- Instructors can identify and correct misunderstandings at a relatively early stage.

Some questions indicate that students understand the main elements of the reading, and a class may focus on enrichment or discussion. Other questions indicate particularly difficult passages that require expansion and clarification. And other questions indicate student misconceptions that must be corrected before moving on to the main ideas for the reading itself. In my experience, giving some minimal credit (e.g., 5%-10% of the semester grade) for the submission of reasonable questions provides adequate incentive for students to do this work.

3.4 Questions/Feedback at the End of a Session

Rather than give discussion questions ahead of time, instructors may encourage active listener involvement by asking a question to be completed in the last 2-3 minutes of a class. Answers suggest student understanding and provide feedback for the focus of the next class. An alternative approach asks listeners to write out at the end of each class what they believe were the 2-3 main points of the session.

4. Conclusion

A lecture format has some advantages, especially related to presentation efficiency and control. However, lectures also have potential difficulties. Rethinking the structure of slides and finding ways to address student questions without duplicating reading may help address some of these problems.

References

[1] <http://www.norvig.com/Gettysburg/>
[2] <http://www.cs.grinnell.edu/~walker/talks/>

Community College Corner

Information Technology … A Program of Study

Robert D. Campbell

Many readers will be familiar with the associate-degree curriculum guidelines published in 2000 by the ACM Two-Year College Education Committee, under the grouping "Programs to Support Computing in a Networked Environment" and providing "performance objectives to encompass the technical skills and knowledge required for associate-degree programs in each of three areas: User Support Services, Networking Services, and Internet/Web Services." Today many would instantly identify these tracks as linchpins in the realm now commonly referred to as "I.T." – the discipline of Information Technology. Just a short five years ago, that phrase – IT – wasn't nearly as prevalent as today and certainly wasn't perceived as a defined discipline. However, the last few years in particular have seen much more attention paid to bringing a sense of structure among and distinction between many areas of concentration within computing.

The recently published report on guidelines for programs in Computer Engineering (http://www.acm.org/education/CE-Final%20Report.pdf) provides the following distinctions:

> Computer scientists concern themselves primarily with the theoretical and algorithmic aspects of computing with a focus on the theoretical underpinnings of computing. Software engineers have a focus on the principles underlying the development and maintenance of correct (often large-scale) software throughout its lifecycle. Information systems specialists encompass the acquisition, deployment, and management of information resources for use in organizational processes. Information technology specialists would focus on meeting the needs of users within an organizational and societal context through the selection, creation, application, integration, and administration of computing technologies. Computer engineering technologists support engineers by installing and operating computer-based products, and maintaining those products.

One can debate the particulars of such definitions, but the fact that these identifications are being formulated and promoted throughout the ACM/IEEE-CS Computing Curricula series is an enormous step forward.

Returning then to the associate-degree guidelines mentioned above, we can now speak to a need to update the two-year college *IT report*, a much friendlier and now well defined moniker than the previous formulation "Programs to Support Computing in a Networked Environment" (http://www.acmtyc.org/2000Guidelines.cfm).
Groundbreaking in its day, and garnering widespread attention in the associate degree granting institutions, this report has served its audience well. However, as frequently happens with computing curricula, the report is now in need of updating and revision.

Nevertheless, in the intervening years, another significant phenomenon has taken root – the identification of baccalaureate programs in IT. Not only have such programs multiplied and become much more widespread, baccalaureate degree accreditation criteria have been formulated. In addition, an ACM special-interest group (SIGITE) is active and in 2005 this group published curriculum guidelines for baccalaureate programs in

Information Technology (http://www.acm.org/education /curric_vols/IT_October_2005.pdf).

These events provide context for the work ahead. First, one can now speak of guidelines for programs in *information technology* with an expectation that this is a widely understood and defined phrase, generally consistent in meaning across institutions. Second, the associate-degree guidelines previously promulgated provided a framework for many program implementations, especially for career-track programs of study. Third, the new baccalaureate degree guidelines provide important insights for the development of two-year college guidelines for transfer programs of study.

Taken together, this sets the stage to provide new curricular guidelines for associate-degree programs in Information Technology. I invite all those interested in such an undertaking to participate in this work. I look forward to hearing from you (contact me at: b.campbell@rvc.cc.il.us.)

Distance Education

On the Merits of E-Learning

Gordon Davies

Over the last few years, I have become increasingly involved in elearning. I was fortunate to be invited to serve on the Steering Committee of the Swiss Virtual Campus [1] and this has enabled me to see at first hand the many elearning developments that are taking place on campus universities in Switzerland. The Swiss Virtual campus project started in 1999 and has had a significant impact on elearning in Switzerland. Approximately CHF 50-million or € 35-million in funds have been distributed to various university consortia in order to develop elearning courses. They used a fifty-fifty financing model between federal government and educational institutions; ten universities, two Swiss federal institutes of technology, and seven universities of applied sciences took part. Many outstanding examples of elearning were produced, although I have seen few in the informatics area. SVC courses are not usually whole programmes, but teaching units available on the Internet. They replace conventional university lectures, many of which are held in severely overcrowded auditoriums. At this stage, it should be emphasised that SVC is not aiming to transfer entire courses of study to the Internet. On the contrary, compulsory online courses are intended to supplement existing lectures and training programmes.

The SVC programme attaches great importance to high teaching quality. "The idea is that the way in which knowledge is communicated should be attractive and - thanks to interactivity - more efficient", says Bernard Levrat, the spiritual father of the programme, paraphrasing one of the main objectives of SVC. An interesting outcome of the investment has been the development of blended learning courses, courses that support or replace the conventional ex-cathedra courses. Initially, there was some justified scepticism about elearning, but now, in the context of blended learning, it is becoming more popular.

I have been struck by the problems that developers of elearning courses encounter that are similar to the problems faced by any distance learning developers. In my time at the Open University in the United Kingdom, I often used to give talks in which I would try to identify the reasons why the Open University had such outstanding success and developed such a good reputation for distance learning, a mode of education, which had, until the Open University came along, had a very poor press. In such talks, I would mention some or all of the following: political commitment, high quality teaching materials, student support, academic credibility, research, and infrastructure. It seems to me that these factors are also important, if not essential, if elearning is to develop successfully in any institution. I do not have the space to develop this argument in detail, but briefly, here are some highlights.

Political Commitment: Elearning is controversial; it is still, to many, an experiment. It can only succeed beyond being an experiment if there is the political will at the higher levels of an institution to allocate the appropriate resources and to such developments and give credit to those who choose to develop elearning courses. The Open University was had support at the highest level, the UK government.

High Quality Teaching Materials: High quality materials are essential if elearning is to gain acceptability amongst students and colleagues. This means several drafts of materials, peer review, and developmental testing. The Open University instigated the use of a course team composed of several members with different skills to develop courses. A similar method of production is essential to produce high quality elearning courses.

Student Support: Elearning is not the same as distance learning, although elearning can be used to teach at a distance. Elearning is used on campus and here the important factor of providing support to students becomes much easier to manage. Elearning becomes a component of blended learning, but a good student support facility is still essential.