

McHenry County College Advanced Technological Education Grant (ATE): Interface Design and Development for Mobile Devices: Year 2 Evaluation Summary

GRANT NUMBER 1501599

Submitted to Meredith Winchester, Principal Investigator
McHenry County College

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By:



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I. Introduction

A. Project Background

This report summarizes the progress of the McHenry County College (MCC) Interface Design and Development for Mobile Devices project funded by the National Science Foundation (NSF; (Grant 1501599) in July 2015. The project team is developing curriculum and educational materials for new certificate and degree programs at MCC that meet business and industry needs. The project goals are to:

- 1) prepare incoming students and incumbent workers in the field of mobile development and design to address the problem of shortage of skilled technicians in this field; and
- 2) provide professional development on mobile interface design, usability, and marketing to the educational community.

The degree prepares graduates to design, build, and maintain mobile applications for Apple's iOS or the Android platform, which together account for 99 percent of the mobile app marketplace¹. Often app developers learn skills through coding boot camp programs, but recently institutions of higher education have begun offering associate's or bachelor's degree in computer science or similar disciplines to provide comprehensive instruction in all areas necessary to become a successful mobile app designer.

B. Project Personnel

Meri Winchester, Instructor of Digital Media at McHenry County College and William J. Skrzypczak, Chair of Computers and Digital Media, have been leading the project with the support of Co-Principal Investigator Thomas Beggs, Instructor of Graphic Arts, Computer Information Systems (CIS), and Digital Media. Mr. Beggs retired at the end of the 2016-2017 school year. Winchester and Skrzypczak will complete the work planned for Year 3 of the project.

II. Evaluation Methodology

The evaluation is using a mixed-methods design to collect qualitative and quantitative data to assess project implementation and outcomes and to answer the evaluation questions.

- 1) To what extent were partners engaged and involved in curriculum planning? (Year 1)
- 2) What information influenced creation of the new associate degree and the certificates? (Year 1)
- 3) What process was used for course creation? How do the course and sequences contribute to the overall program? (Year 1)
- 4) What methods of curriculum dissemination have been most effective? (Year 2 and Year 3)

¹ www.tomsitpro.com/articles/become-mobile-app-developer,1-2219.html

- 5) What outcomes do we see from the newly developed program? (Additional question for Year 2 and Year 3)

The formative evaluation provided information to guide and improve program implementation and ensure that the project met the needs of community college faculty, students, and industry partners. The summative evaluation assesses the impact of project activities on students' progress and also examines the success of dissemination to determine the extent to which this program and process of curriculum development might be applicable for use nationwide in community colleges.

Data were collected through interviews with program staff and review of extant data. Dr. Jarosewich met with project staff during the annual ATE conference in October 2106. Data collection also included telephone and email conversations to discuss project progress, challenges, and successes. The project team provided information about the project timeline and completion of project tasks as well as traffic on the project website. All data are summarized to describe the project's implementation process.

III. Results

A. Dissemination

Professional conferences and publications

During the 2016 ATE conference in Washington DC in fall 2016, the team presented a poster during the project showcase, as well as a panel discussion. The team reported a great amount of interest from fellow ATE grantees about their program and about the curriculum created through NSF ATE funding.

Travel of MCC faculty to professional conferences is limited to the required ATE conference because of a travel ban due to the state budget. In Year 1, the team did travel to the Hi Tec conference held in nearby Chicago. However, they did not travel to any additional conferences in Year 2 of the grant.

The team plans to prepare a proposal to present at the 2017 ATE conference and an article to submit to the Chronicle of Higher Education.

2016 ATE CONFERENCE DISSEMINATION

Booth # 301. McHenry County College Interface Design and Development for Mobile Devices: This project focuses on creating a new degree and curriculum for designing and developing mobile applications, and sharing that curriculum with other schools

Panel: Collaborating with Business and Industry to Keep Your Programs Current
Ann Beheler, PI, Convergence Tech Center, Collin College, TX
Matthew Glover, CTO, Le-Vel Brands, TX
Michael Lesiecki, ED, Maricopa Advanced Tech Ed Center, AZ
Bill Skrzypczak, Dept. Chair, Comp & Digital Media, MCC, IL
Moderator: Meredith Winchester, INSTR, Digital Media, MCC, IL
Collaborating with local business and industry partners is a key to keeping your programs relevant. In addition to ensuring that your students are being trained to meet business needs, your business partners can help build awareness of your program and assist your students in finding internships and jobs. This panel will address the challenges and advantages of developing strong business relationships as well as offer insight directly from industry partners.

Project Website

The team created a project website (www.Learn-mobile.com) as a dissemination tool for the project. An MCC student pursuing Web and Mobile certificates developed the website. Between January 2017 and August 2017, almost 3,000 unique visitors (N=2,980) visited the project website. Registered users can download syllabi, course descriptions, and the program curriculum. According to the PI, there have been no registrations on the site to get curriculum. The team will discuss how to better advertise the site and where to target communication and dissemination efforts to engage potential users.

Communication with community and potential students

A key aspect of dissemination is communicating information about the new program to potential students. The local newspaper, The Daily Herald, ran three stories about the program during the 2016-2017 academic year. The first article, published in November 2016, described the program in general² and the second two^{3,4}, published in June 2017, informed readers that the program had received approval from the Illinois Community College Board. The MCC also ran a story about the program in September 2016 in MCC's online pressroom⁵.

The project team noted that the MCC public relations department did some limited advertising about the program prior to receiving approval from the Illinois Community College Board. In fall 2017, the team will be discussing how to expand advertising to potential students, possibly to include radio and print advertising.

B. Outcomes

Impact on the development of the principal discipline(s)

MCC's new degree is a reflection of the rapid evolution of the field of computer programming. One of the project team members stated that the type of degree now being offered by MCC corresponds to the needs in the field in "the modern era because this is where the jobs are." According to the Bureau of Labor Statistics, Software Application Developers in the Chicago metro area earn an average hourly wage of \$47.80 and average annual wage of \$99,430⁶. The job growth rate in this sector is considered to be one of the fastest growing in the country⁷ projected at 22% by 2022—a much higher rate than the average for all other occupations⁸.

The project team has used a collaborative process to develop and refine a set of courses for an efficient and effective course sequence. The curriculum provides faculty and adjunct faculty a place to start.

² <http://www.nwherald.com/2016/10/27/mchenry-county-college-degree-program-teaches-how-to-create-apps/a1nb44d/>

³ <http://www.nwherald.com/2017/06/15/mchenry-county-college-mobile-app-degree-receives-accreditation/a37b1mc/>

⁴ <http://www.dailyherald.com/news/20170621/mcc-mobile-app-degree-receives-state-board-approval>,

⁵ <http://www.mchenry.edu/news/ViewMccNewsById.asp?NewsId=8951>

⁶ <https://www.bls.gov/oes/current/oes151132.htm#nat>

⁷ <http://www.azcentral.com/story/news/local/arizona-education/2017/05/24/mesa-community-college-one-six-schools-nation-offer-apples-new-app-development-course/339371001/>

⁸ <https://successfulstudent.org/20-best-app-development-colleges/>

According to the team, “If adjuncts modify it, that’s OK. We meet in the summer to talk about what each instructor did. We want to make sure of what everybody is doing and if there are good ideas to improve the curriculum, we incorporate those ideas.”

In summer 2017, the team revised the curriculum materials that they had already delivered, and developed curriculum for the remaining courses. By fall 2017, curriculum will be available for the majority of the courses. According to a project team member, “Everything is moving smoothly – we have planned classes, created curriculum, revised the curriculum for courses that have been taught, and have had the program approved as a new degree.”

The goal of the team is to offer the materials to other faculty and institutions of higher education that would like to offer degree programs in mobile app development.

Impact on other disciplines

The team worked with Principal Investigator Ann Beheler and the team at the National Convergence Technology Center (CTC) to create a Business and Industry Leadership Team (BILT) composed of a group of area technology employers that hires or influences their company employment decisions. BILT provided insights about the skills graduates would need for careers in this technical field and uses a modified curriculum development process (DACUM) to identify the knowledge, skills, and abilities (KSAs) necessary for entry-level technicians to ensure that students would learn skills to gain employment in 12 to 36 months⁹. The team found the process to be helpful and is confident that the connection with local industry representatives will help graduates. Other disciplines could use this model for curriculum development and review.

Impact on the development of human resources

As a result of ATE funding, one of the outcomes on human resources is retraining and improved skills of project faculty. The PI stated, “All instructors are going through the training. They will have to publish an app to be able to teach in the program.” The PI is developing two apps, one for intensity interval training, and the other for weight training. A project team member stated, “This increased capacity of instructors will be beneficial for the institution.”

One of the co-PIs retired at the end of the 2016-2017 school year, an event for which the team had not planned. However, one of the team members stated that, “He gave input during degree-planning and helped with the curriculum development.” Due to the lack of funds in the state budget and the resulting financial constraints placed on the institution, the position will not be filled.

The team will be able to complete the remaining tasks of curriculum development and refinement. From the PI’s experience starting new programs, “It typically takes 2-3 years to have strong enough enrollment to have sufficient demand to justify hiring a full-time instructor. In the meantime, we will work with adjunct instructors to teach the courses.” One adjunct instructor with a Master’s degree had been hired to teach the interface design course. The team held interviews in summer 2017 for an adjunct instructor to teach the design course. These adjunct instructors will improve their teaching skills and knowledge of a comprehensive mobile app development degree program. If a sufficient number of

⁹ https://atecenters.org/wp-content/uploads/2017/03/BestPractice_BILT.pdf

students enroll in the program to allow for an additional full-time instructor, the result will be that human resources at the institution will be strengthened.

Impact on society beyond science and technology

Widening the pool of students. A project team member stated that students in the program “Range in age from 19 years old to 67 and everything in between. The younger students are pursuing the degree, while the adults usually already have a degree in a related area and want to add the specialty of mobile design.” The team has started to engage non-traditional students in retraining in mobile apps.

The team has also begun to engage younger students and girls into the program. The PI stated, “We are beginning to work with the dual enrollment group and will offer Android programming in an 8 am class in fall 2018. We are working with the directors of the dual enrollment program to build anticipation and are visiting the high schools to engage students in the program.” Winchester will teach the morning courses to support the goal of increasing participation of women in programming. She stated, “The best way to encourage girls to go into the field is for them to see and learn from a woman programmer.”

New apps created. The first group of students will complete the final program course in fall 2017, at which time they will be ready to publish their apps. One or two have already published apps. These apps typically support students’ existing business. These students were so deeply engaged in their projects that, as one project team member stated, “Motivating them is very easy for me as an instructor.”

Student employment. The first group of students will complete a certificate in fall 2017 and the first class to graduate with a degree will be in spring 2018. At this point, a few of the industry partners have “looked” at hiring current students, but as of yet have not hired them. A project team member stated, “They are non-committal until graduation, I suspect waiting to see the state of the economy” adding, “This is the hot new area, so many are very excited to enter this field.”

Impact on institution

The two certificate programs and a new associate degree in mobile application design and development allow MCC to provide training in a highly desired and potentially high-paying career. The degree replaced a computer-programming curriculum that project staff said did not have any enrollment “because nobody was getting jobs with that degree.” This grant opportunity to update an outdated program, as well as the growing interest in the degree, have been of benefit to the institution.

C. Plans for 2017-2018

The 2017-2018 school year will be the third and final year of the grant. The evaluation will collect data from students using two surveys, course surveys and a program survey about the overall program. Faculty will include a link to the online surveys in their course shells. The evaluator will discuss course evaluation questions with the project team. The following are suggested questions for the program survey.

1. When you started at MCC, is this the degree in which you enrolled? Y/N
 - a. If yes, what made you want to pursue this degree?
 - b. If no, what made you change to this degree?

2. Did you work while you completed your degree? Y/N If yes,
 - a. Full time/ part time / freelance (check all that apply)
 - b. What job(s) did you have?
3. Have you created any mobile apps? If yes
 - a. Name(s) of apps
 - b. IOS / Android
 - c. Free/paid
 - d. Average review
 - e. How much money have you earned from them?
4. What was the most important thing that you learned in the program?
5. Was there anything that you wished you had learned that you did not?
6. Did have the support that you needed?
 - a. From faculty? Y/N
 - b. Academic advising? Y/N
 - c. Financial aid? Y/N
 - d. From MCC? Y/N
7. Do you have a job after graduation?
 - a. If yes, where? What will you be doing?
8. If you were starting over, would you enroll in the same program? Y/N
9. Do you have any advice for improving the program?
10. Would you recommend the program to others? Y/N

With the support of the project team, we will connect survey responses with student demographic information: gender, age, race/ethnicity, # credits earned, date first enrolled, date graduated, time to degree, FT/PT status, and financial aid.

IV. Conclusions

The project team fully engaged in project activities in the first two years of the grant-funded project. The team accomplished the expected goals of creating an approved degree program in mobile app development at MCC. The input of the BILT was genuine and sustained, with the perspective of the industry group reflected in the final course selection and plans. The team will continue to refine the course syllabi and will begin to deliver those courses to a greater number of students. As the courses are offered, and students graduate from the program, the evaluation will monitor persistence and completion rates, as well as success in the workforce. The ultimate goal of the ATE program is to strengthen the technical workforce, and if implemented fully, this project has the capability to meet this goal.