

Technology Improvement Plan

Tonya A. Melvin-Bryant

Coastal Carolina University

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Introduction

The study of the five standards was conducted in the computing sciences (CS) department at Coastal Carolina University. The CS department offers degree programs in the area of computer science (CSCI), information systems (IS), and information technology (IT). In collecting data for the standards, I discovered the following set of issues for the department:

1. A lack of formal process to develop and implement technology across courses in the department
2. A lack of reporting from individuals and committees to the entire department
3. A lack of review process metrics for technology use and implementation
4. No data collection to improve department technology use and strategic global endeavors
5. Missing collaborative support from the community, such as parents and students
6. No strategic partnerships

Given the department's heavy reliance on technology, it is important that the educational administrators for the department develop appropriate plans for the proper use of technology in the classroom and a clear pedagogy for how content should be presented to the students who must use the technology. I see the administrators leading this effort as the department chair, coordinators for courses, and committee groups for each discipline (CSCI, IS, and IT). In relaying the importance of technology to the administrators, my philosophy surrounds the fact that the majority of today's student population have never lived in a world without technology. These students begin using technology at an early age, and typically without any guidance on proper use.

As discussed by Gallardo-Echenique, Marqués-Molíás, Bullen, and Strijbos (2015), this is the era of digital learners. Those born after 1980 were born into a world immersed in technology. Many people use the term ‘digital native’ to describe these types of learners, assuming that just because they are born into a world of technology, they naturally have a knack for using technology. However, this is not necessarily true. There are learners of all ages in this digital era and some of those who teach technology, and are sometimes more proficient, were born before 1980. The point is, although there can be a small population of learners who have not been exposed to technology (as much as others have), a population of teachers who are digital immigrants (new to technology), and a population of workers coming from industry into the classroom (and sometimes new to technology), it is still imperative that technology is used as a foundation of learning. This can occur as technology is used as the foundational infrastructure and in the context/content of the classroom. It is the responsibility of the department leaders to develop methodology to bridge the gap between these audiences while they exist together in their educational organization.

I believe the department would benefit from the knowledge described within the five standards defined in NETS-A and each set of associated indicators, if the educational leaders used the content to drive the development and implementation of technology in their organizations. A clear and rational technology plan will aid in the success of the students, the department, and the surrounding communities (local, global, and industry).

Issue one – formal process

The first issue is a lack of a formal process to develop and implement technology across courses in the department. Individuals in the department primarily decide change of technology and technology use. The department leaders should develop a formal process for suggesting

changes to, and implementation of, technology. This is not to slow down the ability of one to obtain and use technology in the classroom or across the department, but to make sure technology is used effectively and to benefits the students. Also, it would maintain consistency in technology implementation and use throughout the department.

In developing the process, policy, and/or procedure, leaders need to decide on a location where these documents can be stored for easy access to department members. The department website should also be up-to-date with the policies posted that can be generally viewed by the public. The department has use of the university servers for its website as well as a private, internal server for document storage. Also, the university provides one drive for storage and sharing, should members want to circumvent additional logins and simply use their email and university single sign-on username and password. There is little to no cost involved to be able to correct this issue since the university covers the cost of the equipment and other technology.

The members responsible for writing the policy would be the department chair and committee members; although, I would think the entire department should provide input given the model of shared-governance. There is no additional training needed beyond that required by the university for all employees.

Issue two – Reporting

The second issue is the lack of reporting from individuals and committees to the entire department. When committees meet to make changes to courses, whether it is adding new technology or the removal of technology, it is not required that they report back to the entire department those changes. This can affect all individuals in the department, not just those who are new, since it is possible that any member of the faculty can teach any course at any time.

There is a need to require committees to report changes in technology and technology use, not just content changes, during department meetings or through general email correspondence.

Doing so will prevent many of the hiccups that occur at the beginning of the semester as well as prevent students from being disgruntled when technology does not work or the instructor does not know how to use the technology that is required for students to use when completing assignments.

This issue can be fixed in conjunction with the policy and procedure issue. When writing policy, simply require that changes, whether committee or individual, need to be reported to the department. Then the group is able to decide whether to vote on the changes or allow the work to move forward without a vote. The technology involved could be the same as noted in issue one. However, some reporting could occur during the internal, annual faculty reviews. There is no need for training and there is no cost to resolve this issue.

Issue three – Review metrics

Issue three concerns review metrics considering the dependency on technology in the department and in the classroom. In conjunction with policy and reporting, the lack of technology review can lead to teachers not knowing the technology and therefore not being able to help students. Also, it can cause a disconnect in reporting systems. This would be the case in the semester summary for ABET accreditation, where reporting methods could not be used for the ABET system and work had to be duplicated to enter information into the correct system.

Again, the metrics here can be put in place with the policy and procedure. A measuring tool can be developed to determine whether technology is being used, being use appropriately, effectively used in the classroom, outdated, or defunct. Using these measures can allow leaders

to be aware when changes are needed or if students are not being served effectively. There would be no cost for this implementation; however, there would be required training. As with the ABET system, there needs to be an overview of terminology and process flow, as the entry system is not intuitive. I believe the committee leaders, course coordinators, and accreditation coordinator could lead the implementation.

Issue four – Data Collection

The lack of data collection in the department can prevent leaders from correctly planning for future changes or being able to meet the fast pace changes that are happening in industry and in the world. Should the department improve reporting and review procedures, then data collection would allow leaders to see trends in the use of technology in the classroom, the department, and in industry. This knowledge can help plan for future technology and improve the benefit of use for students and functionality of the department.

A good place to begin would be with tenured and tenure-track faculty. They are required to complete research each year, some of which include big data and its collection methodology and metrics. Again, the department is already equipped with the necessary technology to support such research. It has a high-end computing lab and students who work with professors to complete research. These efforts can lead to further partnerships and research, some of which can compare successful models to the models used in the department. Since the department has an active relationship with China, extending research into the global market is already possible. These efforts would require training to integrate into the department, since many other faculty and staff are not versed in statistical data gathering, and there can be fairly expensive costs because of travel abroad and to conferences to further research.

Issue five – Collaboration

The fifth issue relates to collaborative support from the community. There needs to be more activities within the department that include students, their parents, and other community members. This can be as simple as hosting technology workshops to help educate those in the community who are not exposed to technology. Faculty and students could also go into local schools to support technology programs such as Lego robotics.

The leaders for these endeavors could be any faculty member in the department. The costs are nominal since most community programs simply need people resources. Workshops could include Arduino robots and 3-D printing activities, so there are costs that would need to be considered, most of which are already covered by department technology fees paid by students. This is also a great opportunity to obtain grant funding from external entities seeking to develop programs in the community jointly with educational organizations. Integration of learning communities would be an arduous task for the department. Members would consider available time outside of class, so compensation would be a motivator.

Issue Six – Strategic Partnerships

Lastly, strategic partnership is very important to the success of any organization. Except for China, I do not know of any other strategic partnerships within the department. Local and global partnerships can strengthen the department's foundation in the technology area and help it reach its goals. Students will be more exposed to the types of opportunities available for them in their career choice and even provide them with experience before graduating and entering their career. Leveraging new partnerships will expose the department to a larger audience, possibly also providing additional funding.

There is no need for specific technology to improve the department in this area. Most industry partners would be more than happy to provide resources, if the department can show that they can provide a benefit to students and improve the skill set of their potential employees. As for cost, the department website would need to be kept up-to-date and there are times when the department will pay to bring partners and speakers on campus to speak with students and faculty.

Conclusion

In conclusion, the long-term repercussions for the CS department, should they make the changes related to each of the six issues, would be improved technology implementation, technology use in the classroom, and improved community partnerships. Addressing the lack of formal, written policy and procedure will help to develop a consistent model of data collection, reporting, and review. The department leaders can use collected data to study technology trends that can help improve technology use to benefit students and the department.

Developing learning communities and strategic partnerships can expose the department to a greater audience that can improve student enrollment, garner new internship relationships for students, and increase research opportunities and employment for faculty. Extending partnerships to global communities will also help address global issues, improving the department's goodwill.

I believe the CS department will eventually make changes to how it views formal policy and procedure, as well as data collection and review methods. Currently, they do well with supporting faculty and staff to improve their technology skills via training and the ability to further their education. Also, technology is a high priority for the department and it does stay up-to-date with hardware and software that is used in the department in general and in the

classroom. For the foreseeable future, I believe the department will continue to allow individuals and committees to govern how technology is used in the classroom and to make changes when they deem necessary. The CS department is very open to change, so I believe its leadership would make changes based on sound suggestions on how to improve the department's leadership as it pertains to technology and technology use in the classroom,

References

Gallardo-Echenique, E., Marqués-Molías, L., Bullen, M., & Strijbos, J. (2015). Let's talk about digital learners in the digital era. *The International Review of Research in Open and Distributed Learning*, 16(3). doi:<http://dx.doi.org/10.19173/irrodl.v16i3.2196>