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RESEARCHING QUALITY: The Continuous Improvement Process (CIP)

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Abstract

This paper articulates the view that before Quality systems can be widely adopted in education there needs to be a process of definition and empirical investigation which is currently lacking. But before we can subject Quality systems to empirical tests within educational practice the key concepts need to be operationally defined and widely discussed and accepted. [1] This paper argues that the traditional motivators for adoption of Quality systems in industry are not present in education and when present do not represent a threat so significant to the system as to require massive organizational change. It also argues that certain characteristics of educational systems themselves can assist with the appropriate introduction of well-researched features of Quality systems and that these two forces can link up with issues of current importance to the educational systems and make Quality systems more attractive to K-12 innovators. Finally, the author presents a model for the continuous improvement process (CIP) which is embedded in all Quality systems.

This article also provides an [operational definition of CIP](#) and the [concept of quality](#) (with a small "q") which may be useful to researchers who are seeking to identify and define significant features of Quality systems in education, in researchable ways. [2]

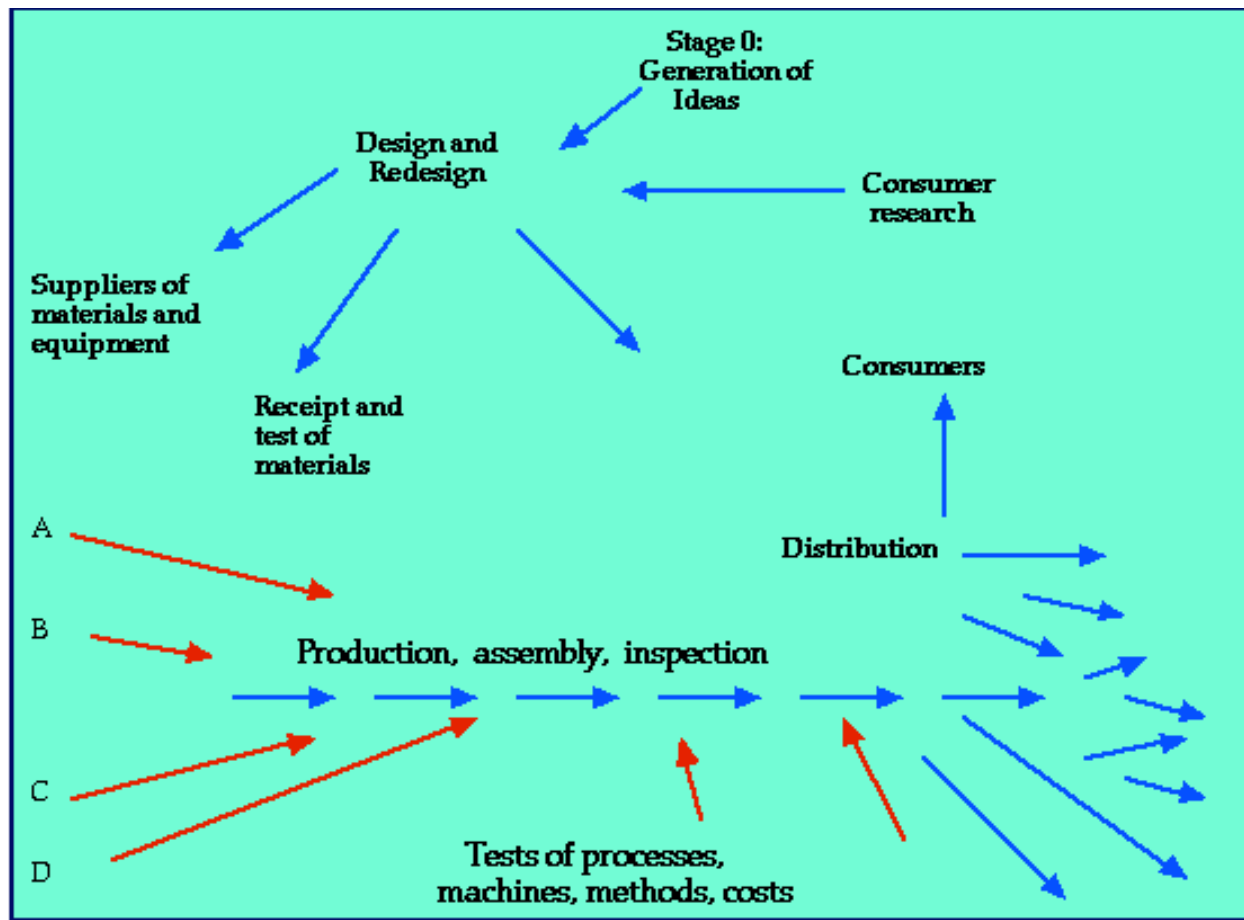
I. Quality Systems lack rigorous empirical measures

Deming and the need for an operational definition of a Quality system.

W. Edwards Deming understood that no theoretical proposition could be validated unless it was prepared to submit itself to an operational definition that could be studied empirically. In his 1994 book (published posthumously) entitled "The New Economics for Industry, Government and Education" he cites the need for an operational definition of a Quality system and illustrates it by explaining how his colleague at the University of Tennessee teaches the concept of operational definitions to her students.

She goes to the grocery store and buys half a dozen packages of animal crackers, dumps them on the table in her classroom, and asks her pupils to count the cows, horses and pigs. Straightaway comes this question Is this a cow? One leg is missing. Should I count her as a cow? Neither yes or no is correct, but the pupil needs to know the rules. Change of rule, count her as a cow, or do not, changes the count of cows. ([Deming, 1994a, p. 106](#))

Deming also provided what he described as a "flow diagram of production viewed as a system" ([Deming, 1994b, p. 58](#)).



He used this chart first in Japan in 1950. He acknowledged that some changes would be required for service organizations. "In a service organization, the sources A, B, C, etc., could be sources of data or work from preceding operations..." (Deming, 1994b, p. 58). But he did not deal with education or how this chart might look as applied to the type of organization whose only function was to produce learning.

His concept of "profound knowledge" placed learning as a quality of the organization and all the people in it. He defined a "learning organization" as one which acquires profound knowledge about its clients, its processes and its outcomes. He just never took the additional step of viewing his system of work as it may apply to a function where the "product"—the learner—would also be a "customer" and where the primary modality of production would be more a "humanity" than an "engineering" process.

The concept of quality as an operating process.

The concept of quality has many foci from which many operational definitions can be formulated. As a characteristic of a product, quality could be anything from a better packaged widget to longer-lasting chewing gum, to more tasty chips, to better fitting shoes. Quality, as a characteristic of a service, expands the criterion to customer's perceptions of how the service was delivered, not just what service was delivered. It is useful to note that in every commercial pursuit, the product or service is separate from both the customer (who consumes it) and the producer or service provider (who delivers it). In education, a

cultural process which is characterized by a cooperative relationship between student and teacher, the product being sought, "student learning," is also (to a great extent) being produced by the learner and thus the flow diagram is much more complex.

In any case, commercial or educational, the operational definitions of quality have been lacking. A consistently applied model for delivering the continuous improvement process, that is theoretically essential to improving quality, is nowhere to be found.

Organizations, including some pioneering school systems, have proceeded to implement one or another version of a quality system by relying upon a Quality systems consultant (QSC). The QSCs have their own set of principles—their 14 points, 4 pillars, 40 steps—which get delivered through training that is devoid of empirical evidence that any or all of these specific steps is likely to deliver (in the client organization) the results forecasted by the QSCs. Who knows which of the steps is actually responsible for optimizing the system? Since organizational change is the most difficult and expensive of all the change processes in education, the QSCs lack the credibility educators have always demanded of innovators; a theoretical underpinning which includes data from third-party studies and operational definitions that would permit the evaluation of the process and its outcomes.

Invariably Quality systems implementation efforts in education have reported favorable results, but there's little externally produced research to confirm it. Most of the findings we have read, on the success of Quality systems, comes from implementation in the business arena and very often the data is guarded as business-sensitive and not widely available to the research community for validation and replication. [\[3\]](#)

Most of the "spectacular" results come from studies being conducted by the proponents of the Quality systems themselves. In part this maybe due to a lack of a widely accepted operational definition of what Quality systems do. As Deming asks "In this a cow?", we must ask, "Is this a Quality system?" and the answer must be "yes or no" based upon the system's coherence and correspondence with a widely accepted operational definition of that type of system.

Educators need to know HOW Quality systems work as well as THAT they work.

Another reason that research may be lacking in this area is that in business, empirical evidence of a how a process works is always less interesting than that the process works to produce favorable economic results.

I spoke recently with the Director-General for Japan's Agency for Industrial Science and Technology, Dr. Jiro Hiraishi, and asked him if Japan's longer tenure in this business of Quality systems had yielded research-based operational definitions for such basics as "benchmarking," "continuous improvement process," or "optimization of the system." There was a prolonged silence while he searched for an example. He finally commented that the question was more interesting to researchers than to business-people and that business-people were looking for other type of information. They certainly know what worked for which company at which time. But they have no study of common elements across companies, industries or time spectrum, nor are they looking to do it in short order.

Some recently published research such as [Kofman, Repenning and Sterman's \(1994\)](#) and [Lewis' \(1995\)](#) are beginning to shed light into the workings of Quality systems in business

and offer some objective indication of how Quality processes work. Yet, at this time, they have no agreed-upon operational definition of a Quality system, either for the private or the public sector organizations under study, that can be tested through empirical research. The variance between the models being proposed as having delivered the expected results is so great, that one wonders whether the models describe the same phenomena.

There's more agreement among the QSCs on the nature of Quality systems' leadership and international standards for Quality processes are currently being applied on the basis of broad theoretical agreements on how the production systems should be designed. But still, this level of agreement has not produced researchable models.

The question needs to be asked... which among the varying prescriptions for quality appear to be most the most effective across settings? In education we must go beyond the immediate outcomes measure as evidence of goodness or Quality. We need to compare the alternatives and define the features that make them successful in replicable terms, if the practice is to have an impact beyond the initial group of innovators. We must have a measure to test and validate the theory and not just a philosophy.

If we can't define quality in a human development sense can we define it as a system of work?

We commit with the heart but we work with our brains and our hands. If Quality systems, as introduced by Deming, have taught us anything, it has taught us that Quality is, at one level, a "system of work."

The QSCs have raised some of the significant questions about Quality as a system of work. Who makes what decisions? How is the "result of our work" measured against the customer's perceptions? Which areas are most sensitive to Quality improvement and how can we measure change in those areas? There are answers within the words of the QSCs and explanations embedded within processes published (Deming, 1986; Juran, 1990; [ANSI Quality Standards, 1994](#); ISO 9000 Standards, 1992) which give clues on how this process should be understood and its outcomes measured.

There are dozens of books appearing every year and articles like this one going to press on Quality systems in education. The Deming idea, whether fully understood or partially understood or misunderstood, needs to be examined as a defined paradigm. This is necessary at least in education where so much of what we do is driven by the empirical study of a process at work, a process which must be operationally defined before it can be studied.

II. Quality Systems and Educational Issues.

Educators are a very issues-oriented group of professionals and political issues and their resolution through innovative schooling policies and practices, is what educational leadership is all about. Given a few years in education, any educator can recite the issues of the 60s, differentiate them from the issues of the 70s and 80s, articulate them with the emerging issues, and even define some non-issues.

Educational innovations come to schools in response to issues and any operational definition of an innovation has to come wrapped around research and theory on the issue to be dealt

with. Quality systems have a set of issues that they can address (that is, there are a series of issues for which some form of a Quality system is a possible response) and some of these issues are currently (in the past decade) becoming important issues about which school systems and legislatures are doing something. There are also some non-issues which QSCs need to watch out for. Addressing these non-issues will not obtain the desired result. They are, after all, only straw-men put there by the profession as accommodations to political pressure being applied them. Here is a discussion of some of them.

Public education is not feeling threatened.

In another article on this edition, [Blackiston and Sabatella \(1996\)](#) point to the "noose at the neck" motivation that moved industry in the 70s and 80s to adopt Quality systems. "Most organizations turn to Quality because they find themselves in a crisis." They go on to say that the 1983 Presidential report "A Nation at Risk" signaled the crisis in education. And while the Secretary of Education's recent evaluation of progress "[Ten Years After Nation at Risk](#)" point to some gains, Blackiston and Sabatella are right in asserting that "American children remain behind other nations in critical areas of education." This fact can be independently confirmed most recently in an analysis by Gerald W. Bracey of several databases including the 1992 Second International Assessment of Educational Progress ([Bracey, 1996](#)).

Why are we so far behind after 10 years of re-structuring and reform efforts? Recently a writer for Business Week characterized the predicament facing education by defining the present condition of education in business terms. These characterizations were all too familiar to business in the late 70s when Quality entered the picture. "Your revenues are rising but not as fast as the cost of serving customers. Labor costs are climbing, but antiquated work rules and poor morale limit your flexibility. Your overseas competitors pay more, spend lavishly on training, and get far better results. Your physical plant is crumbling. Computers are scarce. And your customers are dissatisfied. Welcome to America's public school system. Its problems are so profound and its disorganization so pervasive that it would be a challenge to the savviest of America's business managers" ([Magnusson, 1996, p. 74b](#)). Are we as educators simply unmanageable?

While there are many threats to the educational establishment and to its very survival, the non-profit sector neither perceives nor reacts to competitive survival threats with the same dynamic resolution as does the for-profit sector. In the non-profit sector, the customer or client is far from being the Lord over the Manor we find in the supply-demand ruled world of business. Very often the education client is blamed for the failure of the schools to produce. Whether we are talking about teachers blaming parents for failing to provide cultural opportunities for their students and collaborate with their school activities, to systems blaming the state or Federal government for wrongheaded interventions that have prevented them from delivering the sterling results they are capable of attaining, blaming the client is a time-honored way of shifting blame for lack of quality of a system in our profession. There are many threats to the educational establishment today, but none seem as critical to educators as maybe even a small loss of market share would seem to a corporate executive.

In fact, public education is being challenged and some change is expected by the client. The challenge comes from the one client who pays most of the bill and therefore has the clout; that is, one of 16 state Legislatures which last year passed laws enabling "alternatives to public education." In the past 5 years each has legislated measures such as Charter

Schools, Contracted Schools, Vouchers, Choice Programs, Home Schooling and other alternatives to traditional public education. But this challenge is very limited and thus far the legislated experiments with alternatives to public education are small and controlled. In Texas for example, the total number of Charter Schools permitted will be 20, but only 6 were funded this year by the State. Even at the rate of 20 schools per year, it will take many years before whole systems are threatened, well beyond the tenure of the average Superintendent or school board member. If (sometime in the future), alternatives to public education succeed to the point that they result in a few job losses in districts and some empty schools, this will quickly be seen as an adverse development for public education for which we will need a policy remedy.

Public schools are not likely to go out of business in our lifetime and the educational establishment knows it. Only if the future were to bring us massive re-structuring of public education (and only in that case), would we then have a set of conditions in public education that could equal the economic disequilibrium which results when competitors enter the market in the for-profit sector. Educators have a "noose," but it is not anywhere near their necks, it is probably located under their armpits. It is uncomfortable to hang there and they would prefer to have their feet on firm ground, but the outcome is not fatal. The competition argument is the ultimate non-issue.

Quality improvement and not restructuring as the big issue.

The current and most significant innovations in public education do go back to the above-cited "A Nation at Risk" report of 1983. The report did sound an alarm for educators calling our system of education mediocre and threatening to our national security. The educational establishment chose to respond to this message with a call to "restructure" public schools. In the last decade dozens of re-structuring measures (such as those cited above) were introduced with the support of Federal and State agencies.

In a report on the most comprehensive study of re-structuring to date the authors admit that no widely accepted definition has emerged. "Restructuring has no precise definition, but the term suggests that schooling needs to be comprehensively redesigned; simply improving parts of the schools as we know them isn't enough" ([Newmann & Wehladge, 1995, p. 1](#)). They seem to say what the QSCs have often said...we can't define it, we don't know precisely what it is, but whatever it is, it must be comprehensive.

This latest study, which is abstracted in [note 4](#), points to the effects of specific restructuring practices (which are more or less defined) upon student achievement. Still no operational definition of restructuring is given and a notable reliance on the paradigm of restructuring as a one-time event (either present/not present at the time of the researcher's snapshot) and "which takes time to show effects" makes the phenomena unresearchable.

We think the educational establishment has missed the real point in quality improvement of education, namely that restructuring is just a means to Quality systems implementation, and not the end. The top-down nature of the educational establishment's response to the Nation at Risk and its current plan Schools 2000 maybe a reason for this oversight.

Quality in education has traditionally started at the bottom.

Studies of the success of innovative practices in the early 80's found that teachers and other classroom support personnel were one of the most important innovators in schools. They went to conferences or shared research in a college classroom and they got ideas on how to improve their performance from colleagues in their schools. A single teacher with a successful program, was likely to transmit this success to others in the school and was likely to have that innovation remain in place and continuously improve ([Berman & Gjelten, 1984](#)). Michael Fullan also argues successfully that in optimal terms improvement is a process which is both bottom-up and top-down ([Fullan, 1994](#)).

Those of us who work with teachers know that most teachers care about the quality of their work and in a Quality system this caring is essential to the improvement. In the Quality systems paradigm the teacher (as a member of a team) is empowered to bring to the classroom and to experiences outside of the classroom, those ideas, resources and joy which are likely to improve Quality. Therefore we think there is a better "noose at the neck" than the threat of economic collapse and that is the rational tendency on the part of education professionals to seek to improve their work when this improvement is based on their own assessment of current conditions and a clear definition of what the client wants.

The current trend (or that which can be perceived from all the political posturing and legislating going on at the Federal, state and local level), would have government try to get itself out of the regulatory business in education. To shift some of this oversight to local boards (or Charter school committees) and fund those schemes that provide the greatest amount of empowerment to local schools (within districts) and teachers (within schools). Legislation mandating School Based Management in several states was one example from three years ago that continues to be reinforced through subsequent legislative actions. The real problem with this particular program is that the "system of work" of the school districts is still aligned to the old practices and the real empowerment, that is considered essential in order to have site-based management work, is missing in most cases ([David 1989](#)).

Therefore researchers (and QSCs) should consider this macro-issue of empowerment as a significant paradigm shift for education, and should proceed to provide a new structure to study quality improvement in these contexts, as systems undertake mandated decentralization and site-level decision-making expansion.

How about Continuous Improvement?

The continuous improvement process (CIP) descriptions embedded in the Quality principles and the standards of ANSI and ISO and the Baldrige Awards, is a good place to start in our research of quality improvement in education. From the studies of effective innovation quoted earlier, we have learned that the most effective innovations by far are those which outlast the typical 3-year cycle and manage to improve every year in at least one significant element.

It appears that a system of work could be defined from the work of the standards organizations and other educational leadership research. The object of defining CIP is to provide for an explicit and heuristic model of how the work gets done at the district level, school level and classroom level using Quality systems analyses and definitions. A district-level model would facilitate and encourage the development of model systems of work at the school level and at the classroom level. But before we can move into the school and classroom levels we need to know how the complete system works, where the significant features are, and how and where to modify the district culture to improve on them.

III. Defining Quality Systems: The Continuous Improvement Process

Developing a model.

Developing a model of an educational process is a very delicate and time-consuming task. Someone would have to capture all significant interactions of variables in Quality systems and define them as features. These features will then have to be hypothetically linked through theory to predicted outcomes and this theoretical link would have to be tested by further investigations and the model modified from hypothetical calculations to actual values from the research. This testing will determine which of these features are essential or significant to the predicted outcomes of the model. The resulting model will be very complex and in the end we might find that most of the outcome-related variables are outside the production cycle as it takes place within the school ([Stallings, 1995](#)).

However, only through this modeling, can the researcher make explicit the heretofore hidden dimensions of "the way things work" where the potentially most significant independent variables of Quality systems reside.

The potential for modeling organizational behavior has always been greater than its demonstration. Recently however, [Kofman, Repenning and Stermann \(1994\)](#) demonstrated the feasibility of the approach they use to construct a Quality systems model of an organization. In their longitudinal study of Analog Devices Inc., they used a combination of data sources which proved to be a key factor in the development of their detailed simulation. Following the same principles and strategies, other researchers could model an entire educational system's approach to continuous quality improvement.

In the real world of schools.

In a "Transformation to Quality" process an underlying assumption is that the organization can be controlled by its governing board and CEO. In a public educational institution, control sometimes falls outside the hands of the Superintendent and the district's elected Board. Courts issue orders, Legislatures pass laws and agencies follow with regulations, Board compositions change and on the average every 2.9 years, a Superintendent resigns or otherwise loses his or her job. Control over the goals of the institution, leadership of its essential processes and even the rules of organizational behavior and community relations can be re-written overnight in response to legal and (or) political intervention from the outside.

A public education system has many bosses and each of these brings a different motivation to their exercise of control. Control of the system therefore cannot be assumed as a steady state with clear and unchanging macro-financial goals (as it the case with Analog), but a cultural processes embedded within both, a micro-political context created by the community stakeholders and the macro-political spectrum of American life in a globalizing economy.

Modeling CIP must anticipate and deal with the political (operationally arbitrary or "un-needed") interventions by one or more clients in its orderly process.

Modeling CIP as a system of work.

The first CIP model that needs to be designed is a system of work that is carried out by individuals who are committed to improving quality. An assumption we have made in this model's design is that "commitment to improving quality" does not come from the CIP model itself, but is engaged through leadership and motivations that lie outside the CIP model. Testing the attributes of the model would involve knowing how many (what percentage) of the workers are committed to improving quality. We also define CIP as being carried out by a team. We include this factor of working in teams as an essential part of the model, partially relying upon the QSC's teachings and partially based upon findings of comprehensive studies of what works in school reform ([Newmann & Wehlage, 1995, p. 4](#)).

We have previously defined the product or service of the educational system as Learning. CIP is therefore narrowly defined as a system of work designed to produce quality Learning. The achievement of quality Learning is also defined as being client-determined. What goes on in schools must derive from the needs and preferences of the system's clients and they in turn must determine when these needs and preferences have been met.

From this understanding the following operational definition of CIP resulted.

Continuous Improvement Processes are client-led, on-going, empirical, quality oriented, research-driven processes (which are) carried out by a team empowered to improve the system.

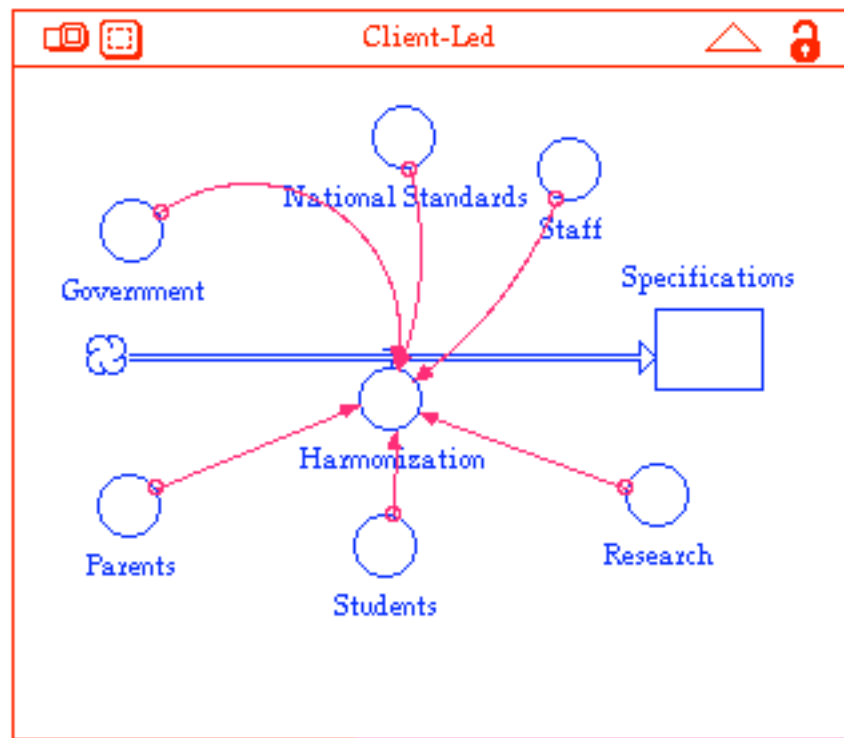
In this system of work another operational definition was needed. This one for the quality the system is designed to improve. For this definition we offer the following: *Quality means consistently meeting planned process specifications within acceptable limits of variation.*

Description of the draft model of CIP as may be found at the level of the School District.

Later on in this article we include a tentative or draft model of CIP at work in a school district which is typical of most school districts in the nation. In the following pages we will discuss the model and describe its various component parts.

The model is presented in three sections. The first section is on the "client-led" activities. The second section is the "specifications" activities which connect with both the client-led section and the next section we call "Production of Learning". (For a full view of the model see <http://llanes.auburn.edu/cipmodel.gif>)

Client-led.



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Our operational definition says that CIP must be client-led, and in order to accomplish that there would be present (hypothetically) the following features of the process. That the educational team, **1)** *is aware of all clients' needs and preferences*, **2)** *harmonizes these to produce benchmarks of quality attainment*, and **3)** *is led by these harmonized benchmarks of quality*.

a) Clients. A complete definition of "client" for a public school would include: 1) the School Board, which hires a Superintendent and sets policy, 2) the State Legislature and education agency that provides most of the appropriations and mandates testing, accountability, audits, texts and more, 3) the local community, that pays the property taxes and authorizes the bond issues, 4) teachers of the following grade and other teachers who advocate a certain type, quality or method of instruction on behalf of the students, 5) researchers and college of education faculty who provide data which lead to applications, theoretical constructs and analysis paradigms, 6) the Federal government which routes its 6% investment in local education through a maze of rules, 7) the press which in some communities editorializes about every issue facing educators, 8) the students and their parent or guardian and (at the Secondary level), 9) employers who have a stake in the educated graduate, and finally, 10) universities and colleges which depend upon qualified students entering their institutions.

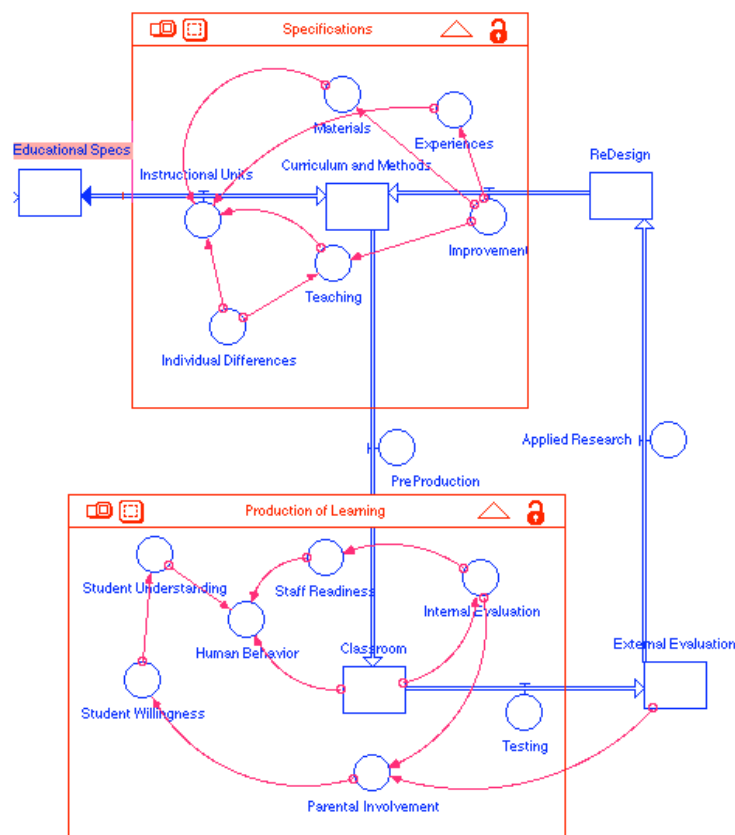
b) Harmonizing client needs and preferences. Taking the needs and preferences from the diverse client pool and harmonizing them so as to produce a consistent set of guiding principles, goals and objectives is a complex process but one in which school systems have a great deal of experience. What schools need is a motivation (either mandated or prescribed) that calls for them to engage in a harmonization process, but presently, the

goals and objectives of one client can dominate the leadership of the entire process. In most Texas school districts today the most important client is clearly the state education agency (SEA). The School Board and community go along with the SEA and look to improvements in the state-mandated performance measures for evidence of quality. But the staff of the system knows that just meeting the SEA mandate falls short of their goals. For example, a state "Recognized" school in one of the school systems under study (that enjoys this status because 99% of all eligible students passed the state-mandated test for the grade), also recognizes that because of its great Limited English Proficient (LEP) population, only 53 out of 183 students in that grade were eligible to take the test. This means that the performance of the balance of the 150 is not being assessed and this disturbs many of the staff. Yet, adding the 150 LEP to the eligible population would only drop the scores significantly, that would bring about state intervention, and in this case (based upon other examples) would surely mandate to the district that it limit testing only to the Full English Proficient and we are back where we started again.

Only by opening the door to other clients' leadership can a school district fashion for itself a mandate that improves the quality of the Learning.

c) Led by these harmonized benchmarks of quality. As the educational team becomes aware of the needs and preferences of all its clients, these must be reconciled and clear direction extracted. This process—and not the bureaucratic compliance-based process—takes the lead of the system under CIP.

From Client-led to Specifications.



As we show in the first phase of the model, input from a variety of client- sources (symbolized by circles) is captured and brought into harmonization. The harmonized needs and preferences lead to Educational (process) Specifications and these to Production of Learning.

All of the clients represented in the first phase of the model are current participants, in dictating policy and practical direction (specifications) in most public school systems of the nation. As national participants, they each have been linked empirically to student outcomes through a variety of mandated studies and scholarly research. Their involvement with and in some cases leadership of the process, may be either positive (contributing to favorable outcomes) or negative (contributing to unfavorable outcomes). Similarly, national standards (a client in the process) can influence specifications. As various national and international bodies issue standards for education, these may or may not have an impact and if so that impact may be positive or negative. Historically, standards are transmitted via curricula, but a new set of quality standards applying to "process" and sponsored by the Quality standards organizations need to be incorporated through methods.

Thus the focus of the client-led process is to produce a set of educational process specifications which when met would satisfy the needs of the client. The specifications are translated into curricula and methods and these become the first level of guidance the system will give schools and teachers. These curricula and methods must be in turn modified to account for individual differences of students and the skills of teaching staff and eventually result in a variety of Instructional Units (experiences, materials and teaching) at the classroom level.

The Pre-production stage (shown in the model) takes these curricula and methods and turns them into classroom activities which result in individual instructional programs for each child within that grade. Pre-production lies between Specifications and Production and involves either development or acquisition of the Materials, training in Teaching Processes and planning for Experiences that will be needed in the classroom (the production site).

Carrying out these units involves an interaction between Human Resources (teachers, specialists, aides and parents working in classroom or with students on a pull-out situation), the student's willingness to engage in the activity (affect) and the student's understanding of the subject matter (cognitive). Outside of the production site, testing is accomplished by clients, (state agencies, Federal evaluators or the School Board) which leads (in some cases) to research on which of the specifications have not been reached, and this research leads to a re-design of the specification, curriculum and/or method in use.

Inside the Production of Learning phase of the model, an Internal Evaluation process is envisioned. This would be accomplished in short cycles (6-9 weeks) and will involve the entire team including the parents or guardians of the student. Using "authentic" methods of testing, the team will assess the performance of each child individually and would present the evidence of this performance to the parent at regularly scheduled meetings. The parent then given feedback and the process is improved. This internal evaluation process is the source of data for determining whether or not the system is producing results.

That, in a nutshell, explains the system of work we are able to model from Quality principles and school district realities and which can be seen as a continuous improvement process (CIP).

Completing the model are the following principles, also embedded in the Quality Standards, which we have made part of our Operational Definition of CIP.

On-going.

As a general observation, innovations in educational practices within schools are most of the time strongly resisted. Yet when mandated by the educational authority and accompanied by funding, they are readily embraced. The “climate for change” is hypothesized by researchers to determine which will be the system’s response to innovation. In the first case, when strongly resisted, no innovation results, although externally imposed change will be observed and apparently “complied” with. In the second case systems change their approach in a pendulum-like fashion, meeting perceived needs with promising methods and techniques, without ever engaging in research about what exactly is wrong with the process they are trying to improve. In summary, the educational program is viewed as either “broke and needs fixing” or “not broke and doesn't need fixing”.

The concept that every process, material, method, technique, media and approach, can and should be worked on to be improved continuously, is alien to many school cultures and an important innovation of the Quality movement.

“On-going” as part of our operational definition means that each cycle of performance/evaluation is viewed as an opportunity to improve the system and that this process goes on forever.

In the study of innovation in the public schools researchers have determined that the typical government-mandated innovation stayed with the school, whether judged to have succeeded or failed, only the period that the activity was directly funded. Title VII programs, for example, which are competitively awarded for 3 to 5 years, saw their programs disappear as soon as Federal funding was removed. A further government requirements that schools take over the program and continue after funding ceased proved impossible to police. Innovations that did not accompany funding stayed on for an average of 18 months and then disappeared. Some mandated state functions also collapsed after their mandate expired even though the practice was judged successful ([Berman & McLaughlin, 1978](#)).

CIP teaches the new notion that innovation in schools (as well as other organizations) is a gradual process that realizes its full effectiveness only after several years in place. This principle of gradual and on-going improvement is embodied in the CIP we defined but we hypothesize it will be the most difficult of all factors to make part of the school culture. The quick fix and the magic bullet will each find receptive ears in a climate of change and it will be most significant if these are ignored and an on-going process established.

Empirical.

This means that the process of continuous improvement should not follow the latest fad or popular cure-all. The need for innovation should emerge from the process itself through its own research as outlined in the model and possible remedies should be empirically evaluated as well. The CIP model feeds all data about student outcomes through a research process which discovers the proximate causal relationships between outcomes and processes and orients re-design toward the empirically defined issues. Only then can its

insufficiencies be noted and the applicability of this finding should be verified in each setting that applies.

Also, the process of continuous improvement in education must be empirical in that it is based upon observations that are: 1) scientific and rigorous, and 2) focused on quality attainment in process and outcome.

Quality oriented.

Quality oriented means everyone involved in the system is committed to improving the quality of the service (experiences) the system delivers. Quality is shaped by the provider of the service, it's individual, classroom or school definition is harmonized between the competing client needs, but is in every case defined as stated above: Consistently meeting planned process specifications within acceptable limits of variation.

Research-driven.

Research-driven means that solutions to quality problems do not often reside within the Quality (CIP) process itself, but that solutions come from research within disciplines, interdisciplinary research, basic and applied, qualitative and quantitative, on the applicable populations and curricular areas.

Carried out by a team.

This means (operationally) that, while every individual has a defined role and each is responsible and accountable to the others for their performance in this role, there's a shared understanding, shared labor and a collaborative decision-making system in place.

Empowered to improve the system.

Fully empowered means teachers and on-site administrators have within their assigned discretion (power) the means to carry out all of the measures they decide upon to improve the system.

IV. Testing, modifying and advancing the Model

All models need to meet the test of the reality they try to model. In this case, a model for a system of work to bring about continuous quality improvement, the test must be philosophical as well as practical. The axiom that "all models are wrong but some are useful" probably applies here also ([Box, G.E.P., et. al. 1978](#)). We are not suggesting that this model could be used to predict anything and thus it is only heuristically that this model must prove useful.

There's a need to examine school systems that are implementing a system of work for continuous quality improvement before we can tell if the model is practical. But in addition to its empirical testing and continuous modification the model must also be philosophically attuned to the issues that drive the Quality movement and also needs to be examined in this light.

This CIP model is offered freely to those who seek to provide evidence of which specific processes within Quality systems work to produce in schools results similar to those produced in industry.

V. Summary

The trend toward devolution of Federal programs (and their regulations) to states and local governments has created the need for locally managed processes that are self-directed but which meet the national goals for quality and equality, for universal access and universal achievement, for world class systems that produce global citizens and more. The old process of researching "best practices" at the Federal level and transmitting them to the local schools through complex webs of training and demonstration has not worked to produce Quality systems. Change, when it comes, often does not result in significant improvement, but even when it does, it does not result in a continuous improvement. Schools must examine Quality systems and their methods seriously. They ought not adopt what they don't understand, but they must strive to understand how these philosophies and practices that free professionals to do their work and challenge everyone to produce quality can be made to work in their schools. This model is the first step.

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Notes

Note 1. Please see [Blackinton & Sabatella, 1996](#) article in this edition for an explanation of Quality with a capital "Q".

Note 2. This model is the product of faculty colloquia on Quality in education conducted at the University of Texas Pan American in 1994 and 1995. It is also designed after empirical research with some of the nation's largest (and smallest) school districts revealed that its dimensions are equally applicable to them, regardless of size or other characteristics.

See <http://llanes.auburn.edu/cimjournal/Vol1/No1/success.pdf>

Definitions

System of work is further defined as "The system, implicit or explicit, found to be most consistently applied by a group of people doing work."

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