and animation software. **Figure 1** lists suggested courses by semester for this option. Students in the Internet Specialist option learn to produce dynamic web sites with animation, interactivity, and database access to prepare them for Internet marketing and web-site design and administration.

In 1997, the college president asked one author to research the possibility of offering a new program in Multimedia. An Internet search revealed that out-of-state Multimedia programs were a blend of art, communications, and computer science. To examine existing curricula, visits were made to Richland Community College and Harris Community College in Texas, followed by visits to local Multimedia firms in Washington, D.C. and Baltimore. This research indicated that Multimedia firms were branching out to Internet applications because the Internet had exploded in the business world: Multimedia is the Internet's interface to the world. In January 1998, a survey was sent to 200 students who had taken either Multimedia

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Multimedia Specialist Option		
Semester 1		**Credits**
ENGL 101	Composition	3
CMSC 155	Internet Literacy	3
MULT 109	Multimedia Authoring I	3
ARTS 102	Two Dimensional Design	3
Semester 2		
MULT 201	2D Animation	3
MULT 121	Digital Imaging	3
1 Elective		3
Semester 3		
MULT 221	Project Development	3
2 Electives		6
	Total Credits:	**30**
Electives		
ENGL 213	Technical Writing	3
CMSC 273	Internship	3
CMSC 157	Internet Programming	3
MULT 205	3D Advanced Animation	3
MULT 209	Multimedia Authoring II	3
MULT 211	Digital Audio/Video	3

Figure 1. Suggested courses by semester for Multimedia Specialist option.

Technology or Internet Literacy in the previous three years. An overwhelming majority was enthusiastic about the proposed program, with comments that this was exactly what the college needed. Even students not planning a technical major expressed a desire to learn about the Internet and Multimedia. The I/MMT program was approved in December 1998 by the CCBC Board of Trustees and by MHEC in May 1999.

3. RECOMMENDATIONS OF PROJECT ADVISORY GROUP

A faculty committee had developed a proposal for a National Science Foundation Advanced Technological Education (NSF-ATE) project, and funding for a three-year project was awarded in April 1999. The project, *Internet and Multimedia Technology: Curriculum, Faculty, and Workforce Development,* includes funds for a computer laboratory, training for faculty teaching in the program, funds for conference attendance, and stipends for course development.

A May 1999 meeting with the project Advisory Board of business/industry/education partners was attended by Beverly Bricker (Principal Apropos Media, Inc.), Blair Taylor (Computer and Information Sciences, Towson University), Marc Montefusco (Multimedia Producer, Apropos Media, Inc.), and Thomas Kuegler (Director of Operations, Skyline Network Technologies, Inc.). Board members pointed out the necessity of cross-platform experiences for students. As a result, the new computer laboratory used Pentium III's and a small Macintosh production station for video/audio capture may be created in the future. Adobe software was recommended for courses involving imaging and illustration, and the Macromedia product suite was recommended for multimedia. The Board did not feel strongly about any particular database programming packages, emphasizing good programming principles, instead. Workforce development needs were discussed. Students' need for team and interpersonal skills, so that technical and creative persons can work well together, and their need for communication skills to articulate, summarize, and document references was stressed, along with the need for a thread of ethics throughout the curriculum. Board members noted the increasingly important role that international issues will play, and students' need to understand how various cultures and international economies affect I/MMT work.

A new I/MMT laboratory was created in August 1999 with 20 Compaq Pentium III computers and the following software: Macromedia *Authorware* 5.0, Macromedia *Flash* 4.0, Adobe *PhotoShop* 5.5, Adobe *Illustrator* 8.0, Macromedia *Director* 7.0, *Dreamweaver* 2.0, Metacreations *Bryce* 4.0, *SnagIt* 4.3, Norton Anti-Virus, MS-Word 97 and MS-Visual Basic Professional. A Compaq server, CD-RW, and Red Hat Linux 6.1 were purchased. CCBC-Essex administration and technical services provided space, furniture, matching funds, and networking infrastructure. A full-time I/MMT laboratory assistant was hired in March 2000.

4. GROWTH OF I/MMT PROGRAM

The number of courses offered in the I/MMT program has increased from 14 sections in Spring 1999 to 27 sections in Spring 2000. Over the same period enrollment in the I/MMT program has increased from 273 student enrollments in Spring 1999 to 452 students enrollments in Spring 2000, an increase of 66%. The first student is expected to earn a certificate in the I/MMT program in June 2000. I/MMT program growth by enrollment is illustrated in **Figure 2**.

5. DIFFICULTIES ENCOUNTERED DURING FIRST YEAR OF I/MMT PROGRAM

Two student Learning Communities were offered in Fall 1999. (Gabelnick 1990, O'Banion 1997) Each paired another General Education course with the CMSC 155 Internet Literacy course, and the paired instructors worked together to prepare and teach the courses. One Learning Community was paired with Introduction to Macroeconomics; the other with Introduction to Psychology. Because registration of students into the paired courses was not carefully monitored, not all students were actually registered for both courses. As a result, these Learning Communities were viewed as less than successful in reaching their goals, and were not offered again in Spring 2000. However, another Learning Community paired with Honors English

Composition was offered then, and viewed as successful.

		Number of Students Enrolled		
Course	**Name**	**S99**	**F99**	**S00**
CMSC 107	Visual BASIC I	45	33	71
CMSC 142	Intro UNIX	21	7	14
CMSC 155	Information Lit-Internet	127	93	139
CMSC 157	Internet Programming	34	23	60
CMSC 201	Computer Science I	29	24	24
CMSC 235	Java	*	*	30
MULT 109	Multimedia Authoring I	17	34	60
MULT 121	Digital Imaging	*	6	11
MULT 193	Internship	*	*	13
MULT 201	2D Animation	*	7	11
MULT 209	Multimedia Authoring II	*	*	13
MULT 221	Project Development	*	*	6
MATH 111 online	(*not counted in total*)	*	*	(17)
TOTAL ENROLLMENTS:		**273**	**227**	**452**

Figure 2. Growth of I/MMT Program by Student Enrollments

Charles J. Schmitt, Associate Professor, Computer and Information Sciences, Towson University, has served as consultant for this project. Two meetings were held in Fall 1999 to advise regarding installation and use of: Red Hat Linux, Apache Server, mySQL database server, cgi-wrap, and WebCT online course software. Prof. Schmitt also taught one of the two sections of CMSC 235 Java Programming at CCBC-Essex in Spring 2000. The opportunity to have a faculty member from Towson University at Essex has been very beneficial. There was a late start in preparing the server, partly due to initial hesitation from CCBC Technical Services director and staff. As a result of meetings held in Spring 2000 with Prof. Schmitt, the CCBC Director of Technical Services, and the CCBC Director of Instructional Services, it was agreed to have Technical Services staff support the preparation and maintenance of the server as needed to teach cgi programming. In addition, one faculty member will work closely with technical services and serve as system administrator for student accounts on this server. Students in the courses MULT 157 Internet Programming and CMSC 235 Java Programming will use the server beginning in Fall 2000.

6. STUDENT PROGRESS DURING FIRST YEAR

Project external evaluator, Doris Lidtke, Computer and Information Sciences, Towson University, met with project faculty in November 1999 and January 2000. At the first meeting, Dr. Lidtke was informed about progress and direction of the project. At a second meeting, the NWCET skill standards (NSF 1999) were discussed, as related to the type of data to collect early in the spring semester from all students taking courses that are part of the I/MMT program. A data collection instrument was prepared, distributed, and collected in all sections of program courses early in February 2000. Analysis is in progress.

CCBC students in other programs of study have been indirectly affected by this project. A faculty member in the Medical Technician training program at CCBC-Essex had experienced difficulty in promoting her students' understanding of how the body responds to infection. This process can be made more clear by visualizing the components of the various reactions and their motions in the process. In Fall 1999, the MULT 201 2-D Animation class accepted the challenge of producing an interactive animation using Macromedia *Director* to illustrate the various processes collectively known as The Complement System. It was delivered on CD-ROM, both as a stand alone executable (a projector file) and a web-based version (Shockwave) for Spring 2000 use in Medical Technician classes.

Approximately 125 secondary school students have been directly impacted via open houses and tours, which included the I/MMT program at CCBC-Essex. An all-day open house for the new program and new laboratory was held in December 1999 for high school principals, graphics arts, multimedia, and computer science teachers from local area schools. They learned about the new program, and were invited to attend sessions of three courses in the program.

The 21st Century Community Learning Center is a federally funded Title I after-school program. A CCBC-Essex Counselor coordinates Essex's role in this program with the three Baltimore County middle schools involved. Students in the program visit CCBC-Essex to provide an opportunity for these students to view themselves as future college students. A group of 10-15 middle school students who have been studying the Internet arrive to create and post a web page about themselves. One author meets the students and takes their photos using a digital camera. They use Netscape *Composer* to incorporate their photos with the text they have prepared and brought with them. Then they FTP their web pages to the CCBC-Essex website, where, in advance, links were created to the 21st Century Page using students' first name and last initial. A view of the first two groups' work can be seen at: http://student.ccbc.cc.mc.us/~kharmeye/21.

Four unpaid 90-hour student internship experiences with local business/industry/non-profit partners have been completed, or are in progress, by students in the I/MMT program. One student worked in web development for Maryland Public Television, Owings

Mills, MD in summer 1999. Another worked on a project involving an interactive kiosk about radar for the Historical Electronics Museum, Linthicum, MD in Spring 2000. A third worked with PhotoShop and Authorware tools for ICS Interactive, Severna Park, MD in Spring 2000. The last worked on an AMF Bowling Settee program and did other work with Macromedia *Director* for ExperTech, Timonium, MD in Spring 2000, and is now employed in California with an $80,000 annual salary. The last 3 of these interns received 3 semester hour credits for their work.

7. EFFECT OF PROJECT UPON I/MMT FACULTY

During the first year of this project, 7 full-time faculty and 4 adjunct faculty have taught courses in the I/MMT program. A major benefit of NSF funding has been that 6 full-time faculty were able to enhance their disciplinary knowledge by taking credit and non-credit courses and workshops including: Macromedia Tools for Web-based Teaching, Introduction to JavaScript, 3-D Design and Animation, Introduction to Oracle, Oracle PL/SQL, Java Programming, and PhotoShop. Faculty, in turn, have developed several new three-credit courses. Two courses were developed in Spring 1999 and first offered in Fall 1999: MULT 121 Digital Imaging, and MULT 201 2-D Animation. Three courses were developed in Fall 1999 and first offered in Spring 2000: MULT 209 Multimedia Authoring II, MULT 221 Project Development, and CMSC 235 Java Programming. In May 2000, the I/MMT Faculty Committee, headed by program director Barbara Mento, received the Change Agent Award of Excellence presented by the Maryland State Department of Education, Division of Career Technology and Adult Learning. The award recognized the research and planning that led to the creation of the I/MMT Certificate program to prepare students for careers in the rapidly growing fields of Internet programming and Multimedia design.

8. FUTURE DIRECTIONS OF PROGRAM

The First Annual I/MMT Summer Conference was held on June 22, 2000, with keynote speaker, Thomas Kuegler, formerly of Skyline Network Technologies, a business partner of the I/MMT program. Presentations, workshops, and poster sessions were given by faculty and students from two- and four-year colleges/universities, by teachers and students from high schools, and by Internet/Multimedia businesses.

The creation of a third option, Instructional Technology, is planned. In November 1999, one author met with the head of the Essex education department and the DACUM (Designing A CurriculUM) coordinator. This meeting indicated the need to do further research on the viability of such a program option. A DACUM is a formal procedure that allows professionals in the field to recommend skills and course curriculum necessary for the job market. Information was gathered on the following topics: current undergraduate level technology courses for education majors, courses for inservice teachers at local colleges, and Baltimore County Public Schools' efforts to meet technology training needs of inservice teachers. A DACUM was held in April 2000, to develop a curriculum for the Instructional Technology option.

9. CONCLUSION

A new certificate program in Internet and Multimedia Technology has had wide-ranging effects upon students and faculty. The program has an Advisory Board, a consultant, and an external evaluator. Results include: a new computer laboratory with Macromedia and Adobe software, enhanced disciplinary knowledge of full-time faculty through completion of credit and non-credit courses or workshops, development of five new courses, and a 66% increase in student enrollment in program courses over a one-year period.

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