DOCUMENT RESUME

ED 413 630 EA 027 647

AUTHOR Snyder, Karolyn J.; Acker-Hocevar, Michele; Wolf, Kristen M.
TITLE Chaos Theory as a Lens for Advancing Quality Schooling.
PUB DATE 1995-09-00
NOTE 34p.; Paper presented at the Annual Meeting of the British Educational Management and Administration Society (Oxford, England, United Kingdom, September 22-24, 1995).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Educational Change; Educational Environment; Elementary Secondary Education; Organizational Change; *Organizational Development; Principals; Quality of Working Life; *School Restructuring; *Teacher Attitudes; Total Quality Management; Work Environment
IDENTIFIERS *Chaos Theory

ABSTRACT

Chaos theory provides a useful mental model for guiding change as leaders garner the energy from unpredictable events for realizing transformation goals. The paper considers chaos theory as a framework for managing school change toward Total Quality Management work cultures. Change is possible to manage when plans are made and then followed by a careful and continuous reading of the chaotic landscape of the school workplace, using the unexpected patterns that surface as energy for change. The paper discusses issues that school leaders now face in managing change, presents a few of the basic concepts found in the yet scant literature of chaos theory, and reports what teachers and principals in 28 schools had to say about change. The study examined the change process in 28 schools in Florida, Louisiana, Minnesota, and Virginia. Data were gathered through interviews with the 28 principals and through questionnaires administered to 1,235 teachers. Findings indicate that change is more likely to be successful if an array of collaborative structures and systems are created to foster continuous dialogue, exchange, and problem solving among work groups. The principals reported that it is possible to engineer the end of unresponsive structures, systems, and programs. The patterns that emerged from the interviews reinforce the utility of Quality as a mental model for guiding change, and chaos theory as a way to ground educators' efforts. (Contains 33 references.) (LMI)

Chaos Theory as a Lens for Advancing Quality Schooling

Karolyn J. Snyder
Professor, Director

Michele Acker-Hocevar
Research Associate

Kristen M. Wolf
Research Associate

A Paper Presentation

Annual Conference
British Educational Management and Administration Society

Balliol College
Oxford University
Oxford, England

September 22-24, 1995

School Management Institute
College of Education
University of South Florida
Tampa, Florida 33620
USA

813/974-3791
Fax: 813/962-6598
snyder@ madonna.coedu.usf.edu

Chaos Theory as a Lens for Advancing Quality Schooling

Transforming schools into responsive learning communities is the challenge for educators as we prepare for a new century. We must not only infuse schools with the complex varieties of technology that now dominate the adult work place, but also literally reinvent school learning to prepare students for dynamic and rapidly changing work places. This challenge, however, will require more than the intent to change, along with a strategic plan to guide activity. The literatures are filled with well designed change efforts that failed to alter any fundamental traditions of schooling, and most today were guided by collaboratively designed strategic plans. It is time to question the utility of a linear construct of planned change, and consider instead the precepts found within Chaos Theory, which assumes the natural patterns found within randomness and unpredictability. Our contention is that Chaos Theory provides a useful mental model for guiding change as leaders garner the energy from unpredictable events for realizing transformation goals.

Given the widespread international adoption of Quality management, it is likely that this movement in education is doomed unless the natural order of change itself is better understood. The Quality movement began in the early part of this century to improve manufacturing processes and products, and has emerged in the last few years not only to influence the private sector with its work and products, but also to help public state and national agencies around the world to improve their programs and services. For decades educators have sought ways to alter the work culture of both the school (teachers, principals and other professionals) and the classroom (teachers and students). Many educators now are exploring the potential of Quality as a philosophy that can transform both cultures in ways that will better prepare students for the 21st century world (Morgan & Murgatroyd, 1994). Teachers and students now seem ready and willing to embark on changing basic traditions of schooling, according to Morgan and Murgatroyd, and the question before us is to consider how change can be managed successfully over time.

In this paper we argue for Chaos Theory as a framework for managing school change toward Quality work cultures. Our assumption is that change is possible to manage when plans are made, and then followed by a careful and continuous reading of the chaotic landscape of the school workplace, using the unexpected patterns that surface as energy for change. We begin with a discussion of issues that school leaders now face in managing change (1). Secondly, we will present a few of the basic concepts found in the yet scant literatures of Chaos Theory (2). To consider Chaos Theory as a workable construct, we

report what teachers in 28 schools have to say about change, for their perspective about schooling today provides clues about natural chaos conditions (3). And last, the principal's voice in those same schools is offered as a response to the dynamic/chaos context of schools (4). The principal's voice describes the change that is possible when the principles of Chaos Theory are embraced.

1. Issues in Managing Change

Many deep-rooted traditions of schooling now face extinction, and in their place are likely to evolve dynamic and energetic work cultures. What seems to be happening, not only in the USA but throughout the world, is a virtual transformation of governments, agencies, institutions, industry and businesses, all of which are responding to rapid changes in the environment and to technological pressures (Snyder, Anderson & Johnson, 1992). At issue for social agencies are the fundamental traditions of work.

Bureaucratic systems have existed over the past century, and have probably served well the needs of an age gone by. Chubb and Moe (1990), policy analysts from the Brookings Institution, have observed that in the past the school organization's objective has been to deliver programs and services that were well designed by experts, and for schools to improve those over time. This bureaucratic approach to program development and school change is now recognized by many as obsolete. More fluid and adaptive structures of work are needed to enable workers to respond to the complexity, variety and pace of demands.

Schooling traditions, however, have tenacious roots (Haberman & Dill, 1993), and revising them to any extent will require an altogether new understanding of the dynamics of change (Tyack & Tobin, 1994). To illustrate the enduring strength of habit and tradition and the challenges faced in changing bureaucracies, there has been reported a discouraging conclusion from an experiment funded by the Annie Casey Foundation. Recently, $40 million was spent on a social experiment to alter the life chances of disadvantaged youth in four cities (Welhage, Smith & Lipham, 1992). A three-year study of the project, as it evolved in the four city school systems, concluded that fundamental changes in programs, policies and structures had *not* occurred, that most interventions were only supplemental to traditional educational programs, and that few workers were prepared to use evaluation data to assess the impact of innovations. Fundamental questions are therefore being raised by many about the conditions for change and the leadership requirements for managing its success.

In another context, the Bensenville New American Schools Project, supported by $1.25 million, was dissolved after only one year of planning among the school districts and

other agencies involved (Mirel, 1994). Although the initial stages of planning met most of the textbook criteria of excellence for planning change efforts, the issues of school governance, local control and school finance surfaced as major roadblocks, the big question being: "Who controls the schools?" As it turned out, the appropriate role of teachers for the new project was not anticipated well enough, and threats to teacher security prompted a negative campaign that shattered the very foundations of the project. A question looms: Is real change in school cultures a possibility?

A systems approach to transforming organizational work cultures appears to be one key to successful change efforts. The Quality movement, which embraces the central tenets of Systems Thinking, during the closing decades of the 20th century now centers its attention on the "customer" as the focal point for systemic change. The mushrooming Quality literatures began with successes that were reported from Japan in the use of statistical processes to improve productivity (Deming, 1986). Japan's initial success with Quality management led to further development of the concepts of Quality Control and Systems Thinking (Feigenbaum, 1983), and Strategic Planning (Juran, 1988). These developments eventually led to the American Baldrige Award that is given to high performing companies (Steeples, 1992). Many of these same Quality concepts have been embraced as a construct for transforming school work cultures (Kaufman and Zahn, 1993; Snyder, 1994 a & b).

The education enterprise is now intrigued with the potential of the Systems perspective and Quality work cultures as a foundation for change. Many governmental and social agencies world-wide, have experimented with and adapted the central tenets of "customer satisfaction," "data based decision making," and "systems thinking" (Morgan & Murgatroyd, 1994; Snyder, 1994a; Acker-Hocevar, 1994b). States in the USA such as New York, Minnesota and Kansas now have education adaptations of the National Baldridge Award to assist schools in the change to a Quality way of life. Further illustrations of interest in Quality are found in USA annual state and national conventions: each year more Quality conferences are held, and there are more sessions within traditional conventions that present education adaptations to Quality. Professional journals, as well, have increased the number and quality of publications about Quality in education institutions, which demonstrates further the promise that the Quality philosophy is perceived to have for transforming schools for requirements in a new century. Even the prestigious Malcolm Baldrige National Quality Award criteria have been recently translated for educational institutions, and are being piloted in 1995.

Many myths exist about the kind of change that is needed and possible, and each presents a challenge to school leaders in moving to Quality management (Morgan &

Murgatroyd, 1994). The beliefs and values must be addressed and altered before Quality can take root as a new way of life in schools and classrooms. Consider the following challenges identified by Moran and Murgatroyd:

1. The rejection of industrial models and vocabulary: an anti-management tendency (quality is defined by the professionals in schools)
2. A tradition of individualist rather than collectivist responsibility for quality
3. The organizational context of the school but not the classroom can be a focus for Quality
4. A traditional belief that performance achievement is a product of inputs
5. We are doing very well as we are under the present circumstances
6. A tradition of management by centralized decision-making: the headmaster or superintendent tradition
7. Teachers' attachment to their own subject and pupils while being uncommitted to the school's goals and strategies.

As we have worked with school districts over the last several years to learn and embrace Quality constructs, we observe strikingly different perspectives and consequential change agendas. We have come to understand the importance of philosophical assumptions that drive change efforts, as well as human values and their respective moral issues. Some approaches to Quality emphasize statistical tools, with the assumption that their use will help folks "clean up their act." Other approaches emphasize organizational learning about Quality, which results from readings, study groups, workshops, experiments and pilots, while addressing the challenges of certain student populations.

Several myths and issues have surfaced for us as we have sorted out our observations of different adaptations to Quality. One myth is that all Quality roads lead to the same place; or, Quality adoption or adaptation projects will all produce more or less the same kinds of results. Several different philosophical orientations to Quality now exist among districts and are producing noticeably different kinds of change efforts and effects. Some educators view the business community as the primary customer, where the purpose for adopting Quality principles is to improve operations. The function of quality within this view is to fine tune the design and delivery of programs and services to improve traditional standardized outcomes over time. In such an approach, the changing needs of student populations, along with the changing workplace requirements *are not* the focus for change. The Quality goal in this case has to do with the alignment and efficiency of operations, and accountability to agencies for compliance purposes, and the use of statistical tools provides useful information for improvement purposes.

Within a different philosophical frame, where students are perceived as the customer, the Quality goal is to develop increasing responsiveness within an organization. Systems thinking and dialogue about purpose (what are we doing?) and structure (how will we organize?) lead to the use of both qualitative and quantitative kinds of information. It seems that new questions face educators, such as: Do we want to fine tune traditional work systems, programs and services? or, Do we want to invent new ways of responding to the changing needs of student populations as they prepare for a new century of work? These are some of the fundamental issues that educators face today, and the philosophical assumptions being made will direct change efforts and yield very different outcomes.

Another myth is that change happens according to a logical comprehensive plan. So commonplace is the practice of setting goals and developing strategic plans, that, even though the change process is rocky at best, people are surprised when events do not unfold as anticipated. The literature is filled with models, steps and strategies for planning change, and yet the same literatures also report the dramas of failed change efforts based on seemingly good plans. What we seem to be unprepared to face is the changing political climate within which change is planned, as well as the continuous demands of communities and parents, and the multiple needs that students have today. Link this chaotic landscape of social change, with the rapid transformation in the workplace, and we find ourselves learning and changing simultaneously and continuously. While the revolution in the workplace explodes before us, the at-risk populations are expanding in quantity and in variation, and we wonder if they will ever be ready to participate in the work revolution ahead. Can we find a way to cope with the chaos that now exists for us as we seek to exert the necessary leadership for change to enhance schooling effects on all populations?

2. Chaos Theory as a Contextual Lens for Change

Given the frequency of reports of failed attempts to change the fundamental systems of work in schools, it appears that we may well benefit from a mindshift in thinking about the change process, and reexamine the natural order of change as a phenomenon. Over the past 50 years Chaos Theory has evolved as a new science, which assumes that the natural order is irregular, discontinuous and erratic (Gleick, 1987). This natural condition of the physical world contains universal behaviors of complexity, randomness, jagged edges and sudden leaps (Wheatley, 1992). During the 20th century several other new sciences have evolved that sought to solve the problems with prior models. For example, the Theory of Relativity eliminates the illusion of absolute time and space. Quantum Mechanics eliminates the Newtonian dream of controllable measurement processes, as well as the fantasy of deterministic predictability. Chaos Theory, the third

new science, embraces irregularity as a norm. Scientists from altogether different fields began to observe the regular patterns within the irregularity of the natural world. For example, Lorence studied the atmosphere; Henon observed the stars; May examined the relative balance of nature; and Mandelbrot noticed the many complexities within mathematics (Gleick, 1987). All of these scientists shared a fundamental belief in the complexity and irregularity of nature, which drove their inquiry to find alternative universal laws.

In the old views of nature, notes Gleick (1987), it was held that simple systems behave in simple ways while complex systems imply complex causes. In the new view, it is believed that simple systems give rise to complex behaviors while complex systems give rise to simple behaviors. Natural dynamics, within the new view, are freed from the shackles of order and predictability, and are referred to as the new law of complexity. Systems then are liberated to randomly explore their very dynamical possibilities, variety, choice and opportunity.

Chaos Theory is attractive to educators because much of what happens in the life of a school just doesn't seem to fit the current frame of "what ought to be happening." Little change ever occurs as it is planned. The objective or goal may eventually be realized, but almost never in the predictable way in which it was designed. It may be time to set aside assumptions about regularity and controllability in changing organizations. Perhaps the best chance that exists for transforming fundamental schooling traditions is to embrace irregularity as a norm, while looking for patterns that can be guided in a certain direction. Gleick (1987) observes that linearity means that the act of playing the game has a way of changing the rules of the game itself. In this sense, then, to accept the future with its challenges, administrators will need to renounce much of what they have held as truth about the past, and retool intellectually for a different avenue to the future. Linear models are betrayed by their linear bias, and almost never appear as conceptualized in the physical world. Nature is more complicated, and thus, embracing the possibility of Chaos Theory is at the same time both exhilarating and threatening.

If one considers chaos as the norm, then new futures may exist for change in schooling. Wheatley (1992) argues that life is not about survival, but about invention. Too often, she notes, people believe they need energy to "keep it all together"; we are afraid of what will happen if we lose our grip. She urges us to rely less on organizational charts and more on the "deep, natural impulses" in the organization. The challenge is to look for the wild disorder and the islands of structure (Gleick, 1987). Some would say: "go where the energy is!" Chaos is both stable and structured, while it is random and

complex, and is fundamentally different from turbulence, which is a mass of disorders that are virtually unstable, creating a drain on existing energy systems.

Blair (1995) observes that "chaos theorists propose....much of what has been previously assumed about organizational systems and their functioning has been based upon erroneous ideas of linear and structural relationships in physical systems, where there was an expectation of performance as balanced entities, rarely changing and uninfluenced by the environment or other external assaults." Through work with fractal generations, it has become apparent to scientists that predictability does exist (known shapes re-appear), and randomness plays an important and unexpected role. What has been learned is that within chaotic and seemingly unpredictable systems, structures of order exist through which the system recreates itself. In this sense, the natural randomness allows for regenerativity continuously (Gleick, 1987).

Little research using Chaos Theory has yet occurred in the field of education. One example comes from the work of Griffiths, et. al. (1991) who have begun to examine its relative utility as a basis for inquiry about educational administrators and their work. A series of studies has been conducted over the past four years that provide a glimpse into the utility of chaos as a frame for guiding a school toward its goals (Blair, 1995). In her most recent study, Blair acknowledges the unpredictability of events for administrators in managing the kaleidoscope of action and meaning at the school site. Stories about change were gathered from five school administrators and three business managers to examine their work from a chaos perspective. Conclusions that Blair (1995) drew from her analysis of the stories reinforce the potential utility of chaos theory as a frame for managing change.

Through a recognition of chaos as the norm, principals in Blair's study adopted a philosophical attitude toward chaotic events and preferred actions that is calculated to encounter these occurrences. Principals observe and learn while continuing to move the school forward. When the goals of the organization are clear, it continues to feed back on itself, and, with fractal-like variations, to recreate the organization. In other words, there are things that the organization stands for and these are reflective of that which it wants to become. Blair found that administrators not only consistently depersonalize the events of chaos, but believe that their effects will be so finely dispersed by the organization and its constituents that no particle large enough to merit attention will remain. School organizations, she observes, are frequently able to resist change because they are so adept at neutralizing the effects of chaotic behavior. In another sense her study portrays the use of chaotic events as energy sources for principals to bring about change in line with the organization's goals, and to off-set the natural randomness at work.

Surely, the implications of Chaos Theory are to reject a deterministic view of change, where assumptions are made about order and control. The best chance schools may have of changing fundamental systems of work is for leaders to recognize and embrace the natural order of chaos, and to guide patterns of regularity toward a vision, mission and set of goals. These new leaders are likely to shed control ambitions, as well as encourage professional teams to respond naturally to patterns they observe. The school's leadership and work teams learn to listen, observe and guide events toward some identified purpose. The choice of control or development as a guiding principle, however, is up to each school leader.

3. The Teacher's Voice on Change

The school-development work of principals necessarily involves teachers in designing, launching and studying change projects and pilots. Teachers no longer are a silent majority, but rather an emerging voice through shared decision making structures such as team teaching, ad hoc committees, and advisory councils (Conley, Schmidle & Shedd, 1988). Recently there have been a few studies that examined the teacher's perspectives about schools, giving "voice" to those traditionally silent workers (Cohn & Kottkamp, 1993; Little & McLaughlin, 1993; Rosenholtz, 1991). To move schools from a frame of isolation into one of collaboration, however, is not something that happens overnight, nor does it happen without a struggle (Dalin, 1993). Schools differ in their capacity for change, notes Dalin, which is due to their innovation history, and to their features as a "tightly" or "loosely" coupled organization. The change process unfolds differently in what Dalin describes as fragmented schools, project schools, and organic schools.

The teachers' voice presented here emerged from a multi-site case study, which sought to examine the change process over time in 28 schools in Florida, Louisiana, Minnesota, and Virginia. The study included 18 elementary schools, 4 middle schools, 3 high schools, 1 lab school, 1 middle/high school, and 1 full service school, which represent a cross section of rural, urban and suburban communities, as well as lower, middle and upper income levels.

Data were collected from three sources: 1) Interviews with the 28 principals, 2) open ended questionnaires of the staff in each school (n= 1,235), and 3) administration of the *School Work Culture Profile* (SWCP) to the same teacher population. The data were then triangulated to identify themes and patterns and to establish their validity and reliability (Snyder, Acker-Hocevar & Wolf, 1994). The surveys and interviews followed a

qualitative methodology, examining the data for themes and patterns, which were then correlated with the literature bases on school change, systems thinking, leadership, restructuring , and Quality management.

The SWCP (Snyder, 1988b) is a diagnostic instrument that was administered to the entire staff at each school, and provides a quantitative measure on the relative involvement of the staff in decision making. The instrument has been through rigorous testing over the past eight years to establish reliability (alpha=.97), validity (scale mean= 5.53), as well as the primary factor analytic structure (one factor), and the secondary factor analytic structures (four higher order factors) (Johnson, Snyder, Anderson & Johnson, 1994).

Teachers' perceptions and experiences (n=1,235) about the change process are reported here to offer the perspectives of first line managers, for this perspective yields the context of the principal's work in managing change. The teachers' voice illuminates the work culture conditions of schools (a natural chaos environment), and the context within which programs are tossed out, revised or invented. A survey was used to gather data from all teachers, the overarching question being: "What is the school change process like today for you? Results from two of the teacher survey questions are reported here: (1) "How do you think schools have changed?", and (2) "How satisfied are you with your job?"

1. Teacher Perceptions of School Change

"Schools have changed for the worse":

Chaos conditions today

Not all teachers perceive that schools are engaged in positive change. Many, although not the majority, feel that schools are burdened by too many forces to be considered candidates for positive change. The following random patterns were identified by teachers as examples of chaos within the school's daily life:

- Social breakdown of communities
- Dysfunctional families
- Need to reassess grading system
- Low parent involvement
- Passing kids who are not ready
- Students' lack of motivation
- Less student accountability
- Overcrowded classes
- Too little money
- Bureaucratic policies
- Not enough structure for students
- Parent influence overshadows student needs
- Normal students are short changed by the focus on at-risk youth
- Schools are social centers rather than learning organizations
- Schools haven't changed, but students have changed.

Basic skills classes are eliminated, not integrated
Student respect for teachers and learning is poor
Retention rates take priority over high achievement standards
Multiple Teacher roles: counselor, advisor, parent, mentor, teacher, paper pusher, disciplinarian
Emphasis is placed on paperwork, not on teaching
We are begging students to learn instead of expecting them to learn.

Reasons for schools worsening might be categorized into three large areas: 1) Social forces and lack of student discipline, 2) Multiple teacher roles that are distracting to "teaching", and 3) Administrative policies that set-up less than adequate goals and programs for meeting the needs of all students. Teachers mentioned the strong negative impact of social ills on their students and classrooms. Students are coming to school without respect for teachers or for learning, and parents are not helping to combat this problem. Consequently, some teachers feel they are working in isolation to be a disciplinarian for "disrespectful" students; a job for which they never applied.

In addition to the isolation that many teachers face, there is an overwhelming sense of being overworked by the multiple roles that they are asked to play, from teacher to disciplinarian, and from paper pusher to learner. For teachers in the low involvement work cultures, there does not yet exist a strong support system for team teaching and group work. The administration, according to these teachers, does not help to alleviate teachers' problems. Some teachers indicate a lack of administrative support, suggesting that teachers do not have the right to make decisions in their classrooms, but rather decisions are guided more by the desires of the parents and community. Other teachers report inconsistent support from the administration, suggesting that sometimes the administration values teacher input and decisions and sometimes it does not. This inconsistency has developed a sense of apathy on the part of some teachers.

Embedded within teacher comments, both positive and negative about school change, was the role of time: "Not enough time..."" We need more time..." "We have to work over-time too much to get things done here", and "Our responsibilities have increased so much that we don't have enough time to teach or learn anything new." There was, however, a clear distinction in the number of references made to time between the higher and lower involvement schools on the SWCP. Teachers in higher involvement schools indicated a strong desire for more time, but it was not an inhibiting factor like it was for teachers in the schools with lower scores.

Several contributing factors to the differences found among teacher perceptions about time constraints relate to support structures. More frequent and cohesive avenues for building support systems exist in the higher involvement schools through the implementation of teaming, collaboration, and interdisciplinary curriculum. These factors seem to be implemented effectively in the higher scoring schools and appear to have a relationship to "managing" the pressures of school restructuring. The lower involvement schools appear to have less organized team structures for harnessing the natural energy from chaos environments. Fewer opportunities exist for ongoing interaction, and hence some teachers are not as optimistic about the school.

Professional enhancement is another area that has the potential for developing skills in teachers to meet the new demands of schooling. Teachers in schools that scored lowest on the SWCP reported a lack of opportunity for professional enhancement, and expressed a lack of administrative support for the development of new skills. Some teachers reported they had to seek training on their own time, and they were not provided with time off or substitute teachers. The result for them was frustration and apathy toward the administration, which carried over to the rest of the school.

Conversely, the schools in this study that scored highest on the SWCP reported a strong sense of professional enhancement on a regular basis, with strong support from the administration. In the two highest scoring schools, teachers reported unanimously that their principal held weekly reading sessions on professional issues, stimulated dialogue and provided access to resources. These teachers indicated a strong sense of self worth and self-esteem as indicated by their sense of control over the challenges facing their schools. At no time did they indicate challenges were non-existent. Rather, they perceived the challenges were manageable. Lessons can be learned about the power of both the external forces upon the internal workings of the school, and also the need for professional enhancement and new ways of working together to manage chaos while building learning communities.

"Schools haven't changed much at all":
Failures to adapt to chaos conditions

In the lower involvement schools, there exists a small cluster of teachers who perceive that schools have not changed in any fundamental way. According to them, schools are engaged in the motions of change with no real substantive moves taking place. The reasons for the little change are as follows:

Swinging pendulum

Only the philosophy has changed, not programs and services

Techniques are still the same
Spinning wheels
Lack of financial and social support
Cyclical nature of change
Business as usual; "just motions".

According to these teachers, change occurs about every ten years, but never results in anything new, and they recognize the talk of change, but do not see any movement. This is not a surprising perception. Schools are public institutions developed and guided by policy, which are linked to government elections that take place every two to four years. Given these structural features, it is not surprising that change takes place on a regular basis, with little substantive lasting effect. What results is a default back to old way; its easy; its comfortable and people understand it. While this population of teachers is small in our study, it represents part of the chaos conditions for principals to manage; it is a dimension of their challenge. How can these teacher perceptions be altered over time and the talents of these can be developed to serve as a force in managing chaos?

"Schools have changed for the better":

Adaptation to new patterns of chaos

Teachers were asked how schools have changed, and were asked to explain their responses. Teachers who felt that *schools had changed for the better* offered the following explanations:

Mainstreaming SEE
Cooperative learning
Better defined goals
Teacher opinions solicited
More technology
Teacher as decision maker
Common planning time
Greater resources
Goal setting and evaluation
Willing to break out of the mold
Meeting the needs of at-risk students
Administration concerned with learning, not just curriculum
New programs to address changing student needs
Shift from top down to cooperative managerial style
Team teaching
Collaborative decision making
Community involvement
Emphasis more on students, less on subjects
"Middle School" concept
Supportive administration
Improved curriculum, more goal oriented
High order thinking skills
Alternative Assessment

Interdisciplinary curriculum.

Of the reasons given for school improvement, there are some that were articulated more frequently and appeared more often in stronger work cultures (as determined by the SWCP score). Among the responses as facilitating dimensions given most often were: Team teaching, interdisciplinary curriculum, cooperative learning, collaborative decision making, better defined goals, teacher opinions solicited, and a supportive administration. All of these characteristics are common in the 28 schools studied. However, these characteristics play a stronger, more dominant role in describing the work culture in schools that scored higher on the *SWCP*.

The above mentioned characteristics for school improvement suggest the positive force that collaboration generates in managing chaos. Within the collaborative culture a stronger support structure is found, from the administration to the teaching teams, and this results in greater collective energy to respond to the environmental shifts as people pursue common goals. Teachers feel valued for their input at all levels. And, chaos management is shared among work teams; a pattern which we found in all schools. Teacher involvement, then, becomes a source of energy as the principal directs work activity toward goals. Perceptions about work conditions and challenges give principals information about the patterns of chaos that can be directed and guided.

2. Teachers on Job Satisfaction

"Satisfying Job Dimensions":

Thriving on chaos

Teachers were asked how they were satisfied with their jobs, and to explain their answers. Interestingly, teachers were more satisfied with their jobs in the higher scoring schools on the SWCP, yet they were not necessarily dissatisfied with their jobs in the lower scoring schools. This finding suggests possibly that teachers come to schools with an intrinsic motivation that centers around a love for teaching and helping students to grow. *Teachers who were satisfied with their jobs,*" indicated the following reasons:

Good staff	Great atmosphere
Team teaching	*I make a difference*
Better classroom organization	Positive support from administration
More resources	Freedom to innovate and risk-take
High level of expectation	Committed principal
Professional staff	Good parent-teacher communication
Motivating school climate	Opportunity to be creative

I enjoy teaching and students
Constant encouragement from the principal to *be our best*
I am contributing more and using more skills
Multiple challenges and opportunities for growth
Total faculty feedback for group goal setting

Of the reasons given by teachers for job satisfaction, several factors were the strongest: "I make a difference" was offered by more teachers than any other response, coupled with "team teaching", "a positive, supportive administration", "freedom to risk-take", and "empowerment of teachers to be proactive" in their school and class.

Several components of school change that lend themselves to teacher involvement include team teaching, empowerment, shared decision making, and freedom to innovate; and these function as a force in the management of chaos. Teachers in our survey indicated very strongly that support from the administration to innovate made them feel more professional and connected to their environment. Anderson and Pavan (1993) observe further that team teaching creates a platform for dialogue and shared learning to take place, in which teachers learn and grow from one another They benefit both from the opportunity to learn from others as well as the impact they have on another person. Empowerment, when implemented in the right environment leads to a satisfying work culture because it creates space for greater involvement and interaction among workers, where otherwise their would be silence or authority (Deming, 1986; Juran, 1988; Senge, 1990).

"Dissatisfying jobs dimensions":

Clues for development

Another group of teachers suggested that they were *dissatisfied* with their jobs for the following reasons:

Low pay
Too much paperwork
Too much time on non-teaching tasks
Lack of appreciation
Too much to do, too little time
Disorganization of time schedules
Irregular administrative support
Lack of recognition from district
No group decision making or sense of cohesiveness
Overcrowded classes
Pulled in too many directions
Lack of principal support
Politicians run the schools
Lack of student motivation
No positive strokes

Lack of freedom to make decisions and take risks in my class
Anyone who objects to the status is ignored
Students need to be accountable, not schools
I am a professional, not someone who is unenlightened
Teachers are social counselors rather than just teachers.

Low pay, overcrowded classes, and too much paperwork were the three most often stated reasons why teachers were dissatisfied with their jobs. However, in light of these factors, teachers remain in teaching because they perceive they make a difference in the lives of students. Other factors that contribute to a negative work culture are the lack of administrative support and freedom to take risks in their classrooms, and a lack of respect from students and parents, along with appreciation from the administration. Some teachers feel burdened from the amount of work without adequate compensation in the form of recognition, respect and professional treatment.

It is understandable how, in the traditional hierarchical structure, teachers perceive that administrators are those who create the culture of work. Nevertheless, teachers, staff and students constitute culture as well. Therefore, we need to foster continuous dialogue among all members for shaping the school's culture. Schools in this study have made adjustments in their cultures by reshaping their working relationships and practices, which has been a mutual process between staff and administrators. It is not a matter of the administration handing everything to the staff. Rather, the staff needs to be given opportunities to interact with administrators and conversely the staff has to accept this responsibility.

Teachers in this study painted two general pictures of schools today. **The first picture** is a high involvement work culture, which exhibits practices that offset the debilitating effects of chaos. Most often mentioned as a force for change was "school goal setting" by the entire faculty and administration, utilizing parent, student, and community involvement, through a process of continuous refinement and reflective dialogue. Teams and committees are organized to facilitate ongoing dialogue about the goals and the work that follows. There is clear and continuous communication among role groups about the vision, mission and needs of the school populations. Teachers and students are empowered to be proactive in the decision making processes that relate to their individual goals, classroom needs, and to the school's mission and vision. The administration encourages risk-taking and innovation, and gives constant reinforcement and recognition. Teachers work together in teams to share and learn from one another. Support systems are in place as a result of the teams, which makes the heavy amount of work more manageable.

Workshops are taken advantage of by all faculty on a regular basis, and the principal supports and encourages growth. The environment naturally is stimulating and rewarding. At the heart of the school's efforts is the interest of the students.

The second picture was found in the lower involvement work cultures, where goals are set by an unclearly defined group that is not necessarily representative of the entire school population. Often times the district/state mandates are so strong that school goals seem to be determined by outside forces. Fragmented methods of communication exist, leaving many in the dark about the school goals and the ideas of others. Teachers work in isolation more often than on teams, and are asked to perform multiple roles alone that take them away from their teaching duties. The job is more disciplinary in nature, rather than teaching; reward and recognition is inconsistent, and in some situations nonexistent. Risk-taking seems to teachers to be stifled, and innovation is minimal and limited by funds and resources. Inservice offerings are abundant, but not taken advantage of either due to a lack of administrative support or too little time.

The principal does not always model the behavior that is expected from the faculty in lower involvement schools, nor do they always "walk-the-talk". The focus of the school is on the student, but there is a dichotomous view about what are the needs of students. Some teachers feel that students need more discipline and accountability, whereas other teachers believe students need better programs and services, and a more caring environment.

Overall, the message from teachers in this study is clear: for schools to change in positive ways for students, new structures and practices must become institutionalized that reflect cultures of collaboration, teaming, shared decision making, risk taking, supportive administration, professional enhancement to the "nth" degree, interdisciplinary curriculum, and student focused goals. And finally, freedom is necessary for each team to do what needs to be done in managing chaos, in combination with greater resources, more money, less paperwork, and more technology.

It is evident from teachers that their job satisfaction is most strongly linked to intrinsic motivation. Nevertheless, several supporting factors were very strong as well: "I make a difference," team teaching, professional growth opportunities, supportive administration, committed principal, strong vision. This is not surprising given the literature on systems thinking, which suggests that in the best organizations, all parts are linked interdependently to offset the negative effects of chaos. There are several core components that affect more than one aspect of the organization, which need to be recognized and examined as part of the new school design: collaboration, team teaching, a

supportive environment, risk-taking and innovation, professional growth opportunities, dialogue, and time.

The teachers in this study represent a cross section of society, yet are working within schools led by principals who are prepared to nurture school restructuring efforts. Some schools are farther along then others, which is a function of vision, time, professional staff maturity, resources, the challenges facing the school when it began to change, combined with district and state support. Yet, there were no patterns among the highest and lowest scoring schools in relation to these factors. The features contributing the most to school success were team teaching, collaboration, interdisciplinary curriculum, supportive administration, professional enhancement and entire staff decision making. *Managing chaos well leaves clues of success for others*, and yields altogether different work environments from the unproductive turbulence that still is the norm in many schools today. Lessons are yet to be learned, however, about how to implement such key elements; recognizing them is the first step.

The more negative work cultures in this study are found in the low involvement schools, whereas the greatest amount of perceived success and progress is found in the highest involvement cultures. It is important to note that the pessimistic views are found in schools with the least amount of professional orientation to collaboration and continuous improvement. Perhaps the initial response to chaos, when the natural order is permitted to evolve, is uncomfortable for many. When this natural condition is talked about continuously over time, staff members develop greater capacities to respond to the natural ebb and flow, and to be productive within its patterns. Chaos has not been celebrated in the past, but rather has been viewed negatively as a condition to eliminate. The principal's greatest challenge is to read the readiness of staff for involvement and development, and to build a fear-free environment for shifting from control to creativity as a way of work within random environments. Building professional maturity over time to respond to the natural ebb and flow of schools will transform the conditions and outcomes of schools.

4. The Principals' Voice in Managing Chaos

In the previous section we reported teacher perceptions of the current conditions of schools that are involved in change, as well as their sense of job satisfaction. In this section principal responses to these chaos environments are reported. We interviewed the principals of those same 28 schools to learn how they develop collective staff capacities to respond to changing demands, and also to identify patterns for working with low involvement teachers and negative perceptions of the school workplace. We assumed that

change was not linear, nor was it predictable. And yet, we wondered how the forces that exist in different kinds of schools are guided by change master principals.

The select group of principals functioned as trainers of their peers in a 25 day program called *Managing Productive Schools (MPS)* (Snyder & Anderson, 1986; Snyder, 1988). At the heart of the MPS model is systems thinking, which postulates that productive organizations are made up of interdependent units that work together to achieve the goals of the system. Within systems thinking, organizational units work collaboratively toward common goals that effect student learning, and recognize the impact of each of the units collectively. Through this, the system benefits by a shared vision, continuous problem solving, and routine shared decision making. Contrary to the report above from some negative teachers, these principals are all able to recognize the many patterns reported by their teachers, yet building the culture over time from pessimism to optimism is their objective. Our quest was to learn how principals thought about their challenge, and about their experiences in the process.

The transcribed interview data were entered into a computer program called *Ethnograph*, which made the identification of common themes possible within and across the 28 data sets. Patterns that emerged from the data analysis are presented here within the *Education Quality System* framework (Acker-Hocevar, 1994a; Acker-Hocevar, et. al., 1995), which not only outlines the work dimensions that this population of principals identified for managing change, but also presents these dimensions as interrelated and interdependent. These nine dimensions of managing change include: visionary leadership, strategic planning, systems thinking, information systems, human resource development, Quality programs and services, continuous improvement, Quality culture, and customer success and satisfaction.

Findings: Managing Change within the Natural Chaos of Schools

Visionary Leadership

The focus of the principal's vision centers around the attainment of success for all student populations. The clarity of this image seems to drive strategic thinking and planning as principals manage the change process. Almost equally important is the vision for the school's work culture, which is described in multiple ways around the central theme of staff collaboration. A vision of student success has a corollary of staff success in working together toward common ends that influence student success. The mission of the school focuses on preparing students for life success, which is something of a departure from the graduation goals of past schooling decades. There is a sense of urgency in these

principals' minds that all populations, especially those who are at-risk need to be prepared for a changing work world.

> The principal of the middle/high school said it this way: "My vision is to develop a school where kids are successful, where the adults are cooperatively involved and ....want to work with us." An elementary principal reported, "My vision of this school is to help students to become productive citizens in the school. This is the first step in the voyage to becoming productive citizens involved in their community." Another principal shared: "I would like to see children leaving here as confident, self reliant learners where they have the ability to seek and handle information, to solve problems and communicate, and to adapt to the changes that they are going to encounter." The principal of the full service school, with students from pre-school to adults, said: 'My vision has been to make this a *statue of liberty school*. With the adult population, there are people who are taking big steps towards completing a life long goal of getting a diploma or a GED. There are so many horizons that have not been explored."

All 28 principals seem to be driven by a belief that most students want to, and can, succeed in what is required of them in school, and that the staff working together functions as a positive force in the chaos lives of students. They see their leadership challenge as one of encouraging teams to invent more powerful programs and services over time, and to sponsor innovation and piloting. Quality is everyone's job, they report consistently, where the focus is on the success of students.

However, not all teachers within some schools appear to be ready to participate in collaborative activities, or to make changes in their programs and services. Initially, much energy is devoted to developing the staff's readiness to see the need, while ensuring they have the skills and knowledge for engaging in the continuous improvement of programs and services.

> One principal shared: "The way we involved the staff in the vision statement was to ask: What do we want children to look like when they leave our schools? We listed ideas, clustered and labeled them and then wrote a brief, concise vision statement." Another principal told us: "My vision is for everybody to function as a leader; and have a focus for growth and be self directed. Everyone is trying

new things, they're reading professional literatures, sharing, coaching each other, and facilitating student learning."

Strategic Planning

A vision of student success for all populations belongs not only to the principals in this study, but also to the staff in every school. School improvement goals are established through consensus building every year within structures for total staff involvement, while goal setting and planning involves not only teachers but parents, students and community leaders as well.

Action planning directs the work that is implicit in the school improvement goals, as task forces and teams develop blueprints for their action. A wide assortment of both temporary and permanent structures is designed for goal-related activity; and goals tend to become the responsibility of many task forces and/or teaching teams as the work is divided. Principals report that the simple action planning of the past decade is evolving into more in-depth study groups who explore options before decisions are made. Simple solutions are being replaced more often by comprehensive plans and long lasting change efforts. In addition, teachers receive training in collaborative planning skills, and in facilitating collaborative ventures. As strategic plans become translated into action plans, many innovative structures evolve along the way to link talents with tasks. One elementary principal shared:

> Before, the comprehensive plan was something I did over the summer after each committee had made recommendations. However, teachers didn't seem to use the plan as a reference point to their work. And so, the next year the entire staff met together in the cafeteria to review the information we had gathered on our progress, along with the district and state goals. We then turned all the information into goals for our school and strategies for our work. That year all 110 of the staff prepared the comprehensive plan, a copy of which was given to each team and task force for reference in their planning. Now, the teachers have the big picture and know how it all fits together; they see more of the whole puzzle.
>
> Another principal reports: "We have used school-wide goal setting since I came. The first year we looked at surface things. The second year we dove into "integrated units," and this year we are implementing integrated instructional programs. At the end of the year when we were deciding on goals for the next year, the teachers said

they wanted to refine what we were beginning in interdisciplinary instruction. Now, goals drive the work we do."

Systems Thinking and Action

Principals report that unless they have been able to select their own staffs, the practice and concept of isolation (in self-contained classrooms) is shed only gradually, as this requires teacher training, coaching, and taking on new challenges over time. Gone is the discussion or tolerance of people working alone, however, for structures that foster articulation across both curriculum and grade levels seem to flourish, while cross-functional teams focus on the integration of curriculum and services to meet student needs.

It is of special interest that multi-aged and nongraded teams were found as pilots, not only in all elementary schools, but in every middle and high school in our study. The three secondary principals reported that content driven departments in their high schools are a thing of the past, for teachers are expanding integrated programs, while pilots are viewed as strategies to test new ideas.

> A high school principal shared: "I think an important area of growth is that the leadership team now thinks they have moved beyond the quality and evaluation of the school as an administrative responsibility. This is now a responsibility that is shared by the leadership team and teachers, all looking at student achievement and how to improve it. We have broken a sacred cow by talking about the effects of our collective work."
>
> Another principal reports: "The focus needs to be a core set of beliefs and standards that we are working towards. Everything needs to be driven by these. Interdependence breaks down some times, but we keep going and learning from our experiences."

Systems thinking, which refers to the interdependency of programs and functions around common goals, is consistent across schools. For example, "inclusion" programs flourish now as teachers work together to integrate some special education students into the regular classroom. Interdisciplinary learning programs focus on a major theme, while integrating separate curriculum areas. Networks and partnerships are thriving in the more high-involvement work cultures to make use of resources and opportunities outside the school. Advisory councils and leadership teams now address challenges that are common to the school as a whole, and solve problems that effect all units. The traditional boss-

principal has been replaced with a leadership team that represents the various work units and community groups, and this team now fosters interdependence and innovation among all work groups.

Information Systems

Establishing new information systems represents the greatest area of change for principals. The question, "How are we doing?" seems to prompt a search for new kinds of information. While many schools in the past excelled in gathering information and preparing reports for district and state compliance purposes, they found that the traditional kinds of data are not very useful for improvement purposes. Principals and teachers are now seeking ways to gather new kinds of information that will inform their planning. And so the question looms large: "What kinds of information will help us improve our services?" Parent and community survey data are being used more often now for improvement planning. Analyzing accomplishments, in relation to goals, also points out areas for improvement.

The biggest area of change concerning information systems relates to the use of student performance data. Principals continue to pay attention to attendance patterns, test performance, honor roll, annual comparisons, bus referrals, percentages going to college, and grade distributions. However, new curriculum rubrics and continuous progress programs offer challenging opportunities for gathering more useful qualitative and quantitative information on student progress, and teachers are learning new skills to analyze data. Many schools even have "measurement task forces" to explore innovative ways to gather data that are useful in staff decision making. Most principals report they have pilot projects to develop and test the concept of student portfolios. These somewhat fresh approaches to data collection and reporting of student progress raise many critical questions about what is useful and reliable information, and what signifies progress and success. Most principals seem excited about the potential that other forms of information will have for guiding the strategic planning and daily decision making processes.

> One high school principal reports: "I just came from a staff meeting where we decided that assessment is the weakest part of every thing we do. Having student outcomes for our school will help us, and so also will the new state competencies for graduation. We have a committee organized now to begin the work of deciding on outcomes for graduation; starting with where we want to end, and then working backwards."

> Another high school principal approached the information task differently: " I give team leaders the overall grade distribution of the school; they give the team distribution data to their teachers, as well as individual teacher distributions. The data raises questions for the team leader to use to guide instructional improvement. However, we now think that the whole assessment system has got to change; the organization has to change from individual and group competition to group and class production of products and services. New kinds of information that will help us respond are still somewhat elusive."

Human Resource Development

It seems significant that during the interviews about assessment and staff development, no principal in any school mentioned teacher evaluation as a function in improving the school's quality of work. The practice probably still continues, but when principals think about developing their school, they focus more on professional development issues. In fact, many spoke about the development of professionals as their primary investment in the future of the school. Professional growth is the chief strategy identified by principals for advancing the school's work culture and its effects upon students. The goal of human resource development for principals today is the empowerment of teams, developing knowledgeable and skillful professionals in groups, who can meet new challenges. Although important, discussion of compliance with regulations seems to be at most a backdrop for development.

> One principal reports: "You have to start training people to lead productive groups, to have interaction skills, and to evaluate what they are doing. They need to know how to coach each other, and to receive coaching from team leaders and administrators. I don't think in the beginning I devoted enough time to staff training in the necessary skills. Each year now the teams choose what kinds of professional development they want, and that's what we do. It always relates to goals; you have to teach them about the natural interdependence between goals and staff development."

Professional development systems in these 28 schools are extensive, and include workshops using teachers as trainers, conferences, seminars, book clubs, visitations, graduate work, networks and partnerships, and leadership development. There is a strong linkage between the school improvement goals and the focus of the staff development programs within a given year, for new knowledge and skills are viewed as enabling

strategies. Professional development centers around innovations and pilots of new programs, strategies and structures, as well as the tools for working collaboratively. Training for teams focuses on facilitation in goal setting, planning, action and results, on group problem solving, and on personality inventories that enhance group work. Peer coaching and problem solving provide a natural way of working within teams, as professionals learn with and from each other to advance the school's capacity to enhance student success.

All principals reported they now have recognition programs for teachers, and more often now for teams. When teachers understand the power of recognition they in turn develop programs to salute student achievements, and in time celebrate the contributions of parent volunteers and of community agencies and business. In fact, the negative climate that reportedly existed in the past for some schools has been replaced with the celebration of successes and a collective optimism for the future.

Quality Programs and Services

Most principals report that teachers no longer use text books as a sole source for information, and neither are the practices of tracking and retention viewed any longer as a workable strategies to enhance student success. Teachers are exploring alternative ways to enhance student success within variable structures. The most prevalent forms of program development are the integrated curriculum within teams, and continuous progress structures. New programs tend to center around real life community challenges, and are guided by rubrics that specify levels of performance for students in many subject areas. Integrated and continuous progress programs stimulate interdependence among students and the curriculum, and because of the ways these two innovations enhance student learning, they soon will become institutionalized. In a sense, principals and their staffs are only beginning to understand the potential of integration and continuous progress for students. Authentic assessment pilots tend to be limited now to reading and writing, with the expectation that the concept will be expanded when there is a greater understanding of how the concepts can be operationalized.

> One principal shared: "It took us five years of learning how to work together and to be successful with our initiatives before we were ready to tackle the really tough problems with some student populations in our school. Now we understand how to work through things, to learn together and do what it takes to succeed. When we began to address questions about certain student populations, we naturally explored continuous progress programs and structures. We

began with pilots, and today our entire school is built around nongraded learning communities, while the district has developed new continuous progress curriculum and assessment systems that we are piloting. We all have learned together, and now continuous progress programs are found in most of our elementary schools, with middle and high school systems being developed and piloted."

For instruction, information bases are now guiding decisions more often for student placement, rather than age and grade level. Integrated curriculum pilots are changing the role of teacher from decision maker and controller, to facilitator of student success. Perhaps one of the most striking themes is the changing role of the student in the learning process from individual recipient of information to team-member and producer of products. Forms of cooperative learning, while working toward common goals, are replacing competition and isolation practices among students, and the biggest change of this sort can be seen in high schools. In this study, nongraded structures are replacing tracking patterns at all levels of schooling (K-12), and are having a positive effect on student success patterns. Tutorials that span age levels function to help students at all ages. Technology has begun to cause a revolution in learning, replacing the teacher function of dissemination and drill. This has encouraged new facilitative roles to evolve for the teacher.

Continual Improvement

Principals in this study report a shift in their thinking about the function of reliable information for making decisions. Most shared that they are exploring the meaning of "data-based decision making". Continuous progress structures require new data systems for improvement, and the teaching team has evolved as the accountable unit for improvement and results. The more that teachers make use of student performance data, the more they are shifting from "improving to meet guidelines", to "improving to help students succeed".

An elementary principal reports: "Managing the quality of work is the hardest part of this job. Last year I asked each team to set goals for student demonstrations by the end of the year. But I'm not satisfied yet; we get data but we're not sure what to do with it. We are looking for alternative forms of assessment for children, and are experimenting with various portfolio formats." Another principal

reports: "We're not using report cards at all, and everyone is experimenting with and learning together about portfolios."

Empowerment is an issue as the school's work culture matures, with not all teachers being ready or willing to assume new kinds of responsibility. Principals report that about one third of the teachers from these schools seem pleased about empowerment opportunities, while the other two thirds are still less than enthusiastic. Indeed, these uninvolved teacher populations are a continuing challenge and dynamic in natural chaos environments. Interestingly, not many principals perceive that large groups of negative or disinterested teachers exist; the challenge for them is tap and utilize the wide range of teacher readiness and willingness to be responsible for improvements.

School improvement goals now focus on pilots for such programs as whole language and reading, continuous progress structures, integrated curriculum, and authentic forms of assessment. Principals spoke about pilots as a strategy to test new ideas, and they seem less inclined to launch new innovations school wide until their success can be predicted. Piloting with eager teachers seems to work in adapting innovations to local conditions.

The leadership team is viewed by principals as a major force for innovation. In the past leadership teams were more concerned with monitoring compliance patterns. Now they often are the sparks and facilitators for innovation within teaching teams and task forces. The leadership team also seems to be the training ground for new school leaders, as it develops new systems and strategies for school wide enhancement, and for the interdependence of programs and services.

Quality Culture

Principals report a shift over time from a "me" to a "we" culture of work. Parents and community agencies, and businesses, seem more integrated into the school's life and now are partners in the development of youth. And, in some communities the school has become a major new resource to families in responding to a wide range of service needs. A climate of success has replaced the crisis orientation from past years, as school cultures move from debilitating patterns of turbulence to the natural patterns of chaos. The new interdependent work structures not only stimulate those who are eager to grow, but many of the "old timers" are revitalized as a force for change. Working on task forces tends to release talent and energy for more exploration and design work, and this influences the quality of work within teaching teams. A sense of family is evolving in schools, one that focuses on "community", and the big story centers around the extent of parent and community involvement in the daily life of the school. The walls of school isolation are

disintegrating and being replaced with open doors to participate in the life of not only the school, but also the community.

> One principal shared: "Teachers are telling me that they aren't afraid to try new things; there no longer is fear of reprimand. They are doing an excellent job creating integrated curriculum programs now." Another principal reported: "The most important ability is for a team to evaluate their own work. They need training in how to ask questions and look at their work objectively. Collaboration allows them to have a quality product. Their knowledge base is high because of our continuous staff development. The focus of our work is on student achievement."

Within most of the 28 schools a "learning community" is forming, one that asks new questions and where over time staff confidence is developed to explore, invent and examine new options. And what keeps the change process moving? Principals report a growing sense of moral responsibility among the staff to do whatever it takes to help all students succeed, especially the at-risk populations. This growing focus on student success provides the energy for continuous development. The picture of collaboration exists within teams, to be sure, but it also extends now to task forces, networks, and partnerships across institutions.

Customer Success and Satisfaction

What effect is the evolving culture of work having on student populations? Rather than sharing quantitative student performance patterns, principals shared with us stories of new concentrations of adult energy to help more students succeed. Principals also report noticeable growth patterns among at-risk populations. Many parents work as volunteers, serve on councils and task forces, function as mentors and tutors, provide dinners and other special events featuring students, and participate in training sessions with the staff.

Considerable effort is made by principals to engage local businesses and agencies in the school's challenges, and the list of participating organizations is quite extensive.

> One principal in a rural setting said: "We've been adopted by the chamber of commerce, and many businesses are sponsoring school attendance projects, the ABC program, specific children, clothing drives, and adopting needy families. It's not just money that we get from these sources; we have become a part of the community, and together we established a way to care about families through the

school. The partnerships with our businesses have developed relationships of caring."

In other schools, principals develop a sense of mission for the school to serve family and community social needs, for the student is now viewed as part of the family system, which effects their performance in school. A response to the whole family is helping more students to succeed. Schools such as these are more integrated with community businesses and agencies now, and gone is the sense of school isolation from the community, or of business only helping the school. Many programs also exist for students to work, for example in nursing homes, and to shadow professionals to learn about career options. New innovative programs enable students to become actively engaged in their communities, while still in school, and to interact with the community in its daily life.

From this study we learned that when principals are knowledgeable and skillful in managing change, they are also confident in strategic planning and decision making tasks. Change occurs over time, and is a different phenomenon in the chaos of each school. Neither is it time bound, but rather successful change is determined by the readiness of the faculty to address the challenges they face. *Developing the readiness of the staff to address increasingly complex problems over time is the new work of principals.* A constant challenge is to think clearly about the integration of functions and services toward common goals as schools function within environments of natural chaos. Developing an interdependence among school planning, staff development, program development and school assessment systems generates a force to offset the randomness and debilitating effects of chaos environments. The integration of these work culture functions gradually matures over time for these principals, while a shared vision of success for all students becomes the umbrella for all development activity.

Principals who understand the change process from a chaos perspective tend to be successful in engineering school development, and in this case study, MPS provided the fund of knowledge and skills for managing change over time. A strong vision of success for the school eventually permeates the culture, and drives continuous program improvement and professional development. Collaboration takes many forms as cultures mature, beginning within teams, and moving out to task forces across the school and district, and then to networks and partnerships across different types of institutions. The leadership team is a major source of energy for the school, one that stimulates innovation and nurtures exploration. Perhaps the most striking pattern found in the principals' voice is the strength of the principal's vision of success for all students, and a belief in the capacity of the faculty to respond to complex, difficult and changing conditions given the

knowledge, skills and moral commitment. Their belief in the capacity of teachers to be able to respond to the needs of students today tends to provide moral strength for principals to meet the political challenges along the way.

Transforming the work culture of schools from bureaucratic patterns to those that are more responsive to needs requires leaders who understand change within natural chaos work environments. Allowing for randomness, surprises, sudden happenings and changing time frames enables principals, together with their staffs, parents, community and students, to garner greater degrees of natural energy to facilitate change toward common and evolving purposes. Success depends also on the extent to which principals welcome the challenges of student success for all populations, and retool their schools for working in 21st century environments. Managing change successfully also requires a passion for managing chaos, routine systems thinking, and the facilitation skills for engineering school development through the political "mine fields". The voice of successful principals in our study provides hope for breaking the deadlock on traditional work cultures, and for transforming them over time into vital learning organizations.

Summary

Changing school work cultures is based on philosophical assumptions of partnership and values about people as con-constructors in shaping the schools of tomorrow. Success may depend on an understanding of how change occurs within natural environments. Chaos Theory encourages leaders to shed the unworkable notion of controlling for planned change, and provides clues for embracing randomness, irregularity, complexity, and sudden leaps as a backdrop for their school change efforts. Within the context of chaos, leaders can watch for the random energy patterns and facilitate their movement toward organizational goals and new visions of school success.

We learned from teachers in 28 schools that change is more likely to be successful if an array of collaborative structures and systems are created to foster continuous dialogue, exchange and problem solving among work groups. Twenty-eight principals report that it is possible to engineer the end of unresponsive structures, systems and programs. Not one principal's story was like another's, in either the context of the school or in the change strategies that worked for them. And yet the patterns that emerged from the interviews reinforce the utility of Quality as a mental model for guiding change; and Chaos as a Theory for grounding their efforts.

Is change to a Quality way of life possible in schools? Much depends upon the assumptions made by the school leader initially, and the choices made along the way as teachers develop greater capacities for collaboration, invention, improvement, and

eventually accountability for results. The voice of teachers, who work daily with the drama of shifting population needs, provides clues to the natural chaos of the school context at the end of the 20th century. The future of schooling may well depend on the philosophical orientations and value systems of principals, as well as their skill for listening and charting schools through the headwaters of change toward new futures for their students.

References

Acker-Hocevar, Karolyn J. Snyder & Kristen M. Wolf. (April 1995) "Developing an Education Quality Benchmark System: A Partnership in Restructuring," a paper presented to the annual meeting of the American Education Research Association, in San Francisco.

Acker-Hocevar, Michele, (November 1994a) "The Content Validation of Standards, Outcomes and Indicators for Organizational Development in Region IV of Florida," a dissertation at the University of South Florida.

----------(March, 1994b). "Quality Standards: A Guide to Organizational Transformation," in *Wingspan,* 10, 6-11.

Anderson, Robert H. and Barbara Nelson Pavan (1993) *Nongradedness: Helping it to Happen.* Lancaster, PA.: Technomics Pub., Inc.

Blair, Billie Goode, "Chaos Theory in Comparison: A Study of Educational Administrators and the Middle-Level Managers from the Business Sector." Paper presented at AERA Annual Meeting, San Francisco, April, 1995.

Chubb, J. and T. Moe. (1990) *Politics, Markets and America's Schools.* Washington DC: Brookings Institute.

Cohn, M. and Kottkamp, R. (1993) *Teachers: The Missing Voice in Education.* SUNY press.

Conley, S., T. Schmidle, and J. Shedd (1988) "Teacher preparation in the management of school systems", in *Teachers College Record.* 90 (2) Winter 1988.

Dalin, Per. (1993) *Changing the School Culture*. London: Cassell.

Deming, W. Edwards, (1986) *Out of Crisis.* Cambridge, MA: Massachusetts Institute of Technology.

Feigenbaum, Armand V. (1983) *Total Quality Control.* New York: McGraw Hill.

Gleick, James. (1987) *Chaos: Making a New Science*. New York: Penguin Books USA, Inc.

Griffiths, D.E., Hart, A.W., and Blair, B.G. (1991). "Still Another Approach to Administration: Chaos Theory," in *Educational Administration Quarterly*, 27 (3), 430-451.

Haberman, Martin, and Vicky Dill, (November/December 1993) "The Knowledge Base on Retention Versus Teacher Ideology: Implications for Teacher Preparation," in *Journal of Teacher Education.* 44:352-360.

Johnson, William, Karolyn J. Snyder, Robert H. Anderson and Annabel M. Johnson, (1994) *Assessing School Work Culture: An Analysis and Strategy*. Paper Presentation at AERA, New Orleans, LA.

Juran, Joseph M. (1988) *Juran on Planning for Quality*. New York: The Free Press, a Division of Macmillan, Inc.

Kaufman, Roger, and Douglas Zahn (1993) *Quality Management Plus: The Continuous Improvement of Education*. Newbury Park, CA: Corwin Press, Inc.

Little, Judith, & Milbrey McLaughlin. (1993) *Teacher's Work: Individuals, Colleagues, Contexts*. New York: Teacher's College Press.

Mirel, Jeffrey, (Fall 1994) "School Reform Unplugged: The Bensenville New American School Project, 1991-93", in *American Educational Research Journal*. 31:481-518.

Morgan, Colin and Stephen Murgatroyd (1994). *Total Quality Management in the Public Sector: An International Perspective*. Buckingham: Open University Press.

Rosenholtz, S. (1991) *Teacher's Workplace: The Social Organization of Schools*. New York: Teacher's College Press.

Senge, P. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday.

Snyder, Karolyn J., Michele Acker-Hocevar, and Kristen M. Wolf, (1994), "Organizational Development in Transition: The Schooling Perspective," A Paper Presentation at the AERA Annual Meeting in New Orleans, April.

Snyder, Karolyn J., (March 1994 a) "Welcome to the Quality Revolution," issue editor, *Wingspan*, 10:2-3.

Snyder, Karolyn J. (July 1994 b) "The Quality Revolution in Schools: A Florida Partnership Venture", in *International Journal of Educational Reform*. 3:279-289.

Snyder, Karolyn J., Robert H. Anderson and William L. Johnson. (July 1992) "Transforming Work Cultures and Learning Patterns: The School-Based Management Challenge," in *International Journal of Educational Reform*. 1 291-297.

Snyder, Karolyn J. and Robert H. Anderson. *(1986) Managing Productive Schools: Toward an Ecology*. San Diego: Harcourt Brace and Jovanovich, 1986.

Snyder, Karolyn J. (1988a) *Competency Training for Managing Productive Schools*. San Diego: Harcourt Brace and Jovanovich.

----------(1988b) *School Work Culture Profile*. Tampa, FL: Managing Productive Schools Training Programs.

Steeples, Marion Mills. (1992) *The Corporate Guide to the Malcolm Baldridge National Quality Award*. Milwaukee: ASQC Quality Press.

Tyack, David and William Tobin, (Fall 1994). "The Grammar of Schooling: Why Has it Been so Hard to Change?", in *American Educational Research Journal*. 31:453-479.

Welhage, G., G. Smith and P. Lipham. (Spring 1992) Restructuring Urban Schools: The New Futures Experience. *American Educational Research Journal*. 29:51-93.

Wheatley, Margaret J. (1992). *Leadership and the New Science*. San Francisco: Berrett-Koehler Publishers, Inc.

pub/london95

EA 027 647

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: CHAOS THEORY AS A LENS FOR ADVANCING QUALITY SCHOOLING.

Author(s): Snyder, Karolyn J.; Acker-Hocevar, Michele; Wolf, Kristen M.

Corporate Source: University J South Florida

Publication Date: Sep95

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic/optical media, and sold through the ERIC Document Reproduction Service (EDRS) or other ERIC vendors. Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following two options and sign at the bottom of the page.

☑

Check here
For Level 1 Release:
Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical) *and* paper copy.

The sample sticker shown below will be affixed to all **Level 1** documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 1

The sample sticker shown below will be affixed to all **Level 2** documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 2

☐

Check here
For Level 2 Release:
Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical), but *not* in paper copy.

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but neither box is checked, documents will be processed at **Level 1**.

"I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic/optical media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Sign here→ please

Signature: Karolyn J Snyder

Printed Name/Position/Title: Karolyn J. Snyder, Professor

Organization/Address: P.O. Box 371669, Tampa, Fl 33688

Telephone: 813/963-3899

FAX: 813/962-6598

E-Mail Address: snyder@typhoon.coedu.usf.edu

Date: Nov. 1997

(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC Clearinghouse on Educational Management
1787 Agate Street
5207 University of Oregon
Eugene, OR 97403-5207

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
1100 West Street, 2d Floor
Laurel, Maryland 20707-3598

Telephone: 301-497-4080
Toll Free: 800-799-3742
FAX: 301-953-0263
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com