Cougar Academy for Teachers (CATs):
A Teacher Quality Enhancement (TQE) Institute Project

• Introduction

This paper examines the development and implementation of the Cougar Academy for Teachers (CATs) -- A Teacher Quality Enhancement Institute Project, held at Chicago State University, June 19 to July 13, 2006 from the standpoint of curriculum design and educational leadership. The systemic nature of the TQE project (a six-year series of leadership in education programs and processes, itself a part of a national project) and subsequently the CATs Institute (as a capstone project for the TQE Leadership Design Team) would require extensive repetition in order to separate pieces into two or more papers. Therefore, I decided to write a single (yet longer) paper to address the components of each course as it fits into the larger TQE CATs picture.

As Director of TQE, I have had to learn what it means to be a leader in a real and immediate sense. Murphy and Datnow (2002) define effective leaders as catalysts for change, protectors of the vision, and leaders of inquiry, engaging others in exploring questions versus telling everyone what to think. Effective leaders are also “willing to let go of leadership functions associated with their roles and support shared leadership” among all vested parties. (Kaser, Mundry, Stiles, and Louks-Horsley; 2006, p. 3) In order to do this effectively leaders need to model best practices, inspire a shared vision, challenge the status quo process, enable team members to act, and encourage the heart and soul of their team (Kouzes & Posner, 2002). Kaser et al (2006) believe that a shared vision “incorporates individual visions, engenders commitment, and focuses energy.” (p. 13) Senge (1990) states that “when people truly share a vision, they are connected, bound
together by a common aspiration. Shared visions derive their power from a common caring.” (p. 206)

Most importantly, I have worked to establish trust (Kerfoot, 1999 & Glaser, 1999) and hope (Lindle, 2005). Glaser defines trust as “the cement that binds together all relationships, and provides the foundation from which society operates, leadership flourishes, and changes occur.” (p. 82) Leaders who “can create trust among their members can create a high-performing, synergistic environment that will produce exceptional…outcomes.” (Kerfoot, p. 79) Furthermore, I wanted to create a “safe environment so that others feel comfortable sharing and taking risks.” (Reinhartz & Beach, 2004, p. 16)

During the years of the TQE project, I have had the unique opportunity to grow personally as well as use what I have learned to promote the readiness-levels of higher education faculty (university and community college), K-12 teachers (with an emphasis on the unique needs at the middle level), preservice teachers (community college transfer, university native students, and teacher candidates), and recently high school and middle level students who may be interested in being teachers in the future. My challenge was to establish learning communities that involve many key players as change agents using data-driven decision-making to build and design this shared vision. (Love, 2002)

• An Overview of the Teacher Quality Enhancement Project

In order to understand the genesis of the CATs Institute project, we need to spend a few moments reviewing the history of the TQE Project. The Illinois State Collaborative for Teacher Quality Enhancement was initially funded by the U.S. Department of Education (FY’s 2001 to 2005) and matched by targeted state funding through the State
of Illinois Legislature (FY’s 2001 to 2010) as well as in-kind support by TQE partners. The original partners of the TQE grant included the Illinois Higher Board of Education (IBHE), the Illinois State Board of Education (ISBE), the Illinois Community College Board (ICCB), Chicago State University (CSU), Northeastern Illinois University (NEIU), Southern Illinois University—Carbondale (SIUC), and Southern Illinois University—Edwardsville (SIUE). Each of the four university partners established local partnerships with the community college system and the public, parochial, and private K-12 schools. The CSU systemic network included the Community Colleges of Chicago (Kennedy-King, Olive Harvey, Malcolm X, Daley, Harold Washington, Wright, and Truman), Triton, Oakton, Moraine Valley, Southeastern, and Prairie State community colleges. In addition, we had the involvement of the Chicago Public Schools, the Diocese of Chicago, and the South Triad Schools. Please see Table 1: Original Goals of the State of Illinois Collaborative Teacher Quality Enhancement Project located on the following page.

Our underlying belief system regarding organizational change is that the individuals within them must learn and change. To make high quality education available to every child in the U.S., educational organizations and larger systems must improve. Those wishing to promote organizational improvement or wishing to study it recognize the need to focus on the individual (Fullan, 1993; Tyack & Cuban, 1995). We also note that within higher education, previous studies have highlighted similar organization factors as key to faculty change projects, for example, the importance of departmental chairpersons and the challenge of too little planning time (Blackburn & Lawrence, 1995). Yet, research typically falls into either individual- or organizational-level frameworks and does not account for the interactions between the two.
Table 1: Original Goals of the State of Illinois Collaborative Teacher Quality Enhancement Project

Goal 1: Develop a middle-grade certificate.

Objective 1.1: Specify certification requirements for middle-grade teachers.
   Activity 1: Convene Standards Advisory Panel
   Activity 2: Recommend draft certification standards
   Activity 3: Draft legislation

Objective 1.2: Establish middle-grade teacher preparation content-area and pedagogy standards.
   Activity 1: Develop/recommend integrated content and pedagogy standards
   Activity 2: Convene an Assessment Advisory Panel

Goal 2: Improve the knowledge and skills of middle-grade teachers, with an initial priority on teachers serving high-poverty urban and rural areas.

Objective 2.1: Develop curriculum and computer-mediated courseware design expertise of 2- and 4-year education and arts and science faculty.

Objective 2.2: Design or redesign standards-based middle-grade teacher preparation curriculum and assessments based on Illinois content and pedagogy standards.

Objective 2.3: Develop the Middle-Grade Leadership Academy to provide hands-on, on-site clinical and other professional development for higher education faculty, in collaboration with middle-grade educators.

Objective 2.4: Design a framework for an Illinois Virtual Middle School/Teacher Preparation Institute.

Goal 3: Develop and implement recruitment activities to increase the supply of effective middle-grade teachers, with initial priority on high-poverty urban and rural areas.

Objective 3.1: Expand the comprehensive data analysis system to identify teacher shortage and high-need areas in the middle grades.

Objective 3.2: Identify and/or design and replicate successful, comprehensive recruitment models for increasing the number of candidates for middle-grade teacher preparation in high-poverty urban and rural areas, including Empowerment Zones and Enterprise Communities.

Objective 3.3: Develop a public awareness and outreach campaign that promotes teaching as a career and facilitates the recruitment of high-quality traditional and nontraditional candidates to teaching, with an emphasis on teaching in the middle grades.
   Activity 1: Develop virtual support systems for recruitment and applications
   Activity 2: Develop a statewide recruitment message and a multimedia campaign strategy

The TQE Project merges the individual- and organizational-level framework concepts seamlessly and involves key players such as department chairs, deans, presidents, and state officials. As a result, these goals have become part of the working language at our university, our partner institutions, and increasingly so in the language within policy circles in the State of Illinois. The mindset has changed over the last six
years enough that our controversial decisions are no longer considered controversial.
Rather our work is now considered to have set a new trail to be followed.

On occasion, supporting grant initiatives were written and funded to address any
gaps discovered in the original vision of the grant. Funded matching grants included
several to provide professional development for the middle level science, math, and
technology teachers at our partner schools, as well as remodeling costs and equipment for
a new model middle school science and mathematics laboratory. More recent grants
include monies for technology infrastructure in the form of wireless technology, a COE
laptop initiative, and projection systems.

Additional technology professional development has been provided for our
partners through collaborations with EPIC, the Tera-Grid Project, TeacherTECH, EOTPACI, NSCA, and NSCI, among others. Since I have gotten to the stage where I
recognize my limitations in personally providing professional development in technology
to other faculty, I am now in the business of establishing partnerships with such other
experts. They need our “empowerment zone” audience in order to meet their funding
requirements as much as I need access to the funding to bring the expertise here. This is a
win-win partnership. Furthermore, I am learning alongside my faculty; yet as their leader,
I am trying to keep an eye on what we will need to learn in the next stage of development
by attending conferences and viewing the work of others in a variety of fields.
• **Previous Accomplishments: TQE Leadership Teams I, II, III, & IV**

The first goal of the state-level TQE grant was to establish a middle-grades certificate. This goal has been only partially met because the actual grant partners do not have the authority to enact such a certificate. The political culture surrounding education in the state of Illinois can almost be described as existing in two camps: Chicago and the rest of the Illinois. The very need to establish a middle-grades certificate was thwarted by the louder voices in the rural districts who are afraid of not having enough teachers to cover their classes. This dissent process was enough to derail the political process of establishing a middle grades certificate three times. What we did accomplish was to ensure that all middle-grades teachers must be highly qualified and obtain middle grade endorsements. The middle grades standards were approved for the state of Illinois and teacher certification programs must provide accountability that their candidates are being prepared to meet the highly qualified status at the middle level.

The fallout seems to be that many teacher certification programs are encouraging their elementary education majors to be doubly certified as elementary (K-9) with an emphasis at the primary level and as middle elementary (K-9) with an emphasis at the middle level (grades 5-9). In addition, we can see that many teacher certification programs are encouraging their secondary candidates to pick up the equivalent 6-hour coursework or are infusing the coursework into their programs so that those candidates are also highly qualified at the middle level. We may not have secured the actual certificate, but we have raised the level of preparedness for teachers at the middle level.

The bulk of our work on the Teacher Quality Enhancement Project has been to address the issues under Goal 2: Improve the knowledge and skills of middle-grade
teachers, with an initial priority on teachers serving high-poverty urban and rural areas, by providing a mechanism that has made systemic change possible. The initial work of the TQE has fostered discussions and solutions based on the creation of the middle level programs that include undergraduate, post-baccalaureate certification, and graduate Master of Arts in Teaching. The process of unbundling and re-bundling content packages has led to numerous transfer agreements and decisions that are streamlining the transfer process for all students across the campus, even those who are not middle level program candidates. In addition, the impact of our joint decisions for the community colleges has led to the Associate of Arts in Teaching (AAT) models and the possibility of revisiting the curriculum for paraprofessional programs.

The stress of the transfer process is becoming less burdensome (from my additional perspective as an advisor). More community college students are using the transfer agreement web pages I helped design to plan their courses at the community colleges to ensure the cleanest transfers possible including more transfers of whole sequences, especially in math and science. The AAT degree model requires that students pass the Illinois Test of Basic Skills (ITBS) prior to degree completion. Our college has decided to accept AAT degree students directly into our College of Education Professional Course Sequence in order to further streamline the transfer process for students across institutions. As a result, those candidates who present a passing score on the ITBS prior to admission to CSU are being waived from our university placement exams. This policy applies to all majors whether or not an AAT or even an AA degree has been posted to the candidate’s transcript.
The Colleges of Education and Arts & Sciences at CSU have a number of initiatives in place to promote involvement of arts & science faculty in teacher education. During the original TQE federally funded timeframe, our Dean decided to establish the Dean’s Professional Development Initiative award. Successful awardees prepared proposals in the areas of research, assessment, or system-wide collaboration efforts in teaching or other educational endeavors that favorably impact the college, university, and community at-large. The awards come with a stipend that is now funded through the COE Dean’s budget (not TQE.) However, the DPDI committee does include TQE Leadership Team members in deciding RFP criteria and evaluation criteria that can further the goals of the TQE project proactively.

Another activity was the creation the Secondary Education Council (SEC) and the inclusion of an A&S faculty member on the COE Dean’s Council. This was done to improve communication and collaborative activities across the two colleges. The SEC provides a forum to help both the renewal of methods courses for secondary methods/student teaching and that of the general education support courses. Nearly all of the SEC members (faculty representatives and chairs) have actively participated in TQE activities and many of these individuals represent other faculty who teach courses essential to the middle school program as well as all other teacher preparation programs. The TQE meetings that involved the chairs in planning curriculum issues and course offering schedules have been subsumed, in part, through the SEC. Now that all ELED and Secondary majors earn a middle level endorsement as part of initial certification, middle level issues continue to be a part of the discussion. This is an example of institutionalization in that “the distinction between leaders and followers” is “obliterated”
as “structurally defined” to allow the emergence of “democratically” elected individuals to leadership roles. However, the “structurally defined” leadership (i.e. chairs, deans, presidents, etc.) work to enact the will of the group until the process or goals become part of the main culture and are no longer considered new. This approach is considered “morally desirable but also practically feasible” (Rizvi, 2002, p. 206).

Goal 3 deals with issues of recruitment into a program, persistence into keeping the recruits enrolled, and retention of these novices in the school setting after graduation. In order to learn more about this, we have been following the TQE middle school cohort through their transition from the partner community colleges to CSU and beyond. The variables include ethnographic details, the pathway(s) of awareness/attraction through acceptance, readiness levels in basic skills and technology, test score data in basic skills, content area, and pedagogical content knowledge.

In addition, we are keeping anecdotal records that may someday help us conduct research and find meaningful patterns that may be of use. The data collected thus far have provided the impetus for collaboration with our community college partners to isolate pathways from which to attract and sustain potential teachers at the middle level. We have partnerships with faculty partners at both Olive Harvey Community College and Daley Community College that specifically are designed to recruit candidates and/or provide support in preparation for the ICTS Basic Skills Test. With only 5 graduates out of 155 majors in the initial cohort thus far, it is too early to pronounce any judgments on our success in this effort.

In effect, the TQE Leadership Academy structure was designed to establish and to sustain systemic reform through an explicit effort to develop the educational leadership
potential of our faculty partners at the university and community college levels. This has been done through professional development mini-grants for TQE partners, support services through the Teachers’ Writing and Resource Center, and through projects that increase the skills and content expertise of higher education faculty, such as the development of the middle school undergraduate and graduate programs, online module curriculum development for both the adult and middle level learner, and the development (TQE LA V) and implementation and formative assessment (TQE VI) of the Cougar Academy for Teachers (CATs) Institute as a capstone project. (There is a nice summary of the National Staff Development Council Standards for professional development in Sigford. (2006, pp. 108-109) The CATs Program, therefore, meets the requirements for both Instructional Leadership and Educational Leadership as two parts of one whole. Subsequently, CATs is the main focus of this paper.

We were particularly interested in how the faculty journeys in teaching proceed over time and whether their beliefs and actions held steady or (re)formed. We also are watching for how well faculty partners are able to articulate their belief systems and rationales for creating and reflecting on this change process. (Re)forming teaching practices is a complex, dynamic, and involved process. At the beginning, people grab onto familiar, reliable constructions of reality in order to attach meaning to the new experiences. The meaning of change is rarely clear at the outset. Schon (1971) wrote that all real change involves “passing through the zones of uncertainty . . . the situation of being at sea, of being lost, of confronting more information than you can handle” (p.12). (Schon (1983) further explores how teachers think ‘in action’ in subsequent research projects.) Change in educators’ practice comes about through a process of
“disequilibrium and reconstruction” within the educators, as they reshape their understandings and beliefs about learning, the nature of content knowledge, the depth and flexibility of their own content knowledge, and their toolkit of instructional practices (Nelson & Hammerman, 1996).

Due to the context-specific nature of teaching, individuals turn to their actual contexts—their students, their institutional supports and barriers, their motivations—to enable the change. Change is a journey, not a blueprint. As Fullan (1993) writes: “When you go deeper you go different. What appears to be a linear track becomes a new world” (vii). Change brings about “periods of cloudy thinking, confusion, exploration, trial, and stress, followed by periods of excitement, and growing confidence” (p. 17) both for the educator and the students.

Change is further complicated by “situations of uncertainty, concreteness, and simultaneity of stimuli to be confronted. (Huberman, 1999, p. 308) Teachers of mathematics and science know that controlled experimental conditions offer great advantages in learning about causes and effects. Yet within the classroom, there are too many variables to control and others that cannot morally and ethically be controlled. Teaching must involve a high level of thinking on one’s feet, making quick professional judgments. The quantitative measurement of change in these ways is problematic when class sizes are small, student backgrounds diverse and changing from term-to-term, and the interplay of content, pedagogy, and assessment complex.

Sherry and Gibson (2002) best describe the challenge of creating the CATs model we used the best as an exercise in educational leadership development. They state that “any new model must deal with the complex interrelationships among the many key
actors and parts of the system. It must provide a framework and language for describing many simultaneous interactions. It must represent the flow of resources in a system over time. And finally, the model must make visible both the patterns and the extent of involvement of the various players and parts of the system.” (p. 1) Furthermore Codd (1989) points out that “educational leadership can and should be both reflective and active.” (p. 157) He believes that educational leadership is a “form of reflective action” that “requires a reconceptualization of the relationship between theory and practice.” (p. 167) In order to accomplish this we are exhorted to view educational administration through both an “executive and critical-reflective dimension.” (p. 176)

• Leadership Academy V—Developing the CATs Institute

The CATs Institute (growing, as it does, from the TQE Project [in part]) is designed to increase the awareness of teaching as a profession and to improve the readiness-level of potential future teachers. We were now asking the TQE Leadership Academy Design Team to move from theory to practice in the development and implementation of the CATs Institute (which includes the Cougar Kids Academy for middle level students.) The process is an exciting twist that gives our community college partners experience in educational leadership through curriculum design as well as provide our high school students the opportunity to experience the role of a middle level teacher. In addition, the middle level students get hands-on exposure to science.

The Backwards Design Model (Wiggins & McTighe, 2001) was chosen to serve as the external frame for the agenda and binder organization for CATS documents in an effort to streamline the design process. (See Appendices A to C.) The Backwards Design Model takes the curriculum design expert through three stages by asking the following
leading questions adapted from Wiggins & McTighe: *Stage 1*—‘What is worthy and requiring of understanding?’ or ‘What do I want them to know and be able to do?’ (Curriculum/Goals/Objectives), *Stage 2*—‘What is evidence of understanding?’ or ‘How will I know they know it?’ (Assessment), and *Stage 3*—‘What learning experiences and teaching promote understanding, interest and excellence?’ or ‘What needs to be done to accomplish it?’ (Instruction).

Many of our faculty partners are more likely to view and use the traditional approach to creating and implementing an educational plan (i.e. the concepts of Curriculum, Instruction, and Assessment (CIA). (See Appendix D.) However, I wanted to reframe the “Create the Vision” process using the Backwards Design Model. Reframing is best defined as “deliberately looking at something through an entirely different lens.” (Kaser et al, p. 29) My approach was to assign targeted topics (based on the Backwards Design Model) on which team members could reflect and report to the group. Shaking up their previously held assumptions, expectations, perceptions, and belief systems led to very creative results in our situation.

The CATs Vision topics (which will be explored in more detail in the subsequent paragraphs) included: The What We Want—Content/Skills, The What We Want—Structure & Schedule, The How We Know (Initial), The How We Know (Refined), and The What to Do. The last homework assignment for the Leadership Team was to prepare a presentation to pull these components together in an effort to help faculty make the transition from novice to expert in terms of the articulation of key ideas and concepts to academic peers as an educational leader. The entire process was captured in a summary form as a PowerPoint presentation (Appendix E) that was extended and shown each day.
(and sometimes each session) with new group decisions, a review of major concepts in the development process, and/or the instructions to complete the next task.

The following themes (and subsequently self-appointed design teams) emerged from the early discussions of “what we want” in the areas of content or skill:

1. Integrated Teaching Project,
2. Basic Skills/Study Skills,
3. Exploring the University,
4. Teaching as A Profession,
5. Technology for Teachers,
6. Recreational Activities.

(See Appendix F.) The new design teams were then asked to reflect that night and come back ready to hash out the specifics of what we wanted to know for each theme. These themes later were subsequently referred to as classes for our future high school level students (as teacher candidates). The specifics were then merged into the proposed class structure format and schedule to include specific sub-topics for each class as shown in Appendix G.

The design principles used to guide faculty in developing the curriculum for their CATs class design team project include accessibility, use of engaged/inquiry-based learning, teacher as facilitator, use of higher order thinking skills (HOTS), use of cooperative/collaborative learning, multiple types of communication, using technology-enhanced/supported learning, transfer of inquiry skills into real life learning situations, and authentic assessment. Each of these design principles involves parts of the cognitive, social, and affective domains that are so essential to learning. Please see Table 2 (on the next page) to see how the design principles chosen reflect the three learning domains.
Table 2: Design Principles

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<th>Cognitive Domain</th>
<th>Affective Domain</th>
<th>Social Domain</th>
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<tbody>
<tr>
<td><strong>Accessibility</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>Engaged/Inquiry-based Learning</strong></td>
<td>✓</td>
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<td><strong>Teacher as Facilitator</strong></td>
<td>✓</td>
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<td><strong>Higher Order Thinking Skills</strong></td>
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<td><strong>Cooperative/Collaborative Learning</strong></td>
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<td><strong>Multiple Types of Communication</strong></td>
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<td><strong>Technology-enhanced/Supported Learning</strong></td>
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<td><strong>Transfer of Science Inquiry Skills into Real Life Learning Situations</strong></td>
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<td><strong>Authentic Assessment</strong></td>
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The first principle is *accessibility*. If a learning environment is not accessible, then what’s the point! The working definition of accessibility was best defined by Tufte (1983, p. 191) as a “clear portrayal of complexity. Not the complication of the simple; rather the task of the designer is to give visual access to the subtle and the difficult – that is, the revelation of the complex.” Another level of accessibility can be described in terms of whether or not the intended audience can relate to what is being taught. Tate (1994) speaks to this issue in terms of preparing mathematics curricula that at-risk students can understand. Examples need to be drawn that help students directly identify what is being taught. Blumenfeld, Soloway, Marx, Krajcik, Guzdial, and Palincsar (1991, p. 376)
argues that “choice and control are critical to enhance motivation to work on classroom tasks. Project design can allow students to exercise choice and control regarding what to work on, how to work, and what products to generate.” Ultimately, the act of balancing the “students’ need for choice and control in the selection of problem questions, approaches, and artifacts” leads to the feeling of “ownership.” (p. 377)

The second principle is engaged/inquiry-based learning. Krajcik (1998, p. 341) believes that a project which uses “sustained inquiry should be a key element in . . . education. Martin (1997a, p. 196) says that in general, “the teacher sets the direction and the children ask questions which, in turn, set new directions.” The amount of direction given or the amount of freedom allowed depends on how the investigation is set up from totally guided inquiry to open inquiry. Ideally, in an engaged setting, students are actively involved in how they design an experiment, “discuss their conclusions with one another and with the teacher to confirm validity” and often “embark on further investigation to develop revised conclusions and reconstructed conceptualizations. (p. 342)” Krajcik (1998, p. 341) believes that this should lead to “more thoughtful and robust . . . learning.”

The engaged /inquiry-based learning instructional strategy often incorporates the teacher as facilitator mode of operation. This principle can be used in other settings besides an inquiry classroom which is why it is named as a separate item. One of the main goals of being a teacher-facilitator is nicely described by Holt-Reynolds (2000, p. 22): “Increasingly, we ask new teachers to learn how to elicit student participation and then use students’ existing ideas as a basis for helping them construct new, more reasoned, more accurate or more disciplined understandings. We ask them to learn how
to actively engage students’ participation and then use that participation as a context within which to do this thing we call ‘teaching.’”

The National Research Council (1996, p. 32) listed the following criteria regarding the role of a facilitator:

- “Focus and support inquiries while interacting with students.
- Orchestrate discourse among students about . . . ideas.
- Challenge students to accept and share responsibility for their own learning.
- Recognize and respond to student diversity and encourage all students to participate fully in . . . learning.
- Encourage and model the skills of scientific inquiry, as well as the curiosity, openness to new ideas and data, and skepticism that characterize science.”

These recommendations show some overlap with other principles, as might be expected.

Getting the students to effectively use their ideas for being engaged would require the use of higher order thinking skills (HOTS). Tileston (2000, p.15) says “that higher order thinking is a basic part of being information literate. This involves the ability to analyze information, extrapolate key points, generate a hypothesis, draw conclusions, and find viable solutions.” McNeil and Wiles (1990) believed that teaching with HOTS is unlike a didactic teaching approach. They describe it as follows: “Rather than using questioning to drill or check learning mastery, teachers engage students in discussions with highly-defined response questions. The teacher listens to the student’s speech (or thought) and then extends those thoughts through higher-level questions. These questions result in additional intellectual participation by students. (p. 214)” Examples of HOTS include critical thinking, creative thinking, and problem solving. (Tileston, 2002)
Another principle that sometimes is involved in engaged learning (but just as often not) would include cooperative/collaborative learning. Sanders (2001, p. 10) claims that “society recognizes the importance of community and teamwork to achieve excellence.” They believe that a good learning-centered course “encourages cooperation among students.” They believe that since humans are socially motivated, “sociability can be encouraged and enhanced to include scholarly study.” This echoes Ted Sizer (O’Neil, 1995, p. 12) who says that the “real world demands collaboration, the collective solving of problems.” Sizer also says that “Evidence and experience also strongly suggest that an individual’s personal learning is enhanced by collaborative effort. The act of sharing ideas, of having to put one’s own views clearly to others, of finding defensible compromises and conclusions, is in itself educative.”

Since students need to build social lives, it is important to model multiple types of communication. Sanders (2001, p. 10) believes that one the of “key good practices in a learning-centered model of education is good faculty-student communication.” This need for communication is articulated well by Rogoff and Toma (1997, p. 475) who says that developmental learning stems from “multifaceted participation in ongoing shared activity. The roles of those who aid them is to lead and facilitate their transformation of participation in the activities, but not to fully control it or to simply transmit information.” Activities that Sanders recommends include email, online threaded asynchronous discussions, and synchronous chat sessions.

Using technology-enhanced/supported learning should be considered an essential principle for designing learning environments. The examples from Sanders (2001) that fall under communication conveniently use technology. Why else would technology be
so important to use? Martin (1997b, p. 361-3) has several reasons: “One reason for employing computers and advanced technology in our schools: they are used everywhere. A second reason . . . is that many children are accustomed to using it at home. . . . Third, . . technology is used to gain access to amounts and types of information previously unavailable to children. . . . Fourth, technology . . . provides speed, accuracy, and convenience in inquiry investigations. . . . Fifth, technology can be used to provide learning experiences suitable for individual needs of children. . . Finally, perhaps the most compelling reason for using technology in elementary . . . education is that scientists use it. One of the premises underlying elementary science education is that children should do science, not just read about science, and that children should do science the way scientists do science. This means using technology.”

Tomei (2002a, p. 72-3) believes that technology is a “potent tool” to explore academic topics. Tomei states that “at this level, learning outcomes center around identifying instructional materials, analyzing their component parts, integrating these components, and understanding the organizational principles involved in their application. . . . Technology for integration acts on the component parts of content material and reassembles them for better learner understanding. (p.73-4)” Technology for technology’s sake does not make sense.

All of the previous principles are in vain if there is not a successful transfer of . . . inquiry skills into real life learning situations. Wolfe (2001, p.138-9) says that “many of our strongest neural networks are formed by actual experience.” He stresses that one can “take advantage of this natural proclivity by involving students in solving authentic problems in their school or community” which echoes some of the words of John Dewey.
In addition, Wolfe feels that with “a little research and creative thinking, teachers can find actual problems in their own schools and communities for the students to solve. (p 139)”

The last principle is authentic assessment. Tomei (2002b, p. 195) defines authentic assessment as a type of assessment that addresses “problems of everyday life.” These may include examples such as “student investigations and showcase portfolios.” Carin and Bass (2001, p. 219) states that “to be an authentic assessment, the performance test of any skill or the application must be as close to the ‘real thing’ as classroom conditions allow.” It is the context of the assessment that is the important note. Assessments need to be designed in such a way that they will allow the student to demonstrate their ability in situations that closely mimic real life. Science laboratory experiments lend themselves well to this situation. Krajcik (1998, p. 341) reminds us that the “benefits of engaging students in investigations to answer authentic questions are substantial.”

In an effort to increase the awareness of assessment issues and concepts and to understand how assessment should inform instruction, we framed the assessment process as a regenerating cycle (See Appendix H: Assessment Cycle). The plan was to use this cycle as both a development process for the curriculum itself (of the integrated thematic project) and as a way to explore whether the high school student participants had a meaningful learning experience while completing the integrated thematic project curriculum. In a specific sense, we wanted the TQE Leadership Design Teams to focus at different levels of analysis in constructing essential questions and to address the following guiding principles in developing their individual action plans: (1) to elicit
initial CAT candidate ideas to help their middle level students begin to think about the concepts (standards), (2) to place CAT candidates in a better position to address student difficulties and build on student strengths, and (3) to aid in the development of instructional materials that will be tested in a classroom setting.

In addition, we required that the designers plan the Integrated Thematic Project so that the candidates themselves would need to use the assessment cycle in their planning of a mini-workshop modeled after the one we would teach them. This kids-teaching-kids project (later named the Cougar Kids Academy) was intended to have CATs Scholars meet the following requirements: (1) Design a stand alone 30-minute lesson on a selected topic covered in your integrated project, (2) Demonstrate that they have utilized results of pretests to address specific student needs, and (3) Submit lesson plan, rubric, portfolio evidence, reflection on the growth of their teaching & learning practices, etc.

In particular, this assessment cycle was intended to capture the whole process of development of the pre-assessment, through administration of the pre-assessment, instruction, and subsequent post-administration of the assessment for the student candidates in their mini-project as much as it was an exercise in educational leadership and curriculum design for the community college and university faculty participating in the TQE Leadership Academy V (in 2004-2005) (and the follow-up TQE LA VI (2005-2006) workshop series. An Action Plan exemplar for one class/theme at the faculty design-team level can be found in Appendix I. In addition, the last stage of the TQE Leadership Academy V workshop series was to decide what was left to do and agree on a plan for when to do it (in year TQE LA VI.) The final list of committees and the proposed timeframe for implementation can be found in Appendix J.
• **Leadership Academy VI—Recruitment Plan and Development of Recruitment Materials**

The Leadership Academy VI Leadership Team met to take the framework that was designed during the TQE LA V and make it a reality. As part of that process, our partners received a crash course in public relations, marketing, and the hassle of getting approvals to print and distribute materials to local schools and other partners as part of the recruitment process. As a result, the CATs Institute, held in Summer 2006, was publicized as being designed to:

- Prepare a high school student to meet the challenges of college
- Increase the awareness of teaching as a profession
- Improve the potential to perform well on the ACT exam
- Enhance technology-readiness skills necessary for success
- Enhance a student’s ability to work as part of a team
- Provide early teaching experiences

Materials were distributed to high school counselors via “snail mail” and via email to science and math teachers who had been TQE contacts, and through state-level and school-district listserv mechanisms. Please see Appendices K and L for the invite letter and brochure documents, respectively. One copy of the application (Appendix M) was also sent. Additional copies of all of these documents were posted online at [http://www.csu.edu/tqe/CATs/](http://www.csu.edu/tqe/CATs/). In addition, we posted notices and published applications online for the subsequent Cougar Kids Academy for middle level students (Appendix N) and for the Chicago State University and Community College Partners (CSU/CC) Future Teachers Club mentors and tutors to assist with the CATs Institute (Appendix O.)
CSU/CC FTC members can use our program to earn points towards scholarships offered by the organization and gain meaningful experience in teaching.

**Leadership Academy VI—Development of Program Evaluation and Curriculum Assessment Components**

During the TQE LA V workshop, the faculty participants designed individual assessment components for each of the proposed lessons in their thematic course areas. However when the whole TQE Leadership VI team sat down to streamline the curriculum, it became apparent that some of the proposed lessons would never be used. We decided that the TQE V process was not in vain, however, because at least our faculty partners were given a chance to experience the whole process through the development of a sample project. Please see Appendix P for the Revised Curriculum Schedule.

During the redesign process in the TQE LA VI workshop series, a set of curriculum pre-assessments was designed. The technology committee created a short technology-readiness survey that was administered through our BlackBoard class site (Appendix Q). In addition, a set of ACT and basic skills pre-tests were selected from pre-existing resources already being used as part of the Teachers’ Writing and Resource Center programs for teacher candidates. The basic skills pre-tests are derived from the same set of test objectives as the ACT exam (Appendix R.) The pre-tests would then be used to individually tailor a study plan for CATs Scholars.

In addition, the program evaluation committee designed an instrument (in Appendix S) to evaluate the perceived effectiveness of the program as determined by faculty and students alike. The idea is that the emergent lessons from this program evaluation will be used in preparation for the Year 2 CATs curriculum. To supplement
the program’s evaluation process, we designed a simple daily evaluation form (Appendix T) because it was noted that not all students might be able to handle the high reading level of the original and that a few of them would be leaving the program early.

- **Leadership Academy VI—Implementation of the Cougar Academy for Teachers (CATs) Institute**

  This month-long experience used a science mystery workshop as the context for the Integrated Teaching Project. We taught the process of teaching in preparation for a mini-workshop (Cougar Kids Academy) in which the high-school students became the teachers for a group of middle school kids. In addition to the science mystery workshop experience, the high-school participants were assessed in their basic skills readiness and received instruction and individualized tutoring to prepare for the ACT exam and in Study Skills. Part of the Institute also focused on Teaching as a Profession and incorporated team building activities, touring the campus, and opportunities for recreation.

  Many of the Teaching as a Profession activities were folded back into the Integrated Teaching Project so that the lessons on pedagogy, lesson planning, lesson preparation, assessment, and reflection, etc. were being learned in context of the lessons the high school students were planning to teach as teachers themselves. Please see Appendices U, V, W & X for representative samples of how the backward-design process was used to re-design the laboratory lessons. Appendix U is an original laboratory experiment as written by a TQE LA V community college faculty member team. Appendix V is a simplified backwards-design lesson plan created a several days in stages using the concepts of Wiggins & McTighe (2001). Stage 1 was to decide what was worth
knowing. Stage 2 was to decide what questions would be needed to determine that a Cougar Kid actually learned or could do whatever was worth knowing. We used a Bloom’s taxonomy flip chart as a reference (EduPress, 1997) and asked them to apply what they had learned in the Teaching as A Profession class about the Bloom’s levels of learning by creating appropriate questions for each level. The third stage (planning the instruction) can be found in Appendix W, the CATs Scholar design team’s revision of the laboratory experiment. The last unofficial stage before bringing in the Cougar Kids was to plan our teaching script. For this CATs Scholar Team, their script can be found in Appendix X.

Similarly, the technology lessons were also infused into the Integrated Teaching Project. Students used technology to plot graphs and analyze them in real-time as specific experiments were being conducted. In addition, students created lesson plans, lesson overview PowerPoint presentations, and an iMovie designed to teach skills and encourage reflection on the process of learning to become a teacher while recognizing the need to be a life-long learner. Please visit http://www.csu.edu/tqe/CATs/ to view a CATs Showcase movie created by Lea, a 17-year old rising junior and 2006 CATs Scholar. Two movies created by Lea can also be found on a companion CD listed as Appendix Y.
Leadership Academy VI—Lessons Learned From the CATS Institute
Curriculum Assessment and Program Evaluation Plans

The reality of running a pilot program such as CATs means that the best-laid plans often go awry. In our case, I had made a conscious decision not to interfere after a certain point so that our faculty participants would have the experience of learning from potential failure, whether by omission or commission. In one instance, I had interfered early in the process to fix the Mystery Solutions lab (Appendix Z) that was based on one of my own labs in a previous laboratory manual publication (Grim in Eichstadt, 1992). This was one lab that needed the process of inferring relationships precise and clear. At the time I felt it was more important to have it correct so that the CATs Scholars would understand the process well enough to transfer that skill to other labs and to the Cougar Kids. In fixing it for the students I irreparably damaged the process for the faculty. As a result that lead faculty member assumed she had no changes to make in the future. As a further unintended result, CATs Scholars did not find anything to recommend as a change for this lab. It was painful for me not to interfere but it forced the opportunity to have a meaningful learning experience from the faculty point-of-view. Please see Appendix AA for evaluation feedback from students and faculty.

The CATs Institute pilot implementation was favorably received by the CATs Scholars, their parents, and the TQE LA VI faculty involved. Although rough at times, the students did show growth in the concepts being measured, although not as well as one might hope in specific cases. For example, some faculty did not plan their pre-assessments well enough to address all the concepts that were being taught. Some faculty had trouble being realistic as to the target depth of a concept for high school and middle...
school students. This was particularly true for the criminal justice and chemistry professors involved in the Integrated Teaching Project. Other faculty sat in meetings where we examined the pre-assessment results, yet did not follow through on plans to adjust the curriculum accordingly. (Please see Appendix AB for the pre-assessment document.) However, since the CATs Scholars were learning the curriculum process as a cycle as well, the faculty mistakes actually gave the student learners an opportunity to recommend changes for their turn as teachers.

An additional challenge for the faculty involved the CATs Scholars’ propensity for learning topics faster than planned by the faculty partners. Each evening we, as faculty, met to discuss where we were, what to move up, what to add, and what to change for the coming day or two. The technology committee was particularly creative in discovering that we needed to split the group into two so that we had a novice and advanced set of technology projects. We eventually were able to merge the two groups back together when it came to the final lesson planning stage (using the advanced members’ versions of the projects) and during the creation of the iMovies. The advanced members tutored the novice set to catch them up in skill level while still getting the opportunity to play on computers. (The laptops were their favorite activity every day.) In the end, the laptops were out almost constantly, since we decided to infuse that form of technology into everything. Notes were taken, reflections were written, projects were posted on BlackBoard, sessions were held on Elluminate, and discussions were conducted with partner teachers and administrators using the Discussion Board. Even labs were recorded and analyzed in real-time using Excel to record data and create
graphs. Please see Appendix AC for the Final Version of the CATs Schedule as it actually occurred during the Summer of 2006.

Other lessons were learned from the CATs Scholars as they prepared to be teachers for the Cougar Kids Academy. [The CATs Scholars helped us to plan the schedule for the Cougar Kids Academy (Appendix AD.)] We learned that it was useful to have mixed ages/grade groups for each laboratory experiment team. A senior or junior served as team leader to keep the group on track, particularly since the younger students (in grade 8) were more likely to get distracted. We also learned that the teachers-training-teachers rotation model previously used in projects such as Chemistry Camp was more difficult when attempted with a kids-teaching-kids model. Perhaps this was true because we had a larger number of grade 8 & 9 CATs Scholars than sophomores, juniors, or seniors. The students had trouble pacing themselves and ensuring that if there was lag time it was used effectively rather than dissolving into play time. We will need to experiment with other models in future years to see which is the most effective process.

Although everyone admittedly had fun, I am not sure that the youngest Cougar Kids Academy students actually learned anything in depth more than the “Gee, Wow, This is fun” response. Most Cougar Kids Academy students did not attempt to answer the questions on the CATs Scholar designed assessment (Appendix AE). When I asked several Cougar Kids about their nearly empty forms, they said that they did not understand the questions. I believe that the reading level was still too high, since we attracted many elementary kids at the intermediate end of the middle-level spectrum. This point was useful for discussion after the fact but not useful for determining meaningful growth or that knowledge was transferred from faculty to CATs Scholar (student/teacher)
to Cougar Kid (student peer). I had hoped this would provide some insight into this larger question, but it appears that we will have to re-think how to assure that this is being done well for CATs Year 2 (TQE LA VII in 2007.)

It became apparent that we were going to need a mechanism to sustain the growth we had started in the Cougar Academy for Teachers Institute. We realized that it was going to take much more effort than a paltry four weeks to make gains in basic skills since we are committed to individualized study plans. As a result, we gained permission to establish the CATs Scholars and Cougar Kids Homework Club in partnership with the CSU/CC Future Teachers Club. The club is scheduled beginning Fall 2006 Mondays to Thursday’s from 4 p.m. to 8 p.m. The CATs Homework Club members get the individualized attention they need to grow exponentially (we hope). The application for the CATs Homework Club may be found in Appendix AF. The Tutor/FTC CATs HW Club Sense of Agreement may be found in Appendix AG. In addition, we have scheduled monthly workshops on Saturday mornings for the CATs Scholars in conjunction with the CSU/CC FTC meetings. We hope that this will allow cross-fertilization between the two groups and benefit all involved.

The process of developing and subsequently teaching the CATs Institute for our community college partners had the most striking results. We monitored the change in their ‘theory-in action’ (Argyris and Schon, 1974) daily and final reflection reports and noted that faculty began and ended in different places, but all grew towards the goal of becoming more effective teaching practitioners. Specific anecdotal lessons included a growth in awareness of the faculty role in the preparation of teachers. Some faculty had never taught high school students nor assisted in the teaching of middle level students.
Faculty reported that they had not realized that perhaps they are not responding to appropriate scope and sequence issues in their own classes. A few vowed to examine their own classes in more detail in the future. In addition, the opportunity to expose them to the assessment cycle has empowered them to take ownership of the teaching and learning process.

Just as the growth for the CATs Scholars needs to be sustained, so too is the need to sustain the growth for the TQE faculty partners. In the spirit of authentic leadership, I have learned to continually strive to understand my own “values” and “belief systems” through “reflection” in order to effectively “build relationships” and make meaningful “choices” or decisions. (Short & Greer, 2002, p. 27) As a result, we are currently planning activities for this year (TQE LA VII) to move the faculty beyond the novice level to a more advanced level of articulation and performance. And thus, the growth continues for all of us.
Literature Citations


