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ABSTRACT

Central Missouri State University instituted a Continuous Process Improvement (CPI) Model based on assessment-as-learning for postsecondary curricular and pedagogical reform. Overall the effort intended to create a paradigm shift from the course credit model to the assessment-as-learning model. The process used the Assessment-as-Learning model developed by Alverno College (Wisconsin) and Total Quality Management as used in industry. In the teacher education program the first year was devoted to faculty and administrator training, emphasizing training for development of explicit outcomes, pedagogy, and the matrix. In the second year, the Secondary Cluster developed a matrix of outcomes related to courses and experiences for the professional education sequence for secondary education majors, worked on authentic assessment, and tried out a video portfolio for the assessment of students in field experience. The Elementary Cluster focused on a comprehensive program and worked to identify goals and outcomes based on the philosophical perspective of the department that had been articulated over the previous five years. The CPI work has increased collegiality of participants within and across disciplines, enhanced institutional reputation, developed a more cohesive faculty, and renewed respect for mutual professional competence among faculty. Obstacles will probably include resistance from the Missouri Department of Elementary and Secondary Education. (Contains 13 references.) (JB)

Assessment-as-Learning: The Continuous Process Improvement Model at Central Missouri State University

A Paper Presented to the

Association of American Colleges of Teacher Education

Annual Conference

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Over the last decade, since the National Commission on Excellence in Education report, *A Nation at Risk: The Imperative for Educational Reform* (1983), ways to make education more relevant to today's society have been legion. Pallante (1993) reviewed the literature and reported several focuses of reform. These included collaboration, transformation, teacher-researcher and critical pedagogy. These focuses dealt with reform in all areas and levels of education, but at Central we chose to focus on preparing future teachers. It is imperative that Teacher Education be at the forefront of educational change in higher education. We need to be the leaders at the cutting edge of pedagogical reform. We have the research, the training, and the experience. We also have the profession of education at stake. For these reasons, the work at Central was critical in the area of pedagogy.

A team of faculty researchers at Central Missouri State University proposed a Continuous Process Improvement Model based on assessment-as-learning for postsecondary curricular and pedagogical reform that built on Central's three years of research, faculty education, and planning. This proposal was funded by FIPSE in the fall of 1991 and continues to be funded. We are currently in the third and final year of the FIPSE funding of this proposal. The purpose of this paper is to describe the processes and effects of the Continuous Process Improvement Model in teacher education and how the teacher education component fit with the other programs across campus.

History of the Project

A brief look at the history of this project is important. The purpose of this project was to develop general and program-specific student outcomes and expected levels of achievement that were explicitly defined for ten departments and twelve programs (majors) and 130 faculty representing four colleges across the University. These outcomes would be the organizing principles for redesigning the curricular and pedagogical process at the University. The intent was to create a paradigm shift from the course credit model to the assessment-as-learning model. Feedback from systematic student assessment would be used to improve student learning, curriculum, and pedagogy. The efficacy of the outcome-based approach to student assessment and learning was demonstrated by Alverno College (1985). Central's proposal integrated the Alverno Assessment-as-Learning model and the industrial Total Quality Management (Juran, 1992) process.

A training program enabled the faculty to develop learning exercises and assessments for active student learning, performance evaluation, and development. Comprehensive assessments would determine student achievement at the entry and exit levels for each major. The intention was that the CPI model would be adopted by other departments impacting most students at Central and be generalized to other large public comprehensive universities as a guide for reform. At the end of the first year of the program five additional departments joined in the CPI model. For the third year of the program, ten more departments started working on the process.

The first year of the project was the training of faculty in the many processes of generating outcomes for the major, explicitly stating outcomes and developing assessment exercises and criteria required to measure the level of student learning. The following were the guiding questions for faculty training:

1. What do you currently want students to know and do in your courses?
2. What do you want them to do with the knowledge and skills beyond the course?
3. What can you do in your classes to make this happen?
4. Do you need to change course requirements to accomplish this?
5. How do you know when students have demonstrated the outcomes you planned?
6. How can you and your colleagues create a list of general outcomes for the major and the University based on the previously stated outcomes?

The training program was designed as a way to introduce faculty and administrators to the assessment center model and to train them in the specific methodology of using assessment-as-learning. It was further the aim of the training program to support the grant participants in their efforts to work through the CPI self-study of the degree programs and the redesign of the scope and sequence of these majors. This pedagogical reform supported the goals of national associations such as the Association of Teacher Educators and accrediting agencies such as North Central which called for the restructuring of college degree programs to meet the needs of the twenty-first century (North Central Association of Colleges and Schools, 1992).

It was the goal of the training program to get participants to commit to the philosophy of assessment-as-learning and to provide specific training opportunities for the participants to generate the degree-specific program and pedagogical changes needed to implement the CPI model. The following specific goal was identified: faculty and administrators would receive training in applying the basic concepts of the CPI model. This training included activities that encouraged the participants to:

a. understand outcome-based education.

b. work with alumni, employers, and students to develop a profile for the degree program graduates in terms of explicit student outcomes.

c. develop a matrix showing how the specified outcomes are integrated across courses in a coordinated, coherent, developmental sequence.

d. develop assessment criteria to measure these outcomes.

e. design learning exercises as a pedagogical methodology.

f. design courses and experiences that include appropriate aspects of the outcomes.

g. use the established explicit outcomes for both general and discipline-specific skills and knowledge to identify an entry level set of competencies that need to be met by the students.

h. use the established explicit outcomes for both general and discipline-specific skills, knowledge and attitudes to identify an exit level set of competencies that need to be met by the students.

The training was conducted by previously trained on-site personnel and off-site consultants. The training program was coordinated by the grant team. The training sessions were a combination of large and small group instruction. Individual assistance was given to departments as requested.

Year One of the grant was the time for all initial training. The Fall semester was devoted to the training for development of explicit outcomes, pedagogy and the matrix. Small group work took place within each department. Grant team members and external consultants were available for individual and program specific assistance.

Year Two of the grant saw the addition of the Elementary and the continuation of the Secondary Education programs. During the past year and a half, the Elementary Cluster worked toward the redesign of the program at Central. To date, the work has focused on identifying general objectives and then

working toward building task-specific objectives that will be identified by measurable criteria for assessment purposes. The goal for 1993-1994 is to complete the matrix of objectives and criteria and create an elementary program that is not course driven but is performance/objective driven. We hope this leads to a new way to schedule educational experiences, provide team teaching opportunities for faculty and establish a new way to present a teacher education program for state accreditation. The Secondary Cluster moved beyond the work of the Elementary Cluster and identified outcomes and developed a matrix of experiences. It is currently exploring innovative (at least to Central's program) assessment strategies. The following sections will present the work of the Secondary and Elementary Clusters and then a discussion of the benefits, costs and obstacles yet to be faced.

Secondary Education

At Central, most of the college work for secondary majors was in the content area and general education, so only the professional core was the responsibility of the Education Department. After working for over two years, the Secondary Cluster developed a matrix of outcomes related to courses and experiences for the professional education sequence for secondary education majors. The components of redesign mainly focused on three areas: (a.) developing a well-defined set of goals and outcomes, (b.) identifying students' teaching skills through authentic assessment by video portfolio development, and (c.) enhancing the relationship among the University, surrounding school districts and state agencies. A major portion of the redesign was the implementation of "authentic assessment" into early field experience through video portfolio development.

The need for assessment systems that utilize tasks was being signalled from a variety of quarters. If we wanted children to be able to read critically, write graceful prose and solve real scientific or historical problems, then our tests should ask them to explore literature, write thoughtful and readable prose and do laboratory or primary source research. The same could be said for preservice teachers. If we wanted our teacher education graduates to be able to teach, they had to demonstrate those skills defined as teaching. Not only did they have to demonstrate those skills, we (as decision makers) had to be able to evaluate those skills based on clearly defined criteria. The task of identifying and defining those behaviors regarded as necessary for effective teaching was arduous.

The Secondary Cluster's research reflected a national movement to provide more measurable and clearly defined teaching/learning outcomes at all levels. As Woulk (1989) indicated (speaking on the establishment of the National Board) "For the first time in history, a national body with a teacher majority has defined what every classroom teacher should know and be able to do" (cited by Lathlaen, 1990, p. 51). This pattern was supported by Harthern and Rolle (1991) who stated that in response to the excellence and accountability movements, many state departments of education, teacher training institutions, school systems and research agencies had identified what they considered to be desirable teaching behaviors and skills. Harthern and Rolle (1991) also stated, "Demonstrating competency has been made a gatekeeper for entering teachers in many school systems" (p. 52).

The literature related to teaching effectiveness revealed that the term "competency" was an imprecise term used frequently, but with varied usage. It appeared to be used interchangeably with teaching skills, teaching behaviors and effective instruction. As Borich (1979) stated, "Perhaps because its origins may have been more political than substantive, the term had yet to take on a single universally recognized meaning" (p. 77). This sentiment was echoed by Smith (1971) who stated, "Despite all of our efforts, we apparently have no generally accepted conceptual system, psychological or otherwise, by which either to formulate or to identify the skills of teaching . . . it is clear that research would be advanced measurably by a conceptual system for formulating and identifying teaching skills" (cited in Henderson & Lanier, 1973, p. 4).

Zahorik (1986) supported the notion that there were some teaching skills that all teachers should possess. "All teachers . . . ought to be able to give lucid explanations . . . be able to structure knowledge in a way that promotes understanding . . . be able to manage groups of learners. But beyond a few obvious skills such as these, identifying universal teaching skills was difficult because teaching skills emerged from one's conception of good teaching" (p. 21). As Zahorik further stated, "If we accept that teaching skills are not independent of conceptions of good teaching and that there are multiple sets of skills, a problem arises: What teaching skills ought teachers acquire?" (p. 23).

Authentic Assessment

Marzano and Kendall (1991) acknowledged that the descriptions and conceptualizations of authentic assessment were as widespread as the support for it. There was great variety in the types of tasks that were considered authentic, and there were certain characteristics mentioned in the literature that were common. Marzano and Kendall designed a listing of authentic tasks and their characteristics:

1. Production oriented: Task utilized at least some knowledge not currently in long term memory;
2. Multi-dimensional: Referred to the diversity of the cognitive operations utilized in a task;
3. Non-routine: Even though a task was cognitively complex, it might be performed in a step-by-step routine fashion that required little thought;
4. Data-based: When a task was data driven, the learner collected and assembled information;
5. Partially-specified: The extent to which the learner was free to specify the content and the outcome of the task;
6. Long-term: The amount of time taken to complete a task;
7. Domain-relevant: The extent to which a task was considered important within an accepted domain of study;
8. Interdisciplinary: involved knowledge from two or more domains;
9. Personally relevant: The extent to which those engaged in the task perceived it as falling within their set of personal goals. (p. 2-6)

Video Portfolio In Field Experience

In the spring of 1993 at Central Missouri State University, a sophomore level field experience course was identified to run a pilot study of an assessment process as part of the CPI model, secondary education redesign component. The pilot assessment project employed the use of a video portfolio for the assessment of the teaching behaviors of the students in the course as compared to first year teaching behaviors. All students enrolled in the course were informed that they would be part of the pilot, and that they would be assessed on their teaching behaviors. The students were told the assessment would not have any affect on their course grade. The students were also told to communicate the objectives and requirements of the course and the pilot component to each of their individual cooperating teachers.

Additionally, the researchers sent a cover letter explaining the teaching behavior assessment along with a copy of the tool and a return envelope to each cooperating teacher.

Each student was given the responsibility to organize the logistics so that the videotape could be accomplished within an eight week timeframe and to ensure that the researchers would receive two copies of a video session which would show each student's individual teaching behaviors. Once the instructors received the video tapes, they then viewed the teaching behaviors of the students and assessed them using the same tool the cooperating teachers completed. The results of the cooperating teachers were compiled (see Table 1) and suggested that the students were above normal expectations as compared to first year teachers. The results of the instructors were one point, on average, below the cooperating teachers' assessment for each category, except dress and posture which were approximately the same.

Table 1

Public School Teachers' Evaluations of First Experience Teaching Behaviors

Competency	Tally/Percent*			M	SD
	1	2	3		
Anticipatory Set	1 / 2.6	21 / 55.3	16 / 42.1	2.39	.55
Communicates Objectives	-0-	16 / 41.0	23 / 59.0	2.59	.50
Provides Rationale	-0-	22 / 59.5	15 / 40.5	2.41	.50
Organizes/Sequences Content	1 / 2.5	12 / 30.0	27 / 67.5	2.65	.53
Nurtures Critical Thinking	1 / 3.1	17 / 53.1	14 / 43.8	2.41	.56
Models, Uses Examples	-0-	13 / 34.2	25 / 65.8	2.65	.48
Checks Understanding Lessons	3 / 7.5	14 / 35.0	23 / 57.5	2.65	.48
Reexplains (reteaches)	-0-	14 / 36.8	24 / 63.2	2.63	.49
Accommodates learning styles	2 / 6.3	17 / 53.1	13 / 40.6	2.34	.60

(table continues)

Competency	Tally/Percent*			M	SD
	1	2	3		
Uses visuals to clarify	-0-	13 / 36.1	23 / 63.9	2.63	.49
Reviews Lesson	3 / 9.7	13 / 41.9	15 / 48.4	2.38	.67
Presets for Next lesson	1 / 4.8	12 / 57.1	8 / 38.1	2.33	.58
Uses App. Methods	-0-	17 / 41.5	24 / 58.5	2.58	.50
Checks for Understanding Obj.	3 / 7.1	19 / 45.2	20 / 47.6	2.40	.63
Teacher Attitude	1 / 2.6	6 / 15.4	32 / 82.1	2.79	.47
Uses App. Class. Mgt. Tech.	1 / 2.4	11 / 26.8	29 / 70.7	2.68	.52
Physical Appearance: Dress	-0-	2 / 18.6	35 / 81.4	2.81	.39
Physical Appearance: Posture	-0-	7 / 16.3	36 / 83.7	2.84	.38
Appears Confident, in Charge	3 / 7.0	10 / 23.3	30 / 69.8	2.63	.62
Appears Enthusiastic, Motivated	1 / 2.4	7 / 16.7	34 / 81.0	2.79	.47

n=43

***Note: All competencies were not observed by evaluating teachers**

1 = Very Poorly Done-Below Average

2 = Acceptable Work-Average

3 = Done Exceptionally Well-Above Average

Problems

During the pilot study, a few problems arose with respect to communications with the principals of the schools where the students completed their assigned course work. There were a few instances of difficulty in the procurement of audio-visual equipment that the student's needed in order to complete the task. Four cooperating teachers questioned the validity of the "pilot tool" and sent it back unanswered, along with editorial comments about the process. The researchers viewed the tool as a preliminary draft in need of refinement in order to further differentiate levels of achievement, i.e., quality indicators, of

observed behavior. The cooperating teachers were not trained prior to the pilot. The researchers gave a lot of responsibility of the project to the students; this proved to be a major mistake.

Conclusions And Recommendations

The use of video portfolios was an excellent idea and a worthy component of any teacher education program, however the gathering of these type of data could and had proven to be a logistical nightmare. Video portfolios did provide an observable baseline of teaching behaviors which could be added throughout the teacher education candidate's program. The utility of the baseline was questionable due to the distorted evaluations by the cooperating teachers who might have been concerned the assessment would affect the student's grades in the course even though they were told differently.

The continuation of the process was necessary for the inclusion of authentic assessment in a teacher education program. It was the first stage in the development of a portfolio for our teacher education candidates. The process of assessment via a video portfolio needs to be adopted as a permanent entity of the teacher education program at CMSU once the logistical/communication problems are resolved.

Elementary Education

At Central, most of the college work for the elementary major was in the department of Curriculum and Instruction. Even many of the general education courses were specifically designated to meet accreditation requirements. When the Elementary Cluster began its work, the focus was more on a comprehensive program than just looking at the professional core. The components of redesign mainly focused on three areas: (a.) defining the entry level requirements for elementary majors, (b.) developing a well-defined set of goals and outcomes, and (c.) identifying students' teaching knowledge, skills and attitudes (KSAs) through authentic assessments in addition to traditional assessments. To date, most of the work revolved around identifying goals and outcomes and considering levels of initial, strengthening and mastery of the KSAs.

The defining of the goals and outcomes was based on the philosophical perspective of the department that had been articulated over the last five years. The basic premises incorporated the department's mission statement for undergraduates and graduates. They were as follows:

The mission of the Department of Curriculum and Instruction is to prepare individuals as professional educators for an everchanging, culturally diverse population; to provide support and service to schools in meeting their present and future challenges; and to promote research and other scholarly activities. (Undergraduate mission, adopted Fall, 1989.)

and,

The mission of the Department of Curriculum and Instruction's graduate program is to prepare students for a lifetime of intellectual inquiry. The program expands and enhances educators' scholarship, curriculum and instructional abilities, broadens their global perspective, and empowers them as change agents and creative problem solvers. The program's essential components are to enhance abilities to communicate effectively and reflect on our diverse knowledge, beliefs, and values within the educational and broader communities. (Graduate mission statement, adopted January 31, 1992.)

These mission statements reflected the goals and beliefs of the knowledge base for the department. The overriding goals for the department were as follows. The Teacher:

1. understands American education and its purposes.
2. understands student growth and development.
3. formulates values and professional practices which promote respect for the dignity of each student and dedication to each student's learning.
4. designs, conducts and evaluates instruction to facilitate student learning and development based on analyses of student abilities, cultural backgrounds, achievements and needs.
5. organizes the classroom environment and manages student conduct to promote productive learning.
6. elicits involvement of students, parents, colleagues and patrons in supporting and improving student learning.
7. engages in reflective decision-making to identify and solve educational problems and/or pursue opportunities for improved student learning.

Next, the Elementary Cluster examined the outcomes established for the redesigned general

education program. The five outcomes there related to the following competencies in communication, thinking, valuing, human interactions, and technology. The following illustrates the comparison among the general education outcomes, the elementary undergraduate outcomes and the anticipated MSE core outcomes.

General Education	Elementary Education	MSE Core
Communication	Develop communication ability	Communication
Thinking	Develop intellectual inquiry	Thinking
Valuing	Develop valuing ability	Valuing
Human Interactions	Develop social interaction skills	Interacting
Technology	Develop organizational ability (using technology)	Technology
	Develop global perspectives	

The last piece of the puzzle to be completed at this time were the elementary specific outcomes with attending sub-categories.

The elementary redesign for CPI involved university, public school, and patron personnel. For any redesign to be effective, all involved parties must participate. This brings the discussion to the benefits, costs and obstacles for CPI.

Benefits

The benefits at the university level were clearly seen in the increased collegiality of the participants within and across disciplines. Through the use of FIPSE funding, university faculty were released from regular loads to spearhead the CPI process. This redesign was not carried totally on the shoulders of volunteerism and duty. The benefits to the University were also seen in a re-enthused faculty actively participating in professional development. Central was represented at several local, regional and national conferences discussing reforms and redesigns in education, thus enhancing Central's public credibility. On a more local front, the administration saw a more cohesive faculty that would work cross-curricularly on pedagogical issues.

Within this department for both secondary and elementary faculty, there were hours, sometimes weeks, of discussions to clarify points of view, definitions, philosophical stances and long held beliefs. These discussions did not always end in consensus or even agreement or compromise, but the level of respect for each other's professional competence grew. The faculty developed an appropriate forum for intellectual exploration and a vehicle for professional change.

The benefits for the students were already apparent in the language and concepts presented in classes. Syllabi were rewritten to reflect CPI progress at the beginning of each semester. Performance assessments increased in quantity and relevance to the outcomes under discussion. Faculty were more focused and organized in talking about the precepts of teaching. Students were made aware of the professional dialog and were drawn into the dialog as participants in both formal and informal fashions. The students could articulate that learning about teaching did not end with a BSE.

On a personal level, individual faculty members were able to reflect on the choices they made for their own professional lives. This in-depth validation of choices has been personally very satisfying for the researchers.

Costs

The costs were great in dollars, time, energy and frustration. The university added in-kind dollars and actual cash to the FIPSE funding of about $50,000 per year for each of the last three years. Individual departments supplied secretarial, equipment and student workers. Individual faculty turned down consulting work and overload classes as well as providing tens to hundreds of personal, uncompensated hours to work on the project. The faculty members expended both physical and intellectual energy to make this project fruitful. They went to evening and early morning meetings and participated in weekend retreats and multi-day training sessions. Several spent vacation time at Alverno. The frustration was reflected in the incredibly slow wheels of progress. It takes real perseverance to make changes of this magnitude and importance, and that is frustrating.

Obstacles

But the really hard part is yet to come. These are the obstacles waiting to challenge the work of CPI. The greatest challenge will probably be from the Missouri Department of Elementary and Secondary

Education (DESE). The intent for the elementary cluster is to create a program that is not course credit driven, but competency driven. How will DESE deal with accreditation within the state and with our graduates moving to other states? How will DESE ascertain whether all the components of the previously accredited program have been included in the new one? How will DESE deal with assessments and competency experiences that are given outside the traditional classroom setting?

These questions also relate to the NCATE experience for accreditation. It will be several years, long after the next review, before the effectiveness of the CPI process will be known. How can the university promote one system while trying to incorporate a radically different one?

How will the public schools receive our graduates? Will they encourage their seniors to come to this kind of program? There will be many public relations decisions to be made about marketing the redesigned program.

An obstacle closer to home is the faculty. Several of the faculty who have been invaluable to the development of the redesigned programs are nearing retirement. Who will be the energy source to maintain change throughout the years of initial implementation? Will there be a new fad that will take the profession by storm and distract those of us still trying to implement this one? Just how long is our professional attention span? These questions haunt the researchers. How much energy and commitment can be maintained over time to ensure unknown change for the good and let the department not just slip back into changes that reflect the known experience?

Conclusion

The adaptation of Total Quality Management techniques and philosophy is currently alive and well at Central, known as Continuous Process Improvement. It has official university blessing and wide spread individual faculty support. Over the last several years, many changes have been made to the organization and presentation of curricula and pedagogy. The process is still in its infancy. Within the next three years individual departments and programs will be implementing the full range of changes. Students and faculty will need to adapt to new methods of instruction and assessment. New methods of record keeping and information will need to be developed. There should be clarity in purpose, expectations and organization of programs. Interdepartmental collaborations should be more easily recognized for teaching. The

department and the university should be administratively open to new ideas that can be justified with sound theoretical and practical experience. With all this in place, the concept of assessment-as-learning should be a reality at Central.

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