AC 2009-1627: FACULTY SCHOLARSHIP AND PROFESSIONAL CURRENCY: A SELF-ASSESSMENT MODEL FOR DEVELOPING AN EFFECTIVE PROFESSIONAL DEVELOPMENT PLAN

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Faculty Scholarship and Professional Currency: A Self-Assessment Model for Developing an Effective Professional Development Plan

Abstract

The exponential rate of technological advances and the convergence of scientific knowledge are remaking the world. As the pace of change becomes faster with every new technological revolution, a new paradigm is required in the domains of teaching and learning. Teaching in today's world requires new approaches to instruction. The convergence of multiple-disciplines has put new demands on educators as well on students. As technology leapfrogs and new technological domains evolve, it becomes increasingly important for faculty to keep current with the new and emerging technologies. The global marketplace requires students to possess an up-to-date technological knowledge-base and complex communications-skill set. In this regard, faculty professional development activities and technical currency play an important role in promoting student learning and success. Accreditation bodies such as the Accreditation Board for Engineering and Technology (ABET) place high emphasis on the professional and technical currency of faculty and require institutions to provide opportunities for faculty to keep abreast of the pace of technological advances.

This paper explores the issues of faculty scholarship viz a viz faculty technical currency, new demands of teaching and learning, and makes recommendations for faculty and administrators for developing appropriate faculty professional development plans, and for formulating policies to promote faculty technical currency through the use of a self-assessment tool.

I. Introduction

The fast pace of technological change and the convergence of multi-discipline scientific knowledge are remaking the world. As the time to remake the world becomes shorter with every new technological revolution, a new paradigm is required in the domains of teaching and learning. Teaching in today's world requires new approaches to instruction. The profound and pervasive changes occurring in education are placing new demands on educators. Educators are expected to be technically current and learn the mechanics of teaching/learning in order to become effective teachers and to narrow the academia -industry gap that exits in the curricula.

Accreditation bodies such as the Accreditation Board for Engineering and Technology (ABET) place high emphasis on the technical currency of faculty and require institutions to provide opportunities for faculty to keep abreast of the pace of technological advances. ABET's criteria for accrediting engineering technology programs state:

> Overall competence of the faculty will be evaluated through such factors as formal education, balance of academic experience and professional practice, industrial experience, professional certification, teaching experience, teaching effectiveness, technical currency, scholarly activity, professional society participation, communication skills, extracurricular support for student activities, and similar attributes appropriate to the program objectives. Individual faculty members must have educational backgrounds, industrial experience, professional practice, communication skills, and technologically current knowledge that support the field of instruction and program objectives. Collectively, the faculty must be capable of providing students an appropriate breadth of perspective and effective instruction in the use of modern technical and non-technical methodologies in careers appropriate to the program objectives. The program must have an effective professional development plan for its faculty. The number of faculty members must be sufficient to provide program continuity, proper frequency of course offerings, appropriate levels of student-faculty interaction, and effective student advising and counseling. Each program must have effective leadership through a full-time faculty member with defined leadership responsibilities for the program. The program faculty must have sufficient responsibility and authority to define, revise, implement, and achieve program objectives.[1]

The pace of technological change also imposes new challenges for faculty development and the technical currency of academic programs. Faculty professional development activities and technical currency play an important role in promoting student learning and success. Especially for non-research (purely teaching) institutions that offer technology driven programs, one of the most important factors determining student success is the professional and technical currency of faculty members.

The nature, demands, and vocabulary of scholarship are also evolving. Ernest Boyer, in his 1990 *Scholarship Reconsidered: Priorities of the Professoriate*, suggested four interrelated dimensions of scholarship; discovery, integration, application and teaching (see Table 1).[2]

Table 1. Dimensions of Scholarship according to Ernest Boyer (1990)[2].

Scholarship domain	Description
The Scholarship of Discovery	- Research is the central ingredient to intellectual environment - The process of discovery
The Scholarship of Integration	- The process of making connections within and across disciplines

	- The process is related to discovery and convergence of disciplines.
The Scholarship of Application	- The process of transforming discovered knowledge into specific applications. - Application of theory into practice Ernest Boyer: "the application of knowledge moves toward engagement as the scholar asks, 'How can knowledge be responsibly applied to consequential problems? How can it be helpful to individuals as well as institutions?' And further, 'Can social problems themselves define an agenda for scholarly investigation?'"
The Scholarship of Teaching	Ernest Boyer: "The work of the professor becomes consequential only as it is understood by others. . . When defined as scholarship teaching both educates and entices future scholars. Indeed, as Aristotle said, 'Teaching is the highest form of understanding.'"

The swift pace of technological change is transforming the global economy into a knowledge-based economy, in which organizations are no longer valued on the basis on their physical assets but rather on the knowledge-base of their employees. And in this new knowledge-based economy the wealth of a nation is determined by its intellectual capital.

In his book *The Digital Economy: Promise and Peril in the Age of Networked Intelligence,* Tapscott proposes a dozen themes for the new economy. The first is knowledge. About the requirements of digital economy and faculty practices, he makes the following observations[3]:

> The digital economy requires a far-reaching rethinking of education and, more broadly, learning and the relationship between working, learning, and daily life as consumer. (p.197)

> With tenured professors, teachers threatened by technology, less competition, and teaching traditions dating back centuries, many educational institutions have become mired in the past. (p.201)

The concepts of faculty development deals with helping faculty members improve their competence as teachers and scholars.[4] Furthermore, improving faculty competence is a part of improving overall instructional quality. The efforts to increase instructional quality depend on faculty development (focus on faculty), instructional development (focus on student, course and curriculum), and organizational development (focus on structure and process).[5]

Faculty in purely teaching institutions (non-research environments), especially those teaching in technology-based and career-oriented programs, generally lag behind the pace of technological change in terms of their professional development activities due to their non-association with research activities. They face two major challenges: how to incorporate and teach new applications of new technologies in the curricula they teach and how to maintain their professional currency.[6]

Therefore, in summary, the rapid pace of technological change mandates that faculty remain current in their technical areas of specialization as technology leapfrogs and new domains of technology evolve, and thus they need to become reflective practitioners.

II. Faculty Professional Development Plan

As a first step/phase in developing a professional development plan, each faculty member should do a self-assessment of professional development needs/enhancements of skills/knowledge-base (see Table 2). This self-assessment would identify the key domains of improvement in the areas of teaching, program involvement, service and professional development. The second phase of faculty development plan involves transforming key domains of improvement into defining measureable goals, identifying internal and external resources required, allocating required time for implementation, and devising a process for measuring the impact of theses goals (see Table 3). Table 3 lists some sample goals in the areas of teaching, program involvement, service, and professional development.

Table 2: Inventory of Faculty Skills and Knowledge-base

(Faculty self-assessment of professional development needs/enhancement of skills/knowledge-base)

Please place an X in each area that describes your skill level.			
	Need to learn basics/pursue	Enhancement Desired	No need/Not Applicable
Teaching			
Learning styles			
Teaching styles			
Syllabus design			

Test development			
Teaching techniques			
Active learning			
Constructivist learning			
Brain-based learning			
Assessment methods			
Classroom management techniques			
Motivation methods			
Teaching critical/complex thinking			
Use of Technology in classroom			
Program Involvement			
Curriculum development/revision			
Assessment tool design			
Curriculum Guide design			
Accreditation process			
Retention strategies			
Service			
Representation at regional and national professional organization			
Representation at accreditation organizations			
Representation at regional and national conferences/forums			
Adviser to a local student chapter of a national professional society			
Innovation in teaching and learning			
Sharing of best practices			

Professional Development			
Technical seminar			
Technical writing			
New hardware technologies			
New software technologies			
Presentation technologies			
Web-based/Online delivery technologies			
Present a paper at a regional conference			
Present a paper at a national conference			
Publish a paper in a professional journal			
Review paper for conferences			
Act as a moderator for a technical session at a conference			
Write a lab manual			
Write a textbook			

Table 3: Faculty Professional Development Matrix

	Goal (Statement)	Resources Required ($) Internal/External	Time Required (Hours)	Timeline (Start date-End date/Gantt Chart)	Impact of accomplished goal (Qualitative/ Quantitative measure)
Teaching					
Program Involvement					
Service					
Professional Development					

Table 3: Sample Goals for a Professional Development Plan

	Goals
Teaching	• Teach a new course (XYZ-123) via online delivery mode. • Design and develop 5 new lab experiments using OPNET software. • Design and develop 5 new simulation labs & virtual projects for XYZ-123. • Design and implement an assessment rubric for XYZ-123 to gauge student success. • Provide a leadership role in teaching the senior project class by improving the project completion success rate. • Incorporate Hybrid pedagogical strategies and technological tools such as web-based assignments, videos, internet research-based projects, individual and group hands-on lab projects to enhance delivery and to promote student learning • Exhibit the teaching effectiveness of senior project course by interacting with students to present a project demonstration and a paper at a national/international conference.
Program Involvement	• Participate in the program revision process at local and national levels. • Develop and implement strategies to enhance retention. • Participate in the TAC/ABET and NCA accreditation processes. • Collect and analyze data though the use national and local assessment tool and make recommendations for improving required student competencies and skills.
Service	• Represent institution at national forums or conferences by presenting a paper. • Represent institution at national accreditation bodies by serving as a program evaluator. • Provide guidance and advise to the student chapter of a national professional organization. • Promote programs by celebrating the National Engineers Week.
Professional Development	• Attend a technical seminar to attain proficiency in application software (e.g. OPNET). • Publish a paper in a professional journal.

	• Present a technical paper at a major national conference. • Act as a moderator for a technical session at a regional or national conference. • Write a lab manual for lab course. • Write a textbook for a course.

III. Faculty Professional Development Recommendations

In order to keep faculty professionally and technically current, polices at program and institutional level need to be developed and implemented, the following are some ideas and recommendations for faculty professional development:

1. Policies at program and institutional level need to be revised in order to encourage faculty members to maintain their professional/technical currency by planning and pursuing professional development activities.
2. Deans/chairpersons need to synchronize the curriculum development and revision cycle with the planning and implementation of faculty professional development activities to optimize teaching/learning and continuous quality improvement process (see Figure 1).
3. Institutions need to allocate appropriate funds for faculty developmental activities.
4. Institutions should identify opportunities to collaborate with industry for creating professional development activities for faculty. Faculty development grants could be solicited from industry, and opportunities for short/long term industrial sabbaticals for faculty should also be identified.
5. Institutions also need to realize the importance of the IT/computer competency in promoting student learning. All faculty members should be provided training opportunities to enhance their computer/IT/networking/hardware/software skills.
6. Faculty should be encouraged to pursue industrial experience via mini industrial sabbaticals and consulting work.
7. Deans/chairpersons need to realize importance of the pedagogy in teaching and learning. And they should provide training opportunities for faculty to reinforce pedagogy in order to improve student learning/success.

Presently accreditation bodies emphasize the importance of professional and technical currency in their accreditation criteria, but no specific definition of the construct of professional and technical currency exits. Accreditation bodies need to develop a blueprint for defining and assessing faculty professional and technical currency so that program evaluators, school administrators and faculty can have a better understanding of the constructs and their assessment. Furthermore the accrediting bodies should also emphasize the importance of pedagogical training.[7]

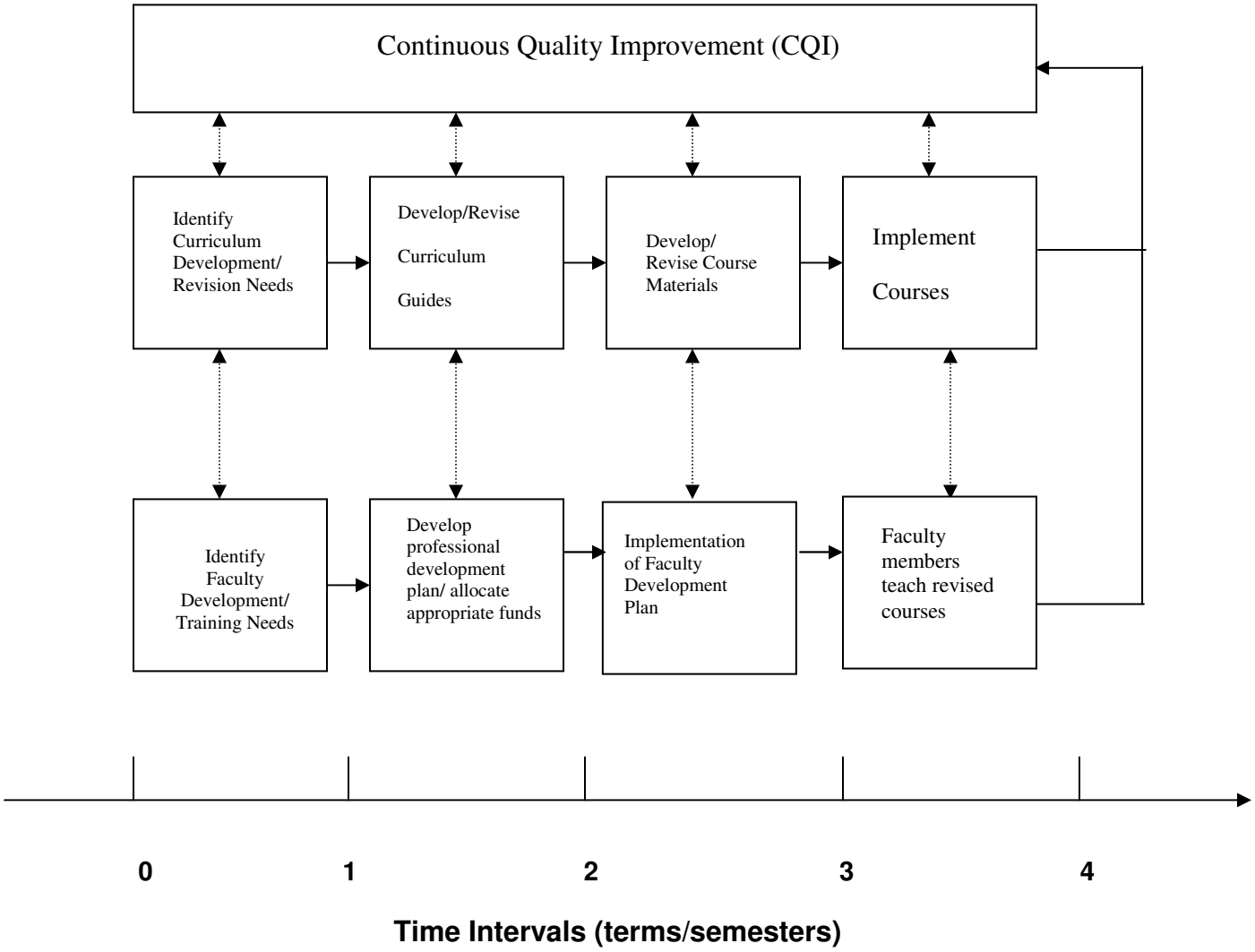

Figure 1. Synchronization of curriculum development/revision process and faculty development/training process to optimize teaching/learning and continuous quality improvement (CQI).

IV. Conclusion

This paper explored the issues of faculty scholarship and made recommendations for faculty and administrators for developing effective faculty professional development plans, and for formulating policies to promote faculty professional and technical currency through the use of self-assessment tools. Such policies are critical especially for non-research, teaching institutions, where the nature of scholarship is different from traditional institutions where faculty are required to conduct research as well as teach. A faculty driven professional development plan encourages faculty to enhance their pedagogy and keep them professionally and technically current to improve student learning. Furthermore, synchronization of the curriculum development/revision process with faculty development/training process optimizes teaching/learning and helps in promoting and establishing continuous quality improvement (CQI) in academic programs.

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