ARTICLES

The Professional Development of Community College Applied Science and Technology Faculty

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This study examined the professional development needs of community college applied science and technology faculty, including full-time tenured, full-time nontenured, and adjunct. These educators, who are expected to be "teachers as leaders" (Baker, Roueche, & Gillet-Karam, 1990) and "classroom researchers" (Cross & Angelo, 1989), strive to remove the barriers of day-to-day learning, to fuel the 2+2+2 curriculum, and to integrate the curriculum findings of the Secretary's Commission on Achieving Necessary Skills (SCANS;1991) report.

For this study, teachers at 15 community colleges in Iowa were surveyed about their perceived importance of a series of "constructs" and teaching skills, the necessary level of competence for each, their preferred delivery modes for such education, and their professional development needs for the future.

Earlier studies about community college teachers have suggested that faculty competence is the key to a successful community college and to effective learning and teaching. Several other researchers have studied college faculty competence, but they haven't addressed it empirically. Zimpher (1988) found several broad skill areas that lead to competence among community college faculty, and Shulman (1987) supported the notion of teacher competence as defined by the National Board of Teaching Standards.

A frequently cited kind of scholarly knowledge has grown out of the empirical study of "teaching effectiveness," which has been summarized by Baker et al. (1990), Brophy and Good (1984), Gage (1978), Rosenshine and Stevens (1986), Shulman (1986), and Van Ast (1995). The goal of teaching effectiveness research has been to identify teacher behaviors and strategies most likely to lead to achievement among students (Shulman, 1987). However, despite Shulman's (1987) research in a variety of areas such as subject matter representation, active teaching, and tailoring to student characteristics, his research doesn't encompass a focus on teaching *and* learning.

If community college educators' knowledge was organized into a handbook, it would include broad areas such as classroom management and organization, "learning to learn," and "tools of the trade" for teachers as they relate to general androgogical knowledge, that is, the teaching of adults as opposed to pedagogy, the teaching of children (Van Ast, 1997).

Among these categories, androgogical content knowledge is of special interest because it identifies specific areas of knowledge needed for teaching the community college student. It represents the blending of content and the tailoring of lessons to reach a desired outcome on particular issues and topics while still allowing the information to be adapted to the diverse interests and abilities of the nontraditional students often found at community colleges.

The Teacher Goal Inventory (TGI) developed by Cross and Angelo (1993) best defines what the ultimate goal of community college teaching can be. The TGI asks teachers to select one course that they are currently teaching and rate the importance of the TGI's 48 teaching goals for that course—teacher goal analysis and teacher professional development in a dynamic partnership.

Cluster analysis of responses revealed six clusters of goals that appear to be related to one another in the minds of community college teachers. The six clusters are as follows:

1. Critical Thinking Skills: Develop the ability to think clearly and develop effective problem-solving skills.
2. Academic Success Skills: Develop the ability to follow instructions and plans, and develop a commitment to careful and accurate work.
3. Liberal Arts/General Education: Develop an appreciation of the liberal arts and sciences and develop a lifelong love of learning.
4. Work/Career-Related Skills: Perform skillfully in their chosen field and make sound career decisions.
5. Personal Development: Develop a sense of personal responsibility and identify own values to improve self-knowledge.
6. Specialized Technical Skills: Learn how specialists in various fields gain new knowledge and develop criteria for evaluating methods and materials in the field of study.

An essential part of any model of faculty effectiveness involves an ongoing evaluation of that faculty. Gibson (1993) pointed out that few community colleges have adequately dealt with this. The same can be said for traditional teacher education institutions.

Because performance appraisal may involve interpersonal conflict and even legal ramifications, most administrators avoid this

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form of evaluation and instead opt for performance enhancement. But in times of limited resources for most community colleges, Gibson (1993) suggested that human resources must be developed to a higher level to expand teacher effectiveness and learner potential. A more thorough approach to faculty evaluation is necessary (Gibson, 1993).

Cross and Angelo (1989) believed that faculty effectiveness is a continuation of many definable things, most of which can be taught, learned, demonstrated, and evaluated. In *Teaching As Leading,* Baker et al. (1990) emphasized that the skills of "award-winning instructors" can be employed by any faculty.

Award-winning teachers have identified their skills and leadership abilities in the classroom to include motivation, influence, and student orientation. These teachers are instrumental in recognizing student desire to learn, in increasing student opportunities for successful educational performance, in motivating students to improve their skills, in offering positive guidance and teaching direction, in working to eliminate or limit learning obstacles, and in using high expectations as the key to empowering students to take responsibility for their own active learning (Baker et al., 1990).

About the Study

This study examined seven construct areas in the realm of community college faculty competence. Fifty teaching skills centering around the seven construct areas were generated from the research cited throughout this article (Van Ast, 1993). The following list of the seven teacher skill areas includes the specific target skills that fall under each construct (Baker et al., 1990; Brophy & Good, 1984; Gage, 1978, 1986; Rosenshine & Stevens, 1986; Shulman, 1986; Stinehart, Van Ast, & Miller, 1995).

Construct 1: *Increasing opportunities for quality educational performance and success.*

A. Operating from a clearly defined community college educational philosophy and mission.
B. Viewing learning as a valuable activity in and of itself.
C. Relating course content and value to real-life situations.
D. Viewing his or her role as a facilitator of learning.
E. Expressing high expectation of students' self-worth.
F. Encouraging belief in students' self-worth.
G. Caring about students.
H. Gaining a sense of satisfaction from achievement.
I. Allowing students to take responsibility for their own learning.

Construct 2: *Offering positive orientation, guidance, and direction through coaching.*

A. Utilizing collaborative teaching and learning methods.
B. Developing and teaching the learning-to-learn process.
C. Demonstrating well-defined class and lab organization.
D. Identifying course expectations and communicating clearly.
E. Matching needs of students with a structured plan for growth and improvement.
F. Encouraging students' efforts through consistent and appropriate feedback.
G. Reaffirming the goals, objectives, and value of the course and learning.
H. Identifying and affirming students' responsibilities.
I. Integrating applied listening, speaking, reading, writing, and computing skills.
J. Integrating interpersonal, group process, problem-solving, decision-making, planning, communication, reasoning, and organizational and management skills.

Construct 3: *Motivating students to increased satisfaction for and development of learning-to-learn skills.*

A. Motivating students to be totally involved in the learning process.
B. Considering students' experiential learning and soliciting their contributions.
C. Incorporating students' experiences into class and lab teaching.
D. Promoting trust and respect between student and teacher and among students.
E. Encouraging independent thinking.
F. Viewing student maturation as a desirable goal of education.
G. Promoting student risk taking.

Construct 4: *Recognizing and encouraging students' desire to learn.*

A. Diagnosing students' needs at the beginning of the course.
B. Clearly communicating the goal and purpose of teaching through syllabi.
C. Providing a forum for student input into course goals, objectives, personal expectations, and needs.
D. Being aware of the total student—including abilities, course readiness, skill preparation, maturity, and learning style.

Construct 5: *Working to limit and/or eliminate leaning obstacles.*

A. Listening to students with an open and accepting attitude before responding.
B. Exploring alternatives with students for changing unacceptable situations.
C. Developing and/or modifying curriculum to meet students' needs and potentials.
D. Meeting with students outside of lab or class.
E. Providing additional help for students.
F. Encouraging students' use of support and resource services.
G. Encouraging peer and/or other tutoring and study skills.

Construct 6: *Using effective performance as an expectation by which to empower students.*

A. Setting and upholding standards of behavior.
B. Being able to model expected behavior.
C. Reviewing student expectations regarding performance and outcomes.
D. Making students aware of the rewards, and consequences, of their actions.
E. Providing positive feedback and criticism regarding student performance.
F. Accepting their active involvement in the teaching/learning process.

Construct 7: *Utilizing intellectual competencies to maximize instructor effectiveness.*

A. Scanning, synthesizing, and drawing conclusions about data.
B. Obtaining information from printed and recorded sources and other references.
C. Exploring and using a wide range of ideas, practices, theories, and models logically and creatively without impact of personal biases.
D. Conceptualizing and developing theoretical and practical models and frameworks describing complex phenomenon in useful ways.
E. Objectively assessing what is happening in or across situations.
F. Knowing one's own values, needs, and teaching skills and their effects on students.
G. Projecting trends and visualizing future needs and their implications.

The study's objective was to answer the four following research questions:

1. What teaching skills of community college faculty are considered most important by community college applied science and technology teachers?
2. What level of mastery of the important teaching skills should be achieved by the (a) full-time tenured, (b) full-time nontenured, and (c) adjunct teachers for effective student learning to occur?
3. Is there a difference in responses among the three respondent groups regarding the above two questions?
4. In order to address professional development needs of these community college faculty, is there a difference in respondent groups in their choice of delivery mode?

What Was Done

The study was conducted as a confidential paper-pencil survey given to the three different groups of community college applied science and technology faculty at Iowa's community colleges. Those who responded included 104 full-timed tenured faculty (69%), 90 full-time nontenured faculty (60%), and 119 adjunct faculty (69%). The survey included the above seven constructs with each of the 50 specific competencies categorized by construct. Respondents were asked to respond to each of the 50 competencies using two different scales as it related to their professional development needs. The first scale was an "importance scale" ranging from 1 (*not very important*) to 5 (*extremely important*). The second scale was a "level of mastery scale" graded as follows:

5. Comprehension (i.e., interpretation)
4. Application (i.e., use of information)
3. Analysis (i.e., breaking information down)
2. Synthesis (i.e., building information structures)
1. Evaluation (i.e., making judgments)

Delivery mode was measured by having respondents rate a number of options on a viability scale rated as follows: 5 = *extremely viable*, 4 = *very viable*, 3 = *somewhat viable*, 2 = *not viable*, and 1 = *does not apply*. Respondents were asked to rate the following options of delivery mode: course, workshop, seminar, face to face, Iowa Communications Network (ICN), Iowa's statewide two-way interactive visual and audio fiberoptics system, their campus, Iowa State University campus, regional location, part of a statewide convention, credit, non-credit, CEU, Friday evening and all day Saturday sessions, once a month, and one evening per week throughout the semester.

Means, standard deviations, and rankings were calculated for sample groups A, B, and C for the two research questions: "What teaching skills of community college faculty are considered most important by community college applied science and technology teachers?" and "What level of mastery of the impor-

tant teaching skills should be achieved by the (a) full-time tenured, (b) full-time nontenured, and (c) adjunct teachers for effective student learning to occur?" For the third research question "Is there a difference in responses among the three respondent groups regarding the above two questions," correlation coefficients and *t* tests were computed in an attempt to look for significant differences between the responses of sample groups A, B, and C. For the fourth research question "In order to address professional development needs of these community college faculty, is there a difference in respondent groups in their choice of delivery mode?," a series of *t* tests were computed to compare preferences for various delivery modes.

What Was Learned

Results are listed below by research question. Pearson correlations were computed to examine the relationship between responses on each item's importance scale and mastery scale. A few of the correlations (i.e., 2 of 50) were significant and were all less than .20, indicating that the two scales were measuring different things as expected.

Research Question 1: What teaching skills of community college faculty are considered most important by community college applied science and technology teachers?

For the overall sample, all 50 of the competencies included in the seven constructs on the survey had mean ratings of 3.00, which was a rating of *important* on the importance response scale (see Table 1). All but 2 of the 50 competencies had mean ratings above 3.50: *Providing a forum for student input* (mean = 3.27) and *meeting with students outside of class* (mean = 3.44). Thirty-four of the 50 competencies had mean ratings above 4.00 (*very important* on the response scale), indicating that the vast majority of the competencies included were considered *very important* to *extremely important* by the average respondent. The two items with means less than 3.50 were the only competencies that could be considered for elimination from the list, although they were retained in this study because their means were above 3.00, a rating of *important*.

Research Question 2: What level of mastery of the important teaching skills should be achieved by the (a) full-time tenured, (b) full-time nontenured, and (c) adjunct teachers for effective student learning to occur?

All mean ratings on the mastery response scale of the survey were between 2.00 and 3.50, suggesting that the average respondent considered all 50 competencies to require either the analysis or synthesis level of mastery. Clearly, these means, which are listed in Table 1, indicate that mastery beyond simple application is needed for all the teaching skills, but perhaps not to the highest level of evaluation—making judgments.

Research Question 3: Is there a difference in responses among the three respondent groups regarding the above two questions?

There were significant *t*-value differences for only 6 of the 50 items on the importance scale and for only 2 of the 50 items on the mastery scale. The significant *t*-value differences appear in Table 2.

Research Question 4: In order to address professional development needs of these community college faculty, is there a difference in respondent groups in their choice of delivery mode?

Analysis results indicate a substantial preference for one's own campus as the site of delivery, with a regional site, ICN, and a state site rounding out the other preferred choices, respectively. Clearly, the results suggest that a program offered at a university location does not match the preferences of the respondents in this study.

The Meaning of It All

The results of this study suggest that all 50 of the competencies examined are important, with all but two of the competencies being *very important* or *extremely important*. Thus all of the competencies should be addressed in a community college applied science and technology faculty's preparation and advancement for teaching at that level.

The level of mastery indicated for each of the competencies (see Table 1) provides a guide in terms of what level of mastery needs to be addressed in the community college faculty's preparation and advancement for teaching. Overall, these teaching skills were rated in the current study requiring mastery beyond the level of simple application, but not necessarily to the point of evaluations—making judgments. This finding was surprising. The author expected to find means indicating that the evaluation level of mastery was essential. If one considers the standard deviation along with the means (see Table 1), the evaluation level is encompassed.

Responses varied little by group, indicating that the three groups rated the competencies similarly. This indicates that a community college could easily address teaching skill needs for all three groups at once, rather than designing separate programs. The old standard "different things for different people" was proven wrong.

Table 1

Item, Mean, and Standard Deviation of 50 Competencies for Importance and Mastery Scales

Item	Importance Scale Mean	Importance Scale Std. Dev.	Mastery Scale Mean	Mastery Scale Std. Dev.
1	4.01	0.88	3.63	1.26
2	4.34	0.79	3.29	1.46
3	4.59	0.65	3.32	1.42
4	4.37	0.72	3.17	1.38
5	4.22	0.82	3.27	1.38
6	4.37	0.79	3.23	1.37
7	4.52	0.69	3.17	1.51
8	4.23	0.71	3.22	1.42
9	4.45	0.69	3.09	1.44
10	3.91	0.80	3.36	1.12
11	4.00	0.81	3.18	1.22
12	4.09	0.88	3.35	1.21
13	4.48	0.65	3.48	1.33
14	3.89	0.91	3.06	1.28
15	4.32	0.74	3.16	1.39
16	3.95	0.86	3.24	1.36
17	4.32	0.74	3.34	1.33
18	4.33	0.84	3.39	1.31
19	4.34	0.86	3.17	1.43
20	4.22	0.79	3.27	1.28
21	4.01	0.81	3.29	1.16
22	3.93	0.90	3.34	1.15
23	4.41	0.75	3.22	1.41
24	4.58	0.63	3.21	1.50
25	3.85	0.95	3.11	1.40
26	3.67	1.01	2.98	1.39
27	3.88	0.90	2.98	1.42
28	4.16	0.88	3.33	1.26
29	3.27	0.99	2.94	1.24
30	3.86	0.90	3.04	1.41
31	4.43	0.71	3.25	1.40
32	3.93	0.85	3.03	1.34
33	3.80	0.97	2.96	1.27
34	3.44	1.07	3.04	1.33
35	3.95	0.87	3.26	1.26
36	4.23	0.78	3.32	1.23
37	4.10	0.85	3.26	1.22
38	4.37	0.80	3.21	1.49
39	4.39	0.79	3.25	1.49
40	4.12	0.80	3.12	1.37
41	4.21	0.83	3.23	1.41
42	4.48	0.64	3.13	1.43
43	4.26	0.75	3.16	1.36
44	3.99	0.87	2.99	1.39
45	4.07	0.81	3.26	1.24
46	4.06	0.86	3.15	1.30
47	3.69	0.95	3.06	1.28
48	3.92	0.86	2.81	1.42
49	4.26	0.84	3.07	1.52
50	4.11	0.92	3.02	1.48

Table 2

Significant Differences Between Sample Responses—t tests

Item	A vs. B t-value	p-value	A vs. C t-value	p-value	B vs. C t-value	p-value
Importance Scale:						
4	-2.35	(.02)	-2.05	(.04)		
13	-2.13	(.04)				
27	1.99	(.05)				
49	-1.95	(.05)			2.41	(.02)
Mastery Scale						
2			-2.08	(.04)		
31			-2.07	(.04)		

Responses regarding delivery mode of a master's degree for the community college faculty suggest that the professional development activities offered at the Iowa State University campus does not match the preferences and needs of community college teachers. Convenience is the priority. As expected, respondents indicated a strong preference for a program offered on their own campus. However, ICN, Iowa's fiber optic two-way interactive communication network, a regional, or state site are more feasible than providing programs for each community college campus.

The methods used to teach educators to be teachers as leaders, classroom researchers, and learning focused rather than teaching focused must evolve. Teachers, whether they be full-time tenured, full-time nontenured, or adjunct, have similar, if not identical, needs when addressing professional development. All three groups in this study identified a statistically similar importance and mastery level for the 50 teaching skills. Statistical differences exist, but are isolated and minimal.

Response and reaction must provide faculty with what they need, and of equal significance, it must be provided at the mastery level that they have indicated. This research indicates that the entire faculty population—tenured or not—wants to be offered professional development at the same level as their peers—tenured, nontenured, and adjunct.

So we must evolve. Community colleges must demand better. Annual in-service days as workshops at the undergraduate or graduate level for multiple credit courses is no longer enough. Community college faculty want open options in credits and degrees for their professional development needs. And they want them delivered in the methods indicated in this research. Traditional teacher education may be left out.

To teach community college educators to "teach better," it only makes sense to provide the skills they want and need at the levels they ask for and in a way that makes learning the skills practical for them. These skills must focus on the process of learning; increasing opportunities for quality educational performance and success; offering positive orientation, guidance, and direction through coaching; motivating students to increased satisfaction for and development of learning to learn skills; recognizing and encouraging students' desire to learn; working to limit and/or eliminate learning obstacles; using effective performance as expectation by which to empower students; and utilizing intellectual competencies to maximize instruction effectiveness.

The university needs to be the role model and reach for the community college rather than the community college reaching for the university when it comes to providing continuing education for teachers. University teacher education programs in cooperation with community college faculties' professional development needs must change the way they do business, or someone else may do it for them.

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