THE ABET CAC ACCREDITATION: IS ACCREDITATION RIGHT FOR INFORMATION SYSTEMS?

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ABSTRACT

This paper addresses issues associated with the Accreditation Board for Engineering and Technology, Computing Accreditation Commission (ABET CAC) accreditation process for information systems (IS) programs. The issues addressed will include ABET’s approach to standards and evaluation, the implications of IS as a social as well as natural science, the various target groups for which IS programs are designed, the dynamic nature of any IS curriculum, and the difference between IS and computer science. To approach these issues, we will discuss the ABET accreditation standards and process and conclude with some of our observations and recommendations for prospective programs. Robert Morris University in Pittsburgh, PA was among the first group of programs accredited by ABET CAC. This paper is based on Robert Morris University experience with the accreditation process and visit conducted in the Fall of 2002, resulting in accreditation of the B.S. in Information Sciences and B.S. in Information Systems Management programs in July, 2003.

Keywords: Accreditation, ABET, Information Systems Education

INTRODUCTION

Accreditation Board for Engineering and Technology’s Computing Accreditation Commission began the accreditation process for IS Programs in 1991 with a pilot trial. In 1992, the first 7 programs were approved for accreditation. It is appropriate to reflect on the results of the process, the nature of accreditation, and what folding in the information System Programs to the ABET family entails.

The Accreditation policies define Programs to be considered for accreditation to be “College Level Programs that embrace engineering, technology, computing or applied science. All programs include sound foundations in science and mathematics.” (1). While the precise standards differ, this presumption has carried into the IS accreditation. The specific Science and Mathematics has changed, but the assumption is that IS is derived from a natural science.

THE NATURE OF INFORMATION SYSTEMS

IS differs from computer science in several ways. While computer science is rooted in mathematics and engineering, IS faculty members are generally from a much more diverse background. The foundations of IS are much more related to business and social sciences. In addition, the focus of IS programs vary widely and new emphases are added frequently.

Information Systems Faculty

The approach taken to computer science presumes a stable discipline, most of whose practitioners have similar backgrounds. Most computer science faculty members have degrees in computer science, and there are over 120 ABET/CAC accredited programs in computer science,
all with similar curricula. (www.ABET.org) While a large number of computer science educators have computer science degrees (computer science and/or engineering doctoral programs have been in existence for over 30 years), IS faculty members have a varied background. In addition, IS educators have a great deal of difficulty articulating the precise nature of IS. Various studies have found multiple backgrounds and terms for different approaches to IS education.

Information Science, Information Systems, Information Technology, Computer Information Systems, and Management Information Systems are all parts of the Information System arena. IS faculty often have extremely varied preparations. Their doctorates come from business, psychology, library science, education, and computer science. The department of Computer and Information Systems at Robert Morris University originated in the School of Business. At the time many of the faculty members received their terminal degree, there were few or no IS doctoral programs available.

The Faculty requirements for IS accreditation have been taken from computer science, replacing the words Computer Science with Information Systems. While “Doctorates in a Closely Related Area” are recognized, the presumption of a stable discipline is still present (3).

The original task force, jointly formulated from IEEE, ACM, AITP, AIS etc. included a much broader perspective on IS education, but of all the organizations, only AIS remains from those which were IS oriented.

**Information Systems Target Groups**

IS programs have been created with a large variety of foci. The results of their graduates could be Developers, Technicians, Super Users, Analysts, or Project Managers. Because of this variety, the requirements for what well-prepared graduates know vary widely.

Lenox and Woratschek have summarized the diversity found within IS programs:

> “From a brief examination of IT curricula in various institutions, (Chu, 2002; Finklestein & Hafner, 2002; Mitchell, 2003), it appears that IT programs, like IS programs, are very diverse and typically multi-disciplinary. Some researchers believe that the IS discipline will continue to specialize along problem areas including telecommunications, animation, e-commerce, wireless-telephony, data mining, and bioinformatics where the required skills are disjoint (Mitchell, 2003). Another way of dividing the information Systems/information Technology field is reported by Denning (2001) who suggested that students be prepared for professions. He divided the IT profession into three types of individuals: 1) those whose focus is a specific IT discipline; 2) those whose focus is a discipline that is IT intensive; and 3) those whose job is IT supportive. Some of these researchers are proposing that the set of skills required for the various areas are so disjoint as to make them separate disciplines with little or no commonality.” (11)

The curriculum standards that are applied by ABET/CAC, refer to established curricular models such as IS2002, but have a strong presumption about the specifics embodied in that model. Daniels and Feather-Gannon have proposed another model more recently in end user computing which embody quite different criteria (6). There is also a movement within ABET to accredit information Technology programs separately, recognizing that there could be technical oriented programs with less of a Business Application emphasis. While the current accrediting criteria
recognize specific application areas, recent interpretation has limited them to business areas. It is apparent that ABET as a whole does not recognize the degree of flexibility embodied by the variety of current IS programs. (3)

**Information Systems as a Social Science**

With the variety of Faculty backgrounds and the variety of careers contemplated by students, comes the conclusion that much of IS proceeds from the social sciences or management rather than from natural science or computer science.

There is now a major body of literature applying qualitative research methods to information systems. (13). In addition, Klein and Myers have recognized that “While the conventions for evaluating information systems case studies conducted according to the natural science model of social science are now widely accepted, this is not the case for interpretive field studies. A set of principles for the conduct and evaluation of interpretive field research in information systems is proposed, along with their philosophical rationale.”(10)

Thus, it is specifically recognized that qualitative research methods in IS are also derived from social science methodologies.

There are two consequences of this difference. First, IS programs are much less mathematically dependent. The nature of the solutions that are developed and studied require much less mathematical sophistication. Secondly, much more sophistication is needed in social systems, human behavior, usability, and being able to deal with gray areas in organizational systems.

ABET curriculum standards include five groupings, General, Information Systems, Information Systems Environment, Quantitative Analysis, and an “additional” area encompassing global, economic, social, ethical implications, and oral and written skills (1). This categorization clearly demotes social sciences to a catchall nature, and seems to be based on the assumption that IS is a “modified computer science” rather than a different field.

Further, even though the mathematics requirements are not as demanding as those for computer science, the ones remaining have rather little application.

**THE ABET APPROACH TO EVALUATION**

The 2002 and 2003 training for ABET evaluators was conducted nearly entirely from a computer science perspective. The presumption that virtually the same model could be used for computer science and IS was held. The training slides merely added one slide in each category highlighting differences. (2)

Relatively few evaluators were from IS backgrounds. In 2004, evaluators being trained are nearly 50% from IS backgrounds.

Equally important is the nature of the interpretation of the criteria by evaluators. The training has made it clear that the evaluators are to treat the standards satisfaction as a black and white concept. Institutions may meet the intent of a category in other ways, but evaluators are discouraged from interpreting. They look only at the standards unless the institution argues differently.
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The Dynamic Nature of any IS Curriculum,
Information systems in its nature is “practical” and applied. This makes it more dynamic than a pure discipline-based area of study. Because of the length of time of the accreditation cycle, and because of the elaborate number of levels involved, changing the programs to keep them current are less likely in accredited programs than in those which aren’t. Lenox and Woratschek (2003) have surveyed the nature of IS and identified three challenges:

“The discipline of Information Systems is faced with several challenges. First, it must keep pace with the rapid changes in technology and its use within organizations (Davis, 1992). Secondly, the curriculum itself must be modified to reflect these changes without focusing entirely on the technology aspect of the discipline (Mitchell, 2003; Clarke, 1999; Davis, 1992). The third challenge is the need to develop a common understanding of the Information Systems discipline that is agreed to by both practitioners and educators. The final challenge for Information Systems is to decide whether or not to distinguish itself from Information Technology as a discipline.”(11)

Our experience is that the market is dynamic, and that tying curricular change to the accreditation diverts faculty effort from innovation to documentation. A question that remains is whether or not accredited programs will have their curricular change slowed.

RECOMMENDATIONS

We recommend that CAC and its constituent societies explicitly recognize the dynamic nature of IS programs, alternate curricular models which may be appropriate, and make sure that IS evaluators are used for IS accreditations.

REFERENCES:


