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Creating a “TQM” Classroom through Cooperative Learning

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Two important trends in higher education—Total Quality Management and Cooperative Learning—happily result in compatible and creative classroom approaches. In fact, much of the TQM theory is predicated on the noncompetitive teamwork that forms the heart of the cooperative learning movement. This paper discusses how instructors using cooperative learning activities simultaneously create a TQM classroom.

Like other faculty developers, I was theoretically aware of the widespread Total Quality Management (TQM) movement. A year-and-a-half ago when my faculty development program at the University of Maryland University College became the focus of a TQM team, I found myself more directly involved as a reflective “process owner.” This experience—complete with all the “forming, storming, norming, and performing” attributes described by Tuckman (1965)—forced me to revisit and reexamine some of my long-held beliefs in teaching efficacy. Specifically, I began to look for evidence that a pedagogical approach in which I passionately believe—cooperative learning—met the process-oriented, quality-driven standards of TQM.

In this exploration, prompted initially by a TQM training film by Joel Barker (1990) entitled *Rediscovering the Future*, I also began to look at the paradigm shifts mentioned in both TQM and cooperative learning literature and to seek parallels between them. I discovered numerous philosophical and practical connections between TQM and

cooperative learning. My research and reflection have reinforced my advocacy of cooperative learning structures and strategies, and I encourage those academics who have already embraced the principles of TQM to adopt cooperative learning as a way to “operationalize” TQM tenets in their classrooms.

What is TQM?

American businesses and industries, like the Japanese, have embraced a new emphasis on cooperation and teamwork. The old images of the greedy robber baron riding roughshod over hapless consumers or the business tycoon in a gray flannel suit finessing his way to the top of the entrepreneurial heap have given way—in theory at least—to new metaphors of interdependence and cooperation. Many factors have fueled this change, often described as a “paradigm shift,” including the increasing turbulence and complexity of the international scene, fast-paced technological changes, opening markets accompanied by intense competition, and recessionary trends necessitating quality products at competitive prices. Paradigms, as Kuhn (1962) emphasizes, frame the way individuals understand and interpret the universe. Focused on paradigm shifts, the Joel Barker TQM training film emphasizes the importance of new ways of viewing the world if breakthroughs are to occur. Swiss watchmakers, for example, continued to perfect the inner workings of their precision instruments without ever noticing the work of the Japanese in digital technology.

The movement toward TQM, begun nearly thirty years ago with the work of Deming and Juran, has affected many corporations including Motorola, Ford, Federal Express, and Xerox. Many corporations have introduced cross-functional work teams, quality circles, and a variety of other small-group techniques to promote continuous improvement in the quality and timeliness of work.

Definitions of TQM are often complex and cumbersome. Sashkin and Kiser (1991) provide this relevant but succinct summary of the three most important aspects of TQM:

- **counting**—tools, techniques, and training in their use for analyzing, understanding, and solving quality problems;

- **customers**—quality for the customer as a driving force and central concern; and,
- **culture**—shared values and beliefs, expressed by leaders, that define and support quality. (p. 3)

TQM methods were first applied in the manufacturing sectors of business; within the last decade there has been a shift to the service environment, including hospitals, a shift which makes the transition to academic applications more viable (North Dakota State Board of Higher Education, nd).

How Does TQM Relate to Academia?

TQM's far-reaching ties to academia basically affect three different levels. At one level, most schools of business have already placed a new emphasis on preparing students for team work in the work place. Students of all levels are learning skills in interpersonal communication, conflict resolution, group problem-solving, and group decision-making in order to function in the contemporary business world. New pedagogical needs have been defined in a number of disciplines. The Accounting Education Change Commission (1990, August), for example, in advocating a life-long learning stance, recommends instructional methods that engage students as active, not passive, learners who identify and solve unstructured problems requiring multiple information sources. Experiential learning, group work, and technology are essential. Most business schools have specifically focused on TQM curriculum issues. The Graduate School of Business, Columbia University, for example, has established a Deming Center for Quality Management.

As Marchese (1991) and others have noted, however, TQM's influence extends well beyond schools of business in academia. Its premises are already accepted in higher education and are changing the way that colleges and universities operate on a day-to-day basis. Total Quality Management teams at my institution, for instance, are working on topics as diverse as Open Learning course development, the student newsletter, textbook acquisition and delivery, student complaint handling, computer-assisted advising, administrative paper

flow, and student outcomes in the Office of Special Program's nuclear engineering program. Gardiner (1992) notes:

Since 1989 TQM has been spreading through American higher education at a rapid pace. Motivated prominently by sharply reduced income and the need to contain rising costs, together with a desire to improve the educational results they produce, many colleges and universities are asking whether TQM can help them achieve some of the same good effects it has produced elsewhere. (p. 1)

Most of the TQM applications to higher education have occurred in nonacademic areas, as a survey by Daniel T. Seymour (1991) indicates. Issues such as registration procedures, mail distribution, and physical maintenance may or may not have a direct impact on teaching improvement and student learning outcomes. Clearly, definitions of quality in a college book store are far removed from those in a college classroom, even though they share common student customers.

Like most faculty developers—to say nothing of state legislators!—quality in the classroom concerns me a great deal, and it is in this area that TQM can potentially have its third impact on academia. Some serious attempts have been made to involve students and faculty working as teams to improve classroom instruction as a class proceeds. For example, Hau (1991) conducted class surveys to identify problem areas and then took corrective action which substantially reduced the defect rates in areas such as computer instruction and blackboard and overhead presentations. Roberts (1991), however, cautions that Hau's approach has two limitations: (a) it is likely to work only in classes where both students and professors can justify the enormous amount of time spent on the TQM process; and (b) tensions could develop because of power inequities (the professor is grading the students' team efforts) or because of interpersonal student clashes.

I would also suggest that this TQM process is too complex and time-consuming for the average teacher seeking to improve his or her teaching; students, too, may resent the time spent on assessment. Ironically, using TQM tools may not be the most effective way to produce a TQM class environment. An approach that involves a flexible, easy-to-implement classroom pedagogy such as cooperative

learning, however, can potentially strengthen classroom teaching and indirectly foster TQM tenets.

What is Cooperative Learning?

Cooperative learning—structured small group work—is becoming, like TQM, widely known, researched, and practiced in higher education. Like TQM, cooperative learning, which has an even longer history, tends to be a well-defined, systematic process. Like TQM, it is based on a set of principles and values plus specific tools to carry them out. And finally, like TQM, cooperative learning advocates think of its emphasis on student-centered learning as a paradigm shift in education.

Cooperative learning's two most critical components, which distinguish it from other less structured group work, are positive interdependence (students have a vested reason to work together and to support one another's efforts) and individual accountability (students are ultimately responsible for their own achievements and are assessed individually under a criterion-referenced grading scheme). Most practitioners also use groups to promote positive interactions: groups are usually heterogeneous in composition, mixing male and female students of high and low abilities, ethnic backgrounds, and various ages. Attention to social skills (interpreted broadly to include adeptness in such things as providing constructive feedback or asking probing questions), which faculty both model and reinforce, helps groups function smoothly. And finally, group processing—monitoring and ongoing assessment by both students and faculty—insures continued group success.

Underlying cooperative learning are powerful philosophical values, including: (a) a belief in the right of all students to quality education and to respect from faculty and peers; (b) a belief that well-conducted team learning, including provisions for mutual support, benefits all members academically and socially; and, (c) a belief that cooperation, communication, and community can be established in a classroom and are qualities urgently needed beyond the classroom.

The tools used to implement cooperative learning are commonly called structures. A relatively simple structure, such as "think-pair-

share” can be used in virtually any setting, academic or otherwise. In a classroom, the teacher poses a question and gives students at least 30 seconds of “wait time” to reflect (think). The students turn to a partner and discuss their ideas (pair). In the final stage (share), students can share ideas with the class as a whole, within their own learning team, or with another learning team. The structure “think-pair-share” is itself content-free. When content is added through the specific question, which might deal with accounting, biology, English grammar, sociology, and so forth, a specific classroom activity emerges (Kagan, 1992).

Paradigm Shifts in Higher Education

Cooperative learning is now being “discovered,” Johnson, Johnson, and Smith (1991) suggest, because it speaks to a new paradigm of college teaching. This new paradigm puts a new emphasis on delivery of the curriculum. It has resulted in part from the influx of nontraditional students—women, minorities, part-timers, adults and all the possible permutations—into college and university classrooms. It has also developed as a result of more sophisticated research on the dynamics of teaching and learning. It is increasingly evident that how we teach is as important as what we teach.

This viewpoint has gained enormous credence by the recent publication of Astin’s (1993) comprehensive study of the impact of college and university experiences on undergraduates. In the concluding chapter, “Implications for Educational Theory and Practice,” he draws some important conclusions: The student’s peer group is the single most influential factor on growth and development, followed by the influence of faculty contacts. General education curricular structure makes little difference for most of the 22 outcomes he studied. He concludes: “In short, it appears that how students *approach* general education (and how the faculty actually *deliver* the curriculum) is far more important than the formal curricular content and structure” (p. 425).

Astin’s research findings—important to faculty developers—suggest that institutions should “put more emphasis on pedagogy and other features of the *delivery system*, as well as on the broad interper-

sonal and institutional context in which learning takes place" (p. 427). Because of its impact on the peer group, Astin endorses the use of cooperative learning as an instructional method:

Under what we have come to call cooperative learning methods, where students work together in small groups, students basically teach each other, and our pedagogical resources are multiplied. Classroom research has consistently shown that cooperative learning approaches produce outcomes that are superior to those obtained through traditional competitive approaches, and it may well be that our findings concerning the power of the peer group offer a possible explanation: cooperative learning may be more potent than traditional methods of pedagogy because it motivates students to become more active and more involved in the learning process. This greater student involvement could come in at least two different ways. First, students may be motivated to expend more effort if they know their work is going to be scrutinized by peers; and, second, students may learn course material in greater depth if they are involved in helping teach it to fellow students. (p. 427)

Boehm (1992) argues that in the new paradigm of teaching and learning, we must maintain clear standards, but we should use teaching methods which help students—regardless of gender, class, and culture—learn to achieve them and to feel responsible for their achievements. Johnson, Johnson, and Smith (1991b) suggest that under the old paradigm, excellence or quality is not achieved through any value-added efforts. Instead, most colleges and universities maintain rigorous admission standards and then cull out the unfit and the unworthy. Under the new paradigm of teaching and learning, faculty would adopt what Astin (1985) calls a talent development model. This new model of excellence in higher education would encourage student and faculty development by assuming that competencies and talents are always dynamic.

Thus, both TQM and cooperative learning involve new philosophies predicated on the value of individual initiative and responsibility, but within the framework of cooperative teams. Such paradigm shifts don't always come easily. Astin (1991) notes, for example:

Some of the most important findings from higher education research have not yet been translated into practice. For example, despite the considerable body of evidence suggesting that undergraduate pro-

grams could be strengthened through greater use of cooperative learning and other “active learning” strategies, faculty members continue to rely heavily on the traditional lecture. (p. A36)

Faculty members open to change, those who are seeking to bring quality to their classrooms—as it applies to their immediate teaching goals and activities—can do so by implementing cooperative learning techniques.

Combining Cooperative Learning and “TQM” Philosophies

There is no one TQM theory or even agreement about appropriate terminology or approaches. However, as Marchese (1991) notes, from its many “gurus” (Deming, Juran, Crosby, Feigenbaum, Ishikawa, Imae), a dozen themes seem to be at its core. Of the dozen he cites, the nine that follow apply most directly to college and university teaching. In each case, it might be useful to think of the students and the teacher as cooperative teams striving for a “product” of student-centered learning. The “customer,” as Chickering and Potter (1993) remind us, should not be only the students, who often have a short-term, short-sighted investment in education: “we also have a contract with the collective social enterprise. Educating for the commonweal is not the same as satisfying students” (p. 35).

(1) A focus on quality: We must set and exceed high standards for ourselves as teachers, and as Patricia Cross (1986) and many others have emphasized, if we set high expectations for our students, they will rise to meet them. Because cooperative learning emphasizes peer tutoring, collaborative learning, and positive social skills, students recognize that their contributions are both valued and necessary.

The teams as a whole usually strive for a quality product. Instructors using cooperative learning approaches find that students have three reasons to aspire for quality: (a) their own intrinsic motivation, whether it is stimulated by personal fulfillment/learning or for a certain grade; (b) their wish to please the instructor, whether it is for affiliative approval or again for a certain grade; and (c) their team commitment, whether their actions are predicated on a desire to “come through” for

the team or to avoid the censure of their fellow learners. In a traditional competitive classroom, usually only the first two stimuli are operative.

In cooperative classrooms, quality is constantly monitored. Group processing, as indicated earlier, is an essential practice. Faculty members, for example, actively move among groups when they are engaged in structured activities. Thus, they are able to determine and influence the level of learning and—with the help of student team members—to eliminate potential pitfalls, including dysfunctional group interactions, which might interfere with mastery of the course content. Students appreciate the faculty interest and involvement and the opportunity to sit side-by-side without an intervening podium.

Quality is also reinforced by the insistence in cooperative learning classrooms on individual accountability. Group members, although they coach one another and cooperate on projects, are nonetheless responsible for their own learning and are tested individually. No one is allowed to coast on the achievements of others, as sometimes happens in less structured group settings where one or two team members do most of the work on a joint project, but all members receive the same grade.

(2) **Customer-driven:** As faculty, we must focus on the needs of students, maintaining high standards, yet providing the flexibility to help them succeed, regardless of their educational backgrounds and preparations. Cooperative learning is a student-centered approach to learning. The faculty member becomes not the “sage on the stage” but the “guide on the side.” Too often, faculty hoping to improve their teaching focus on, “How am I doing? Is my delivery well-paced? Am I covering the content? Do my students like me?” A cooperative learning approach reformulates those questions and asks such things as: “How are my students doing? How can I discover if they are learning the material? Are they relating to me, the other students in class, and the learning experience?” We must also look beyond the students’ immediate classroom needs to their long-term success as citizens and productive workers in a multidimensional, interdependent, complex, multicultural society. Thus, the cooperative learning approach complements and enhances the movement fostered by Angelo and Cross (1993) toward classroom research because we cannot be content simply with “covering the material.” Such research is

directed not toward traditional “publish or perish” projects, but to the assessment of what students are learning and applying in an individual classroom. The various Classroom Assessment Techniques (CATs) provide all team members (both the students and the faculty member) with the data needed to make informed judgments about individual and collective progress. As Angelo and Cross point out: “It provides faculty with feedback about their effectiveness as teachers, and it gives students a measure of their progress as learners” (p xiv).

(3) Continuous improvement: As faculty members committed to teaching, we must continue to improve the quality of our classroom planning, instruction, and interactions, and assessments. Because cooperative learning is so process-oriented, faculty continually strive to improve the activities and assignments that will result in student learning. For example, a simple cooperative learning structure such as the “Three-Step Interview,” (Kagan, 1992, p. 12:3) designed for information-sharing, can be modified for virtually any curriculum to fit any number of teaching situations including an opening class content-focused icebreaker. Kagan and Kagan (1992) encourage experienced cooperative learning instructors to experiment with elements, the basic units of classroom behavior composed of actors, actions, and sometimes recipients. By skillfully sequencing the elements, faculty can build new structures to deliver their course content. A particular challenge is finding better ways to convince our students that personal and professional growth and new learning must continuously progress.

(4) The discipline of information: Evaluation—of ourselves and of our students—must be done openly, objectively, and continually. We can provide ongoing feedback to our students about their improvements and shortcomings, but we must also solicit feedback from them in a number of ways, including classroom research projects, learning logs, and individual conferences. The way we establish and maintain grading criteria, for instance, has a tremendous impact on classroom climate. When students “bond” in learning teams, each member has a vested interest in helping others to succeed. Thus, it is appropriate that we encourage students to monitor each others’ progress.

In practice, many faculty—especially those teaching large class sections—find it useful to introduce the use of team folders. Each class

session, a designated team member picks up the team folder, which contains material to be returned to students plus any materials needed for class activities. Designated team members then typically record attendance and the results of cooperative homework checks and place these papers in the folder for return to the instructor. Typically, too, examination results should be shared with the class as a whole so that students can get a sense of their own achievements.

Such open practices help to “drive out fear,” (a Deming principle), reducing the debilitating effects of uncertainty and paranoia from student perspectives. In a cooperative classroom students understand exactly what they will be tested over and how the results will be used. Often they will have had opportunities beforehand for peer coaching and rehearsal. Some instructors lessen test anxiety by allowing team testing, often after students have taken a test for which they are individually accountable (Michaelson, 1983, 1991; Creed, 1991).

TQM principles, serendipitously, contribute to the best practices emerging in the assessment movement (Ewell, 1991). Angelo and Cross (1993) also advocate classroom assessment techniques to help “individual college teachers obtain useful feedback on what, how much, and how well their students are learning. Faculty can then use this information to refocus their teaching to help students make their learning more efficient and more effective” (p. 3).

(5) **Teamwork:** Cooperative learning practitioners conscientiously build teams to enhance the learning of all members, who work toward common goals while maintaining individual accountability. Most faculty using cooperative learning set up long-term learning teams which meet regularly at scheduled times to accomplish specific tasks during the class sessions. For example, traditional accounting and math faculty often conduct standard whole-class homework reviews where students ask for solutions to the problems they couldn’t work. Class time often is used inefficiently because most other students may have understood the problems and are bored with the repetition. Often those who really need help are afraid to call attention to their deficiencies and those who are already “over-achievers” provide the solutions.

Cooperative learning instructors avoid these pitfalls by using learning teams for ongoing cooperative learning homework checks.

Groups—usually of four—meet at the beginning of each class period to review homework. They focus only on those problems germane to their group, and people unable to solve them receive immediate peer tutoring. Students must be “trained” to provide not just the answers, but to coach their teammates to understand the entire process of derivation.

(6) Empowering people: We can empower students in many ways. In college and university classrooms, students who may have been victimized by traditional competitive educational practices can find a voice in supportive, cooperative teams. As TQM tenets emphasize, it is particularly important to “drive out fear,” by reducing learning anxiety and by giving students opportunities to behave maturely and responsibly. Such an approach does not mean that we are subscribing to a “happy face” mode of education where students need merely to feel good. Research on student learning emphasizes that students must feel responsible for their own successes (Weiner, 1980). They must understand that these successes are valid. When faculty members place students in carefully monitored groups where they work together on structured assignments, students become active learners who genuinely achieve. That is true empowerment.

(7) Training and recognition: We must teach students how to behave responsibly toward one another and how to celebrate the achievements of others. Johnson, Johnson, and Smith (1991a) describe it this way:

Cooperation results in participants’ striving for mutual benefit so that all members of the group benefit from each other’s efforts (your success benefits me and my success benefits you), their recognizing that all group members share a common fate (we sink or swim together) and that one’s performance depends mutually on oneself and one’s colleagues (we cannot do it without you), and their feeling proud and jointly celebrating when a group member is recognized for achievement (you got an A! that’s terrific!). (p. 3)

To develop a TQM/cooperative learning classroom, it is extremely important that our evaluation system be criterion-referenced. All students must be able to succeed if they meet established criteria. Thus, students helping others will not harm themselves by jeopard-

izing their own final course grade. Furthermore, they stand to benefit from these efforts: as much of the K-12 research indicates and as most of us who teach already know, they will gain a great deal from learning a topic so well that they are able to teach it. Above all, faculty seeking a TQM/cooperative must eschew grading on the curve.

(8) **Vision:** We must acquire a new vision, one which may emerge from the first two of fourteen TQM points specified by Deming, "Create Constancy of Purpose," and "Adopt a New Philosophy." Faculty adopting cooperative learning principles often undergo the "paradigm shift" so commonly talked about in the TQM literature. We must consciously eschew an elitist view of education—"Let the students fall where they may"; "Only the fit shall survive this class"—and recognize that our changing world requires more enlightened views if we are to welcome life-long learners with diverse ethnic, cultural, socio-economic, and educational backgrounds.

Thus, our purpose must be to provide the best possible learning environment for the vast majority of our students. Students, too, must acquire a new vision of themselves as active, capable learners. Wlodkowski (1989) postulates that adults are motivated to learn when they feel they can be successful, when they want to learn, when they value what they can learn, and when they find the learning experience enjoyable. Thus, if we can offer students a vision of themselves as successful learners, they will indeed succeed. The cooperative learning classroom is predicated on such success.

(9) **Leadership:** Finally, we must become new kinds of leaders in academe by grounding our classroom practices in theoretical, philosophical theories. The theories inform practice. Fisher (1993) reminds us that productive, creative team work involves inspirational leadership. Classroom teachers who facilitate student success are themselves often risk-takers and fellow learners, but in a reflective, not a reckless sense. Thus, if we consciously decide to embrace an approach to teaching that emphasizes TQM, and we adopt specific cooperative learning structures and strategies to give this philosophy practical credence, we are accomplishing what Russell Edgerton, the President of the American Association of Higher Education, calls "informed practice." Only then can we be certain that we are genuine classroom

leaders, ones who can step aside, who can listen, and who can motivate without controlling.

With vision and leadership—and the willingness to undertake risks—faculty can transform their classrooms. Working with students, cooperatively, they can bring a quality education to all students.

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