

Chapter 1 : 5 Big Ways Education Will Change By

Class and field-tested, The Challenges of Educational Change provides the most comprehensive and current examination of research and practice related to educational change. This book is designed for change and reform courses in schools of education as well as policy and organizational behavior courses.

Some of the biggest challenges we face can appear frustratingly intractable. Despite reform efforts, regular government reviews and ongoing calls for change, progress in addressing our most significant challenges is often slow and solutions continue to elude us. But their roots sometimes lie largely outside the reach of schools or in deeply entrenched educational processes and structures that are difficult to change. A political response is sometimes to focus instead on low-hanging fruit and quick wins “to make changes at the margins where change seems possible. However, real reform and significant progress in improving the quality and equity of Australian schooling depend on tackling our deepest and most stubborn educational challenges. Here are five such challenges. Raising the professional status of teaching A first challenge is to raise the status of teaching as a career choice, to attract more able people into teaching and to develop teaching as a knowledge-based profession. In high-performing countries such as Singapore and Hong Kong, teachers are drawn from the top 30 per cent of school leavers. In South Korea and Finland, teachers are drawn from the top 10 per cent. In these high-performing countries, places in teacher education programs are limited and competition for entry is intense. Attracting the best and brightest school leavers to teaching is only a first step for top-performing nations. They also work to understand the nature of expert teaching and use this understanding to shape initial teacher education programs, coaching and mentoring arrangements and ongoing professional development. Features of these high-performing systems include rigorous teacher education courses and well-developed processes for defining and recognising advanced teaching expertise. In contrast to top-performing countries, Australia draws its teachers largely from the middle third of school leavers. And there is little evidence that this is about to change. Following recent demand-driven reforms, some universities are admitting larger numbers of teacher education students with increasingly low Year 12 performances “a trend that may continue as the number of teachers required to staff our schools grows over the next decade. Meeting this first challenge requires an understanding of why teaching is currently not more attractive, what high-performing countries have done to raise the status of teaching, and what strategies are likely to make teaching a more highly regarded profession and sought-after career in Australia. Germany, Mexico and Turkey are examples. Two conclusions from recent PISA studies are that increased national performance is associated with greater equity in the distribution of educational resources and that equity can be undermined when school choice segregates students into schools based on socioeconomic background. According to the OECD, at least as important as how much countries spend on schools is how these resources are distributed across schools. Although Australia performs relatively well in PISA, both in terms of quality and equity, there are trends that should be of concern. These include a steady decline in the average performance of Australian year-olds since and no reduction in the relationship between student performance and socioeconomic background. Perhaps even more concerning has been an increase in between-school variance in PISA a measure of the extent to which Australian schools differ from each other. In Finland, which has a comprehensive school system and little social stratification by location, between-school variance in reading increased from eight per cent to nine per cent between and In Australia, as John Ainley and Eveline Gebhardt observe in their report Measure for Measure , between-school variance increased from 18 per cent to 24 per cent, suggesting that our schools became more different from each other over this time. Significant between-school increases also were recorded in New Zealand, Sweden and the United States. Further, there was a significant increase in the gap between low and high socioeconomic schools in Australia over this period. Australia was the only OECD country to observe such an increase, with several countries recording a significant decrease. And there is little reason for optimism that this trend is about to reverse. Designing a 21st-century curriculum A third challenge is to re-design the school curriculum to better prepare students for life and work in the 21st century. And the pace of change is accelerating, with increasing globalisation; advances in technology, communications and

social networking; greatly increased access to information; an explosion of knowledge; and an array of increasingly complex social and environmental issues. The world of work also is undergoing rapid change with greater workforce mobility, growth in knowledge-based work, the emergence of multi-disciplinary work teams engaged in innovation and problem solving, and a much greater requirement for continual workplace learning. The school curriculum must attempt to equip students for this significantly changed and changing world. However, many features of the school curriculum have been unchanged for decades. We continue to present disciplines largely in isolation from each other, place an emphasis on the mastery of large bodies of factual and procedural knowledge and treat learning as an individual rather than collective activity. This is particularly true in the senior secondary school, which then influences curricula in the earlier years. There is little evidence that these general features of the school curriculum are about to change. At the same time we are seeing a decline in the popularity of subjects such as advanced mathematics and science and a decline in the performances of Australian students in comparison with students in some other countries. International studies indicate that the top 10 per cent of our Year 8 students now perform at about the same level in mathematics as the top 50 per cent of students in Singapore, Korea and Chinese Taipei. Again, it is not obvious that we have policies in place to reform mathematics and science curricula in ways that might reverse these trends in subject enrolments and performance. Meeting this third challenge requires a significant rethink of the school curriculum. Promoting flexible learning arrangements focused on growth

A fourth challenge is to provide more flexible learning arrangements in schools to better meet the needs of individual learners. The organisation of schools and schooling also has been largely unchanged for decades. Although composite classes are common, students tend to be grouped into year levels, by age, and to progress automatically with their age peers from one year of school to the next. A curriculum is developed for each year of school, students are placed in mixed-ability classes, teachers deliver the curriculum for the year level they are teaching, and students are assessed and graded on how well they perform on that curriculum. This approach to organising teaching and learning might be appropriate if students of the same age commenced each school year at more or less the same point in their learning. But this is far from the case; the most advanced students commencing any year of school are typically five to six years ahead of the least advanced students. In practice this means that less advanced students often struggle with year-level expectations and are judged to be performing poorly – often year after year. At the other extreme, some more advanced students are unchallenged by year-level expectations and receive high grades year after year with minimal effort. Underpinning this practice is a tacit belief that the same curriculum is appropriate for all, or almost all, students of the same age. Learning success and failure are then defined as success or failure in mastering this common curriculum. This age-based approach to organising teaching and learning is deeply entrenched and reinforced by legislation that requires teachers to judge and grade all students against year-level expectations. In this way, excellent progress becomes an expectation of every student, including those who are already more advanced. Identifying and meeting the needs of children on trajectories of low achievement

A fifth challenge is to identify as early as possible children who are at risk of falling behind in their learning and to address their individual learning needs. Some children are already well behind year-level expectations, and many of these children remain behind throughout their schooling. Trajectories of low achievement often begin well before school. Differences by Year 3 tend to be continuations of differences apparent on entry to school when children have widely varying levels of cognitive, language, physical, social and emotional development. Some children are at risk because of developmental delays or special learning needs; some begin school at a disadvantage because of their limited mastery of English or their socioeconomically impoverished living circumstances; and some, including some Indigenous children, experience multiple forms of disadvantage. Many children in our schools not only remain on trajectories of low achievement, but also fall further behind with each year of school. They make up a long – and sometimes growing – tail of underperforming students, many of whom continually fail to meet minimum standards of achievement. Meeting this fifth challenge depends on better ways of:

Chapter 2 : Challenges and Barriers to Education for Sustainable Development

Drawing on a five-phase model of the change process, this book uses real-world examples to examine the discovery, design, development, implementation, and maintenance of educational innovations and improvements. Class and field tested, The Challenges of Educational Change provides the most.

According to researchers, though some of those challenges are systemic and some related to the technologies themselves, teachers and education leaders share in the blame as well. Among those issues are challenges that represent significant constraints on the adoption of technology in education. In past reports, those challenges have centered largely on reluctance on the part of administrators and teachers, lack of preparation, and lack of support or funding. Key among all challenges is the lack of adequate, ongoing professional development for teachers who are required to integrate new technologies into their classrooms yet who are unprepared or unable to understand new technologies. Resistance to technology comes in many forms, but one of the key resistance challenges identified in the report is "comfort with the status quo. MOOCs and other new models for schooling. Related to challenge 3, rigid lecture-and-test models of learning are failing to challenge students to experiment and engage in informal learning. But, according to the report, opportunities for such informal learning can be found in non-traditional classroom models, such as flipped classrooms, which allow for a blending of formal and informal learning. However, there is still an assessment gap in how changes in curricula and new skill demands are implemented in education; schools do not always make necessary adjustments in assessment practices as a consequence of these changes. Simple applications of digital media tools, like webcams that allow non-disruptive peer observation, offer considerable promise in giving teachers timely feedback they can use. It also identified key emerging trends, which we reported in our earlier preview of the report. An increasing shift toward blended learning, online-learning, and technology-driven collaborative learning; The growth in the potential of social networks to allow teachers to engage students online; Openness of educational resources and technology is "becoming a value"; BYOD is becoming more common as the cost of technology drops for students; and The role of the educator is being challenged as resources become more accessible on the Internet. Emerging Technologies The report also identified the technologies that will have a palpable effect on education over the next five years, broken down by near term one year from now or sooner, the mid-term two to three years out, and the long term four to five years out. In the near term, cloud computing was identified as the top trend. The report cited several examples of its use in teaching and learning, including cloud-based 1-to-1 programs using Chromebooks and computing platforms that allow for shared desktops. It also identified the use of the cloud in K-12 IT infrastructure. Also in the near term is mobile learning. According to the report: In many regions of the world, students come to class already familiar and comfortable with the technology. The report characterized OER as essentially the opposite of cumbersome, expensive, and quickly outdated textbooks. Both are currently in use in several districts in the United States and are not technically new; but, according to the report, they are about to become more mainstream, in particular in the context of improving STEM education science, technology, engineering, and math. In the case of 3D printers, physical models of fossils or proteins or molecules or other objects can be whipped up on the fly, allowing students to interact with them. A preview and additional information about the report is available now. For more, visit nmc.org.

Chapter 3 : The Challenge of Change | Harvard Graduate School of Education

Drawing on a five-phase model of the change process, Duke (University of Virginia) uses real world examples to examine the discovery, design, development, implementation, and maintenance of educational innovations and improvements.

Reeves Although the demand for 21st century skills has spawned a good deal of enthusiasm, the reality of curriculum in K-12 education remains firmly rooted in the traditions of past centuries. Curriculum practices are firmly rooted in the 20th century, and assessment practices barely depart from the 16th century, when the Ming dynasty originated the multiple-choice test in China. The deployment of technology and the public embrace of 21st century skills one of the best frameworks comes from the Partnership for 21st Century Skills are inadequate substitutes for a genuine commitment to 21st century learning. This article considers three essential challenges for education leaders who are grappling with the challenges of fostering 21st century skills: The Assessment Gap Reasonable people differ about the details of 21st century skills, but the common themes that emerge include communication, teamwork, creativity, critical thinking, and problem solving. Effective communication includes both written and oral skills and the use of technology to convey ideas, evidence, images, and emotions. Moreover, despite the clarion calls for teamwork and collaboration, no state test is the barometer by which many teachers, administrators, and education systems are measured assesses students in a team or collaborative environment. Academic content and skills are necessary but in insufficient condition to meet the needs of the 21st century. The Teaching Gap Robert Marzano recently issued a scathing indictment of schools claiming to use "Marzano strategies" that he neither supports nor endorses. In previous decades, one could substitute "Marzano" with "Hunter," "Dewey," or "Socrates" illustrious company indeed to see the pattern of thoughtful ingenuity followed by oversimplification; mass production; and, often, disappointment. Socrates did indeed ask questions, but these queries were sufficiently challenging that the result was a state-administered dose of hemlock for his efforts. Teachers fear delivering honest and challenging feedback, and with each stroke of candor, teachers and school leaders risk negative evaluations that, through social networking tools, become an instantaneous combination of indictment and presumed truth the hemlock of the 21st century. Although the conventional wisdom is that teacher tenure is the root of all education evil, the other extreme is equally pernicious. In a world where "customer satisfaction" is the coin of the realm, the teachers who are most highly rewarded will not be those who tell the truth about student performance, but rather those who tell the customers what they want to hear. They can succeed on the basketball court and in the internationally competitive world of electronic games, and they must do the same in our classrooms. Leaders who bring in an inspirational speaker to talk about 21st century skills but who evaluate teachers with centuries-old assessments should not point the finger at unions, teachers, or colleges of education. This is a failure of leadership, not a failure of teachers. If we aspire to have 21st century teaching and learning, then we must demand 21st century leaders. Specifically, if we require critical thinking, problem solving, collaboration, and creativity, then leaders must assess now today, this very hour the instances in which you can observe these characteristics in classrooms. Just visit 10 classrooms right now and count the instances in which you observe these skills. Then do the same next week, and the week after that, and the week after that. From Blame to Responsibility Blame is a remarkably popular but ineffective strategy for change. School systems blame colleges, who, in turn, blame school systems. Administrators blame teachers, who, in turn, blame administrators for impossible workloads and inadequate working conditions. High schools blame middle schools, who blame elementary schools, who blame early childhood education, who blame parents, who, I suppose, can blame prenatal care. Where does it stop? If we aspire to seize the opportunities 21st century learning presents, then we must first make the shift from blame to responsibility. When our students confront difficulty and failure, we expect them to respect our feedback, change their learning strategies, and try again. That is the essence of the resilience, self-discipline, and work ethic that are essential for successful students in every century. Therefore, education professionals must embrace feedback, seize personal responsibility, and model the changes required to close the gaps in assessment, teaching, and

DOWNLOAD PDF CHALLENGES OF EDUCATIONAL CHANGE

leadership. Teaching writing to high school students: Journal of educational psychology, 1 , 1997” Setting the record straight on high-yield strategies. Phi Delta Kappan, 91 6 , 301-306” Ideas from the Field Subscribe to ASCD Express, our free e-mail newsletter, to have practical, actionable strategies and information delivered to your e-mail inbox twice a month. Learn more about our permissions policy and submit your request online.

Chapter 4 : Why Teachers Must Become Change Agents - Educational Leadership

There is no shortage of challenges in school education. Some of the biggest challenges we face can appear frustratingly intractable. Despite reform efforts, regular government reviews and ongoing calls for change, progress in addressing our most significant challenges is often slow and solutions.

Fullan Teacher education programs must help teaching candidates to link the moral purpose that influences them with the tools that will prepare them to engage in productive change. Teaching at its core is a moral profession. Scratch a good teacher and you will find a moral purpose. At the Faculty of Education, University of Toronto, we recently examined why people enter the teaching profession Stiegelbauer Nonetheless, there is a strong kernel of truth to this conclusion. What happens in teacher preparation, the early years of teaching, and throughout the career, however, is another story. Those with a clear sense of moral purpose often become disheartened, and those with a limited sense of purpose are never called upon to demonstrate their commitment. A Natural Alliance Certainly calls for reestablishing the moral foundation of teaching are warranted, but increased commitment at the one-to-one and classroom levels alone is a recipe for moral martyrdom. To have any chance of making teaching a noble and effective profession—and this is my theme here—teachers must combine the mantle of moral purpose with the skills of change agency. Moral purpose and change agency, at first glance, appear to be strange bedfellows. On closer examination they are natural allies Fullan Stated more directly, moral purpose—or making a difference—concerns bringing about improvements. It is, in other words, a change theme. In addition to the need to make moral purpose more explicit, educators need the tools to engage in change productively. Moral purpose keeps teachers close to the needs of children and youth; change agency causes them to develop better strategies for accomplishing their moral goals. Those skilled in change appreciate its volatile character, and they explicitly seek ideas for coping with and influencing change toward some desired ends. I see four core capacities for building greater change capacity: Each of these has its institutional counterpart: But we are facing a huge dilemma. On the one hand, schools are expected to engage in continuous renewal, and change expectations are constantly swirling around them. On the other hand, the way teachers are trained, the way schools are organized, the way the educational hierarchy operates, and the way political decision makers treat educators results in a system that is more likely to retain the status quo. One way out of this quandary is to make explicit the goals and skills of change agency. To break the impasse, we need a new conception of teacher professionalism that integrates moral purpose and change agency, one that works simultaneously on individual and institutional development. One cannot wait for the other. Personal Vision-Building Working on personal visions means examining and re-examining why we came into teaching. For most of us, the reasons are there, but possibly buried. For the beginning teacher, they may be underdeveloped. It is time to make them front and center. Personal vision comes from within. It gives meaning to work, and it exists independently of the organization or group we happen to be in. Once it gets going, it is not as private as it sounds. Especially in moral occupations like teaching, the more one takes the risk to express personal purpose, the more kindred spirits one will find. Paradoxically, personal purpose is the route to organizational change. When it is diminished, we see in its place group-think and a continual stream of fragmented, surface changes acquired uncritically and easily discarded. Inquiry All four capacities of change are intimately interrelated and mutually reinforcing. The second one—“inquiry”—indicates that formation and enactment of personal purpose are not static matters but, rather, a perennial quest. Pascale captures this precisely: I will use the term inquiry. Inquiry is necessary for forming and reforming personal purpose. While the latter comes from within, it must be fueled by information and ideas in the environment. Inquiry means internalizing norms, habits, and techniques for continuous learning. For the beginner, learning is critical because of its formative timing. Teachers as change agents are career-long learners, without which they would not be able to stimulate students to be continuous learners. Mastery Mastery is a third crucial ingredient. People behave their way into new visions and ideas, not just think their way into them. Mastery is obviously necessary for effectiveness, but it is also a means for achieving deeper understanding. New mind-sets arise from mastery as much as the reverse. It has long been

known that expertise is central to successful change, so it is surprising how little attention we pay to it beyond one-shot workshops and disconnected training. Mastery involves strong initial teacher education and career-long staff development, but when we place it in the perspective of comprehensive change, it is much more than this. Beyond exposure to new ideas, we have to know where they fit, and we have to become skilled in them, not just like them. To be effective at change, mastery is essential both in relation to specific innovations and as a personal habit. Collaboration There is a ceiling effect to how much we can learn if we keep to ourselves Fullan and Hargreaves The ability to collaborate on both a small- and large-scale is becoming one of the core requisites of postmodern society. Personal strength, as long as it is open-minded that is, inquiry-oriented , goes hand-in-hand with effective collaborationâ€”in fact, without personal strength collaboration will be more form than content. Personal and group mastery thrive on each other in learning organizations. In sum, the moral purpose of teaching must be reconceptualized as a change theme. Moral purpose without change agency is martyrdom; change agency without moral purpose is change for the sake of change. In combination, not only are they effective in getting things done, but they are good at getting the right things done. The implications for teacher education and for redesigning schools are profound. With all the problems demanding immediate solution, it is easy to overlook a preventive strategy that would take several years to have an impact. Currently, teacher educationâ€”from initial preparation throughout the careerâ€”is not geared toward continuous learning. Teacher education has the honor of being the worst problem and the best solution in education. The absence of a strong publicly stated knowledge base allows the misconception to continue that any smart person can teach. After visiting 14 colleges of education across the U. Everything [a person] needs to know about how to teach could be learned by intelligent people in a single summer of well-planned instruction p. In a twisted way, there is some truth to this observation. It is true in the sense that many people did and still do take such minimal instruction and manage to have a career in teaching. It is true also that some people with a strong summer program would end up knowing as much or more as others who take a weak yearlong program. In her journey, Kramer found plenty of examples of moral purposeâ€”caring people, committed to social equality. What she found wanting was an emphasis on knowledge and understanding. Caring and competence are of course not mutually exclusive indeed this is the point , but they can seem that way when the knowledge base is so poorly formulated. Teacher education institutions themselves must take responsibility for their current reputation as laggards rather than leaders of educational reform. I will not take up the critical area of recruitment and selection in the profession for the best discussion, see Schlechty , chapter 1. It is self-defeating to seek candidates who turn out to be better than the programs they enter. What is needed is a combination of selection criteria that focus on academics as well as experience related, for example, to moral purpose , sponsorship for underrepresented groups, and a damn good program. Teacher educators like other would-be change agents must take some initiative themselves. Examples are now happening on several fronts. At the University of Toronto, we embarked on a major reform effort in With a faculty of some 90 staff and 1, full-time students in a one-year post-baccalaureate teacher certification program, we piloted a number of field-based options in partnerships with school systems see University of Toronto, Making a Difference Video, a. In I prepared a paper for our strategic planning committee, taking as a starting point the following premise: Faculties of Education should not advocate things for teachers or schools that they are not capable of practicing themselves. To illustrate, consider items 3 and 6. It would seem self-evident that faculties of education would stand for exemplary teaching among their own staff. Faculties of education have some excellent and poor teachers, but I would venture to say that hardly any have effective institutional mechanisms for improving their own teaching. Regarding item 6, many faculties of education advocate collaborative work cultures for schools, and some participate in professional development schools. This leads to two embarrassing questions. First, to what extent are teacher preparation programs designed so that student teachers deliberately develop and practice the habits and skills of collaboration? Even more embarrassing, to what extent do university professors arts and science, as well as education value and practice collaboration in their own teaching and scholarship? Key Images for Teacher Preparation With such guiding principles, and some experience with them through our pilot projects, we at the University of Toronto have recently begun redesigning the entire teacher preparation program. Our Restructuring Committee has

proposed that: Every teacher should be knowledgeable about, committed to, and skilled in: We are now developing the actual program, curriculum, and teaching designs. Everything we know about the complexities of change applies in spades to the reform of higher education institutions. Nonetheless, after four years, we have made good progress and look forward to the next four years as the ones when more comprehensive and systematic reform will be put into place see also Goodlad , Howey , and the third report of the Holmes Group, forthcoming. Sarason puts it this way: Goodlad asks a similar question: The new standard for the future is that every teacher must strive to become effective at managing change. Redesigning Schools One of the main reasons that restructuring has failed so far is that there is no underlying conception that grounds what would happen within new structures. Restructuring has caused changes in participation, in governance, and in other formal aspects of the organization, but in the majority of cases, it has not affected the teaching-learning core and professional culture Berends , Fullan

Chapter 5 : The Challenges of Educational Change - Daniel Linden Duke - Google Books

Our leaders and change agents, including researchers with great ideas, need to listen, acknowledge the real challenges of change, adopt a much longer time frame and longer horizon, and celebrate the small but important steps that will eventually lead both psychologically and practically to bigger and better.

There has been generally a growing awareness of the necessity to change and improve the preparation of students for productive functioning in the continually changing and highly demanding environment. In confronting this challenge it is necessary to consider the complexity of the education system itself and the multitude of problems that must be addressed. Clearly, no simple, single uniform approach can be applied with the expectation that significant improvements of the system will occur. Indeed, any strategy for change must contend with the diverse factors affecting the education system, the interactions of its parts, and the intricate interdependencies within it and with its environment. As we consider these problems, we become increasingly cognizant of the various possibilities of using concepts and methods of the study of complex systems for providing direction and strategies to facilitate the introduction of viable and successful changes. A key insight from complex systems is that simple solutions are not likely to be effective in cases such as the education system, and that providing a balance or coexistence of what seem to be opposites may provide the greatest opportunities for successful courses of action. In the following we consider Integrating the commonly polarized goals of education; i. Adapting teaching to different student characteristics by using diverse methods of teaching. Adaptation to the ability levels, patterns of different abilities, learning styles, personality characteristics, and cultural backgrounds. Integrating the curriculum by developing inter-disciplinary curriculum units that enable students to acquire knowledge from different disciplines through a unifying theme while having the opportunity to contribute in different and special ways to the objectives of the integrated units. Educational Goals The approaches to teaching can be categorized according to major educational goals that affect teaching strategies. On one hand the goal of education is viewed as the transmission of knowledge by the teachers to the students. The convergent approach is highly structured and teacher-centered; the students are passive recipients of knowledge transmitted to them and learning achievements are measured by standardized tests. The divergent approach is flexible, student-centered, where the students are active participants in the learning process and learning achievements are assessed by a variety of evaluation tools such as self-evaluation in parallel to teacher evaluation; documentation portfolios; and special projects see also Niche Selection link to be added soon. Still, the tendency in the education system of today is toward the convergent approach. In fact, among the current suggestions for implementing educational reforms to deal with the considerable problems of the education system, there has been a strong emphasis on setting convergent goals, an aspect of which is the use of across-the-board standardized testing. Testing has been commonly viewed as a prudent way to determine the success or failure of the teaching and learning process. There has been a relatively limited use of other means of evaluation which are more complicated and more demanding in terms of application and interpretation. Educators who stress the importance of the acquisition of specific knowledge as a useful way to prepare the students for productive future functioning, must come to realize that even for the purpose of this goal alone, a divergent approach is needed today. On the other hand, those who emphasize the importance of autonomous growth and creative self-expression, must realize that the students need academic skills such as reading, writing, calculating, etc. Since the creative process involves new ways of using existing knowledge, it is important to provide opportunities for students to acquire such knowledge which can be acquired by convergent teaching. Hence, convergent and divergent teaching strategies are both needed and the challenging question is how to find the balance between them within the complexity of the process of teaching and learning. It is likely that the two approaches may increasingly become not mutually exclusive but interrelated and interdependent. An important development is the growing awareness that academic achievement could improve by adapting teaching to students individual differences. In general, adaptation to individual differences under convergent teaching tends to be limited. The students are all expected to strive toward one goal of learning specified required knowledge; some may attain it and others

may fall by the wayside or be given some remediation with limited results. Nevertheless, there are various possibilities of effective adaptation to individual differences under convergent teaching. Even when all the students are taught the same material, teachers can use different methods, different techniques or different media, to cater to individual differences in abilities and personality characteristics. As the students experience success and consequently a sense of competence, their motivation is enhanced to pursue further learning. Such an approach has a better potential for success than the common reality of students with learning difficulties, who often struggle through remediation with a sense of inadequacy and discouraging experiences of failure. Adaptation to individual differences under divergent teaching may be expected to be productive because of its emphasis on student autonomous, active, self-reliant learning. Yet, there are students who may not function well under divergent conditions because of their strong need for guidance, direction, and structure. Divergent teaching can cater to such needs by individual guidance, along with ongoing assessment and subsequent modifications. Teaching Strategies and Students Characteristics Among the most difficult problems faced by the education system are those associated with teaching effectiveness. The current preparation of teachers for specific age levels, specific subject matter, specific academic skills, etc. There is a strong need to train teachers to adapt instruction to the diverse student abilities, learning styles, personality traits and needs by using more differentiated teaching strategies See also Complexity in the Classroom link to be added soon. In addition to the preparation of teachers to more differentiated teaching, there could be more divergent use of teaching resources. Worthwhile teaching can be done with advantageous results by persons other than the traditional classroom teachers. For example, valuable teaching can be done by peers of different ages and abilities. Also, parents, grandparents, and relatives could participate in and contribute productively to the teaching process. Furthermore, teaching can be enhanced by volunteers, retirees, people with various areas of expertise from the worlds of science, business, engineering, medicine, public service, entertainment, and others. Also, high-tech resources such as multimedia technology, computer programs, telecommunication, the Internet, audio-visual techniques, and others can provide beneficial options. Student learning can be greatly enriched further by traveling - near and far; interaction with people of different cultures; different geographical areas; different occupations, different ways of life; different outlooks. Ability levels and patterns of different abilities. Presently, the practice in some schools is to adapt teaching to different ability levels by forming classes or groups of students of similar levels usually based on achievement tests or psychological tests taught by teachers who tend to treat the students as if they were in homogeneous groups. Obviously, once a group of two students is formed, it cannot be considered homogeneous. The differences evident in rate of learning are only one aspect of the diverse effects of students with different abilities studying under different conditions. For instance, the type and manner of teaching has differential effects: Furthermore, the multiplicity and differentiability of mental abilities must be taken into consideration when teaching at any level of the education system. There has been a growing acknowledgement of the importance of adapting teaching to a variety of intelligences e. The diversity of patterns of mental abilities is well recognized today, yet little has been done to develop adequate conditions aimed at adapting teaching to this diversity. Thus, teaching strategies can be differentially facilitating various ability patterns. The interaction between specific aptitudes and specific teaching styles can be important in considering the various options of implementing changes in the teaching and learning process. Learning styles and preferences affect the way students approach any task and the way they function under different conditions and different learning environments. Some educators have begun to acknowledge the importance of adapting teaching strategies to students different learning styles, but no earnest efforts have been devoted to this promising endeavor. The adaptation of teaching to learning styles may include not only more appropriately differentiated teaching strategies but also may add to the dependability of the evaluation measures of what students have learned. To some extent there is recognition among educators that personality characteristics such as self-reliance, attitudes, anxiety, independence, emotional stability have differential effects on students learning achievements. There is some acknowledgement that attention should be paid to students personality needs and to particular aspects of students different cultural backgrounds. Nevertheless, while the effect of personality characteristics on learning is significant, very little has been done or even suggested regarding the adaptation of teaching to students different personality traits and needs.

Among the reasons for that is the very large number of traits with a wide variety of tests to measure them and the problem of their lower validation than the ability tests. Also, the complexity of the interactions of personality characteristics with various other factors affecting learning seems too difficult to tackle. Many educators and educational administrators are convinced that it is very difficult to implement multi-dimensional teaching strategies in the classroom. For example, students of higher ability levels who are also self-reliant, independent, with lower anxiety tend to do better under divergent teaching and self-directed learning conditions, while students of lower ability levels who are also dependent, and anxious, tend to do better under convergent teaching with clear structure and much direction. Such interactions need to be explored further to find more about the various factors affecting the teaching learning process. The outcomes of such exploration can be very helpful in the search for enhancing teaching effectiveness and students achievements. In sum, the attempts to match teaching strategies with students characteristics may become critical steps toward dealing with some of the particularly difficult problems of the teaching and learning process. Admittedly, many difficulties are faced not only by teachers but also by administrators and policy makers in the endeavor to adapt instructional strategies to students characteristics, but the methods and concepts of the field of complex systems can provide ways of implementing such changes in the attempts to introduce reforms to the education system.

Inter-Disciplinary Curriculum One of the most exciting developments in the world of science today is the growing involvement of researchers in interdisciplinary collaborations, and the increase in cross-fertilization of ideas and research endeavors of people in different fields of science.. The benefits for cross-disciplinary scientific work are invaluable and the various application possibilities are promising not only for science but for many aspects of daily living. These developments have direct implications for the education system. The tendency in our schools is to teach bits and pieces of information related to particular disciplines. In view of the cross-disciplinary trends, the curriculum can be integrated around topics that reflect the patterns, interactions, and interdependencies of the different fields. This can provide students with ways to study and attempt to comprehend the world around them through concepts and ideas that are less disparate or disconnected. The growing inter-disciplinary collaborations and cooperative sharing of information from different fields and the efforts to find pragmatic solutions to global problems have further implications for education. There are important implications for the preparation of students to function and be productive in a world with diverse populations, different economic conditions, multitudes of cultural, religious and ethnic groups, and many other different factors. Furthermore, it is highly beneficial to begin early in the educational process to organize learning around problem solving, critical thinking, and dealing with issues arising from different fields of study and different aspects of real life conditions. An integrated, inter-disciplinary curriculum links a variety of learning subjects as they are related to the topics of integrated curriculum units. The emphasis on connecting and synthesizing information around topics of interest to the students provides favorable conditions for the acquisition of knowledge from different disciplines through congruous concepts and ideas. Integrated curriculum units are chosen by the students with the teacher and involve teams of students working cooperatively toward common goals. Small groups, pairs, or individuals can work on relevant tasks and materials that can be shared with the other students and yield peer-to-peer learning. Experiencing the benefits of contributing to the goals of the unit by members of the team is empowering and gratifying and is also a beneficial way of preparing them for future functioning in the world. In terms of teaching strategies, an integrated curriculum encourages a multi-dimensional approach to the educational process and tends to combine regularly multi-convergent and divergent strategies of teaching. There are also various options in the way teachers are assigned to classroom teaching. They can also organize various teaching experiences with the assistance of volunteers, specialists, peers and others who could contribute to the teaching process. In terms of the structure and settings adapted to different teaching and learning conditions, there can be alternative places for learning, e. The structure and organization of the student body can be in the form of small and large groups; study pairs; and individualized study arrangements. Social alternatives are possible in heterogeneous groups with a great deal of interchange within them and between them and other groups. Clearly, student groups may vary in age, cultural and socioeconomic background, special interests and special needs. There are various alternatives in the types of learning that an integrated

curriculum can include: For example, different intelligences may be emphasized such as, linguistic intelligence, logical-mathematical intelligence, spatial intelligence, musical intelligence, bodily-kinesthetic intelligence, and others. A major part of the program can be devoted to integrated inter-disciplinary curriculum units chosen by teachers and students together. These units enable students to acquire knowledge and skills associated with different disciplines through congruous meaningful learning revolving around a topic of interest to the students. The work on the units is undertaken by groups of students who are encouraged to take active part in the decision-making process and focus on aspects of the units in which they can best develop their capabilities, satisfy their interests, and fulfill their needs. Each student is given the opportunity to use their strengths academic or non-academic to contribute to the common goals of the group. In working on these integrated units, guided divergent teaching is used as needed. At the end of a period of work on the unit, the group can celebrate with other students, parents, administrators and others involved in the school, the conclusion and accomplishments of the work on the unit. Each student in the group is encouraged to contribute whatever they can to such celebrations by presenting their work through various performances, presentations, exhibits, videos and other contributions to the festive activities. Students can be encouraged to present their work on their project to the group in any way compatible with their tendencies. The students can present their work to their peers and teachers as an exhibit, as an oral presentation, as written material, as a play, a video, or any other means of communicating and disseminating information.

Chapter 6 : Challenges to Change and Innovation in Higher Education | The EvoLLLution

At present we are witnessing radical political and economic changes across the world. Most cases of political or economic change will impact on education and necessitate educational reform.

They may range from minor staff restructuring to merging or acquiring another company. While the changes may be necessary for the future of the company, you are likely to face certain barriers and challenges. Anticipating these roadblocks helps you avoid them before they become major issues in the change implementation. Without step-by-step planning, change in an organization is likely to fall apart or cause more problems than benefits. You need to understand exactly what changes will take place and how those changes will occur. You also need to assign roles to individuals who are responsible for the change so all duties are covered. The time line for the change is also a key component. You need to plan for downtime or difficulties in completing regular work tasks while the change occurs.

Lack of Consensus If you fail to get everyone on board with the corporate changes, you are likely to face barriers during the process. The decision to implement changes should come from the top level of the organization. All management level staff needs to be on board and able to deal with the changes or you may face dissension within the staff. You may not have everyone on board right from the beginning. Showing managers how the changes will affect the company and the steps for implementing the changes helps get them on board if they initially have reservations. Keep employees updated regularly about the plans and progress toward the change implementation. Involve all employees as much as possible through meetings or brainstorming sessions to help during the planning phase.

Employee Resistance In some cases, employees resist change. They become comfortable with the way the business is run. They know the expectations and their role within the company. When a major change disrupts their familiarity, some employees become upset. Supporting your employees and providing training for any new responsibilities can help ease the transition.

Her experience comes from teaching, tutoring and managing educational after school programs. Frost worked in insurance and software testing before becoming a writer. She holds a Bachelor of Arts in elementary education with a reading endorsement.

Chapter 7 : 6 Technology Challenges Facing Education -- THE Journal

MAKING CHANGE IN SCHOOLS IS ESSENTIAL, BUT IS ALSO FRAUGHT WITH CHALLENGES. Addressing Current and Future Challenges in Education. If educational publishers.

David Schejbal Dean of Continuing Education, Outreach and E-Learning, University of Wisconsin-Extension

While massive changes are demanded of higher education from their most populous customer segment, the industry has generally been slow to adapt. Higher education is a change-resistant enterprise. Academic culture, faculty governance and an unusual bureaucracy all work together to slow down evolution. In part, this has contributed to the enormous survival success of higher education institutions. Harvard and Yale Universities have been around for nearly years, and most of the flagship state public universities, although much younger, are past their sesquicentennials and approaching two centuries of teaching and research. Private industry would envy one-fourth of this level of longevity. There is comfort in doing things the way they have been done in the past. A handful of schools have chosen to develop competency-based programs as one step toward addressing large social and economic challenges that began about a decade ago and are in full swing now. The particular challenge for higher education is how to provide relevant, affordable, and accessible programming to large numbers of learners who are increasingly over 25 years old and encumbered with all of the responsibilities that come with adult life. Competency-based education holds promise. It provides the flexibility students need as it is generally self-paced and online ; focuses on assessing learning mastery needed to be a well-functioning, working American; and is affordable because it is scalable in ways that create efficiencies. Yet, with each benefit, there is risk, and when there is risk, there is opposition. For faculty, competency-based education is especially threatening because it changes the structure of their work. In competency-based programs, faculty focus on assessing student mastery and on providing individualized support and tutoring as students work to learn what they need to know. Although faculty remain central in competency-based programs, their roles change and, for many, that change can be unsettling. At the center of the challenge is the credit hour. Simply put, the credit hour is a time-based measure of academic progress while competency-based education is not. Yet, the ways in which colleges and universities work, receive federal dollars for financial aid and engage with their accreditors are all based on the credit hour. Changing to a competency-based model requires changing all of the above, and that is a daunting task. Faculty skepticism and bureaucratic hurdles pose significant obstacles to adopting a competency-based approach in higher education. Both, however, pale in comparison to the cultural challenges competency-based education engenders. Academic culture is sui generis. It has its own language, customs, values, traditions, etiquette, rules, regulations, policies and politics “ and it has evolved over a very long period of time. That evolutionary history fuels inertia. Change comes hard to academe. Still, proponents of competency-based education are asking academe to change, and the world outside of academe is demanding it. So change is coming “ slowly, in dips and drabs “ and sporadically in one program or at one institution at a time. Some schools, such as Southern New Hampshire University, have chosen to build new structures rather than to try to make the traditional parts of the institution change. Other schools, such as the University of Wisconsin, have decided to work inside their prevailing structures and to try to finesse change from within. Each approach has advantages and disadvantages, and both are challenged by the currency of the credit hour. The latter is beginning to change too. Staff at the Carnegie Foundation are rethinking whether the Carnegie Unit credit hour still makes sense as the standard measure of academic progress. The Department of Education is guardedly open to considering alternative ways to award Title VI funds and accreditors are carefully exploring how to address the competency phenomenon. Change is coming to higher education, but it is a measured, sometimes contentious, and often uncomfortable, slog. Among the committed few, competency-based education is the hot thing right now. Whether it will replace the credit hour and become the new paradigm is yet to be seen. That it is a thorn in the side of academic culture, however, is quite clear.

Chapter 8 : The Challenges of Higher Education in the 21st Century | Guni Network

Change is coming to higher education, but it is a measured, sometimes contentious, and often uncomfortable, slog. Among the committed few, competency-based education is the hot thing right now. Whether it will replace the credit hour and become the new paradigm is yet to be seen.

This lack of progress stems from many sources. In some cases, a lack of vision or awareness has impeded progress. In others, it is a lack of policy or funding. According to Charles Hopkins, who has spoken with people at many levels of involvement in education i. By addressing these critical impediments in the planning stage, governments can prevent or reduce delays or derailment of ESD efforts and, ultimately, the attainment of sustainability. In addition to these generic issues, governments at all levels will need to address issues that are specific to local conditions e. Issue 1 - Increasing Awareness: ESD is Essential The initial step in launching an ESD program is to develop awareness within the educational community and the public that reorienting education to achieve sustainability is essential. If government officials or school district administrators are unaware of the critical linkages between education and sustainable development, reorienting education to address sustainable development will not occur. When people realize that education can improve the likelihood of implementing national policies, regional land and resource management programs, and local programs, then education is in a position to be reoriented to help achieve sustainability. This awareness forms the essential first step in the reorienting process. Fortunately, at the international level, ESD is recognized as important and central to the success of sustainable development around the world. At the sixth meeting of the UN Commission on Sustainable Development, delegations from countries worldwide repeatedly mentioned the importance of ESD in achieving goals of sustainability. It was apparent that they were ready to move forward with the next steps; however, the importance of ESD must reach beyond the delegations and permeate the educational community and the general public. Inherent in building awareness are efforts to outline important linkages between education and more sustainable societies e. In large part, perceiving a need brings about a corresponding change in educational systems. Unfortunately, the need to achieve sustainable development is not perceived today as sufficiently important to spark a large response in the educational community. If leaders at all levels of governance are to make progress, the recognition and active involvement of the education sector is imperative. Response to an Educational Crisis The "space race" brought about massive reform in science and mathematics education in the late s and s in the United States. The federal government was determined to create the scientific and engineering work force necessary to create a successful space exploration program. The National Science Foundation, professional organizations, and textbook publishers invested millions of dollars into rewriting curriculums, developing and publishing new textbooks, training teachers, and equipping school laboratories. The reform accomplished its goal in improving science and mathematics instruction and producing scientists and engineers to support the space program and a technical society. Nations also need to clarify whether their educators are being asked to teach about sustainable development or to change the goals and methods of education to achieve sustainable development. In reality, education related to sustainable development will be implemented in a wide range, in both depth and breadth. In some communities, ESD will be ignored; in others it will be barely addressed. In some, a new class dedicated to ESD will be created, and in others the entire curriculum will be reoriented to address sustainability. Communities must be aware of the limitations of educating about sustainable development. Teaching about sustainable development is like teaching the theory behind an abstract concept or teaching the principles of sustainability by rote memorization. ESD in its real and effective forms gives students the skills, perspectives, values, and knowledge to live sustainably in their communities. At the same time, true education is not indoctrination or inculcation. Experimentation will determine what level of ESD will be appropriate and successful for communities to meet their sustainability goals. For example, a community may weave a few themes of sustainability into the curriculum, only to find the additions will not achieve sustainability for their community. In cases where schools carry total responsibility for ESD, complete curricular reorientation of education at all levels will probably be necessary. In communities where informal,

nonformal, and formal education unite to create an integrated ESD program for citizens of all ages, a less intense approach in the formal education system might be effective. As programs are developed and implemented, problems will occur. Flaws and questionable practices will need to be addressed as ESD continues to develop and mature. Issue 3 - Linking to Existing Issues: The current widespread acknowledgment of the need for educational reform may help advance ESD. If it can be linked to one or more priorities of educational reform, ESD could have a good chance for success. However, if promoters try to add another issue to an already over-burdened system, the chances of success are slim. One current global concern that has the potential to drive educational reform in many countries is economic security. Around the world, ministries of education and commerce are asking: What changes will prepare a workforce that will make my country economically viable in the changing economy of the new millennium? One educational effort that can boost the economic potential of entire nations is educating females. During the last decade, some national leaders have recognized that educating the entire workforce, both males and females, is important for economic viability. In addition, Lawrence Summer of the World Bank says, "Once all the benefits are recognized, investments in the education of girls may well be the highest-return investment available in the developing world" King and Hill, , p vii. Accordingly, some nations are removing barriers to girls attending school and have campaigns to actively enroll girls in school. Further, aligning education with future economic conditions is difficult, because economic and technological forecasting is an art based on imprecise science. To be successful, ESD will need to catch the wave of educational reform. ESD proponents need to identify and illustrate the linkages between the principles of sustainability and the long-term economic well-being of each nation. If ESD can be linked to the current global educational reform movement, educating for sustainability will be swept along with the energy of the reform effort. If, however, the wave is missed, proponents of ESD will be looking for a foothold in the curriculum and trying to convince teachers to wedge sustainability principles, knowledge, issues, skills, values, and perspectives wherever possible. Linking to the reform movement can guarantee ESD to every child in school, while inserting ESD into the curriculum will be left to the whim of individual teachers. In the case of the latter, ESD will be characterized by huge gaps or possible redundancies. The report strongly recommends that all reform be conducted in the spirit and essence of sustainable development and calls for the full-fledged pursuit of reorienting education to attain sustainability. Accordingly, ESD and goals for sustainability have a legitimate place in whatever changes emerge from national or regional educational reform efforts. Issue 4 - Facing the Complexity of Sustainable Development Concept Sustainable development is a complex and evolving concept. Many scholars and practitioners have invested years in trying to define sustainable development and envisioning how to achieve it on national and local levels. Because sustainable development is hard to define and implement, it is also difficult to teach. Even more challenging is the task of totally reorienting an entire education system to achieve sustainability. When we examine successful national education campaigns, we find they often have simple messages. For example, messages that encourage us to vaccinate our children and boil our water, or discourage us from driving drunk and taking drugs, are simple concepts compared to the complex range of environmental, economic, and social issues that sustainable development encompasses. Success in ESD will take much longer and be more costly than single-message public-education campaigns. National Education Campaigns When we examine successful national education campaigns, we find they often have simple messages. For example, AIDS education focuses on prevention. The message is, "people can prevent the spread of the HIV virus by taking certain precautions. The AIDS prevention message is extremely simple. Nevertheless, AIDS is on the rise in many countries, not because the education programs are ineffective, but because the problem is complex. Rather than being clear, simple, and unambiguous, the concepts involved in ESD are complex. Their complexity stems from the intricate and complicated interactions of natural and human systems. The challenge to educators is to derive messages that illustrate such complexity, without overwhelming or confusing the learner. In simple terms, those who will be called upon to educate differently e. Education for sustainable development remains an enigma to many governments and schools. Governments, ministries of education, school districts, and educators have expressed a willingness to adopt ESD programs; however, no successful working models currently exist. Without models to adapt and adopt, governments and

schools must create a process to define what education for sustainability is with respect to the local context. Such a process is challenging. It calls for a public participation process in which all of the stakeholders in a community carefully examine what they want their children to know, do, and value when they leave the formal education system. This means that the community must try to predict the environmental, economic, and social conditions of the near and distant future. Public participation processes whereby stakeholders examine the needs and desires of a community and identify essential elements of basic and secondary education can be adapted and implemented in many types of communities. Seeking the opinions of parents and workers to shape the education of their children will be a totally new idea in some cultures. Although community consultation and other forms of public participation can be effective tools, they should be introduced slowly and in accordance with local traditions and cultures where they have not been used previously. However valuable, the community consultation process is not without pitfalls. For example, an organized, educated, and articulate few might dominate the process; people who have received little formal education may not feel they have the expertise to take part in or contribute to the process; and the worldviews and life experiences of some people might prevent them from perceiving or accommodating the changes that will come to all regions of the planet in the coming decades. In these cases, how the outcome of the process is used becomes important. A continuum of implementation exists, ranging from ruthlessly implementing the results of a skewed process to totally ignoring the outcomes of the process. The interpretative, political, and interpersonal skills of the implementation team are key in this effort. ESD carries with it the inherent idea of implementing programs that are locally relevant and culturally appropriate. Just as any sustainable development program must take into consideration the local environmental, economic, and societal conditions, so too must ESD programs consider these same conditions. As a result, each region must create its own ESD program. It is impossible to create an international, or even in many cases a national, curriculum that would be relevant to all communities. It should be apparent to ministries of education and school districts that developing locally relevant ESD curriculums will be facilitated by creating public participation processes that allow communities to shape the major ideas underpinning their own curriculums. Rather than spending time searching for curricular models to adapt, it would be better to invest time and resources in developing processes by which communities of different sizes and traditions can define their own ESD programs. Issue 6 - Engaging Traditional Disciplines in a Transdisciplinary Framework ESD by nature is holistic and interdisciplinary and depends on concepts and analytical tools from a variety of disciplines. As a result, ESD is difficult to teach in traditional school settings where studies are divided and taught in a disciplinary framework. In countries where national curriculums describe in detail the content and sequence of study in each discipline, ESD will be challenging to implement. In other countries where content is described generally, ESD will be more easily implemented, although doing so will require creative teachers who are comfortable and skilled at teaching across disciplines. Issue 7 - Sharing the Responsibility Popular thinking promotes the myth that an informed society is solely the responsibility of the ministry of education. In reality, however, the ministries of environment, commerce, state, and health also have a stake in ESD, just as they have a stake in sustainable development. By combining expertise, resources, and funding from many ministries, the possibility of building a high-quality, successful education program increases.

Chapter 9 : Three Challenges for Education Leaders - ASCD Express

The biggest challenge in education today is its myopia and disregard for real-world problem-solving as concretized in our collective and sometimes willful lack of imagination in reforming education outside the tautological feedback loop of standardized testing.

In this issue of the CMEJ we showcase several studies of successful innovations, a commentary calling for more and better research into curriculum delivery models to eventually improve the choices available to curriculum planners, and a suggestion that a recent change in resident work hours was ill advised. Applied research, which is much of what currently happens in medical education, by its very nature, recommends, suggests, and offers a new direction which then implies change for someone. On a regular basis we seem to blithely toss out ideas for improvement with little regard for the very real challenges of successfully adopting, implementing, and embedding 1 new ways into often reluctant organizations. Though we know much about the march of progress as a whole 1 we know little and use less of what is going on inside individuals and organizations. Though volumes of books and stacks of articles offer advice, plans, and promises of easy and successful change, 2 , 3 , 4 the fact remains that significant change remains elusive. And even when we are successful, we are not sure why. Some of the latest research has shown that leaders, who are by definition change agents, come in all shapes and sizes and seem to exhibit all manner of characteristics. We still do not really know what makes a leader effective 4 , 5 in the face of unavoidable and powerful resistance. From where does the all-too-familiar resistance originate? What is it that makes organizations reluctant? The answer to both questions is people. We are the enemy! All of us at different times and in different ways provide resistance and balk at the prospect of change. Are we bad people? No, we are like everyone else who is empowered and at the same time imprisoned by organizational culture and a psychology of inertia. When change comes knocking we realize, sometimes unconsciously, that we are about to face loss, awkwardness, incompetence, uncertainty, confusion, and conflict. Most new ideas represent a threat to old, familiar, and comfortable ways of being at work. Those that do not pose a threat are by definition not that new, at least not to those of us who embrace them, advocate for them, and attempt to implement them. Researchers and authors in this edition and in general have thought about these new ideas, tried them out, made careful observations, written up their results, and now invite us too to give them a whirl. They have come to terms with the implications of the change, become competent in other ways, make sense of the innovation, and moved forward. Marris 6 said it well: It will take time for the rest of us to come around, lots of time. To highlight the startling fact that these ideas are not new I quote again from Marris, who wrote in Every attempt to pre-empt conflict, argument, protest by rational planning, can only be abortive: They make decisions, adopt unpopular changes, compromise, and tell their followers all the important reasons why they need to get with the program. And it does not work. Forced change is superficial or it is sabotaged or both and therefore almost always counterproductive. Real change needs to go deeper than and beyond mere policies and procedures and organizational charts and new course names. Real change penetrates cultural beliefs and assumptions to assimilate or displace the old. Take for example changes in undergraduate curriculum and negotiating the proportion of time and hence priority that various courses, competencies, or blocks will have. The allocation of time and weight given to public and preventive medicine, knowledge and skills of patient advocacy, inter-professional practice and collaboration, leadership, and of course to clinical decision-making and the scientific basis for medicine merely represent the outcomes of deep cultural assumptions about what really matters and what is truly important. Though stakeholders may generally have espoused beliefs represented even by officially sanctioned and heralded documents like The Future of Medical Education in Canada 9 or the CanMEDs 10 roles or by their own statements of educational philosophy, it is the deeply held and shared cultural assumptions and warrants that will carry the day, day after day. Clearly, as Goldsmith puts it: Yes, but we must go slowly and not ignore human nature. Being unrealistic, trying to go too far too fast is, sadly, as I stated earlier, truly and predictably counterproductive. We must marry reach with realism as Evans 5 wrote. We need to find that balance between too fast and too slow, between fierce resistance and suffocating

stagnation. Setting, working towards, and then achieving moderate goals will actually give us small wins to celebrate and motivate us to strive for more and better. On the other sad hand, aiming too high too soon leads to burnout and demoralization. Our leaders and change agents, including researchers with great ideas, need to listen, acknowledge the real challenges of change, adopt a much longer time frame and longer horizon, and celebrate the small but important steps that will eventually lead both psychologically and practically to bigger and better. They found, not unexpectedly, areas of strength and weakness. This can be used to help guide program development. Using questionnaires, Persson et al. The results could easily be used to strengthen the undergraduate curriculum and teaching in pediatric ambulatory clinics. Interestingly, students rated their skills in communication, history taking and physical exam lower than did the parents. Using a prospective, cross-sectional study with a national survey of second-year family medicine residents, Janke et al. They found that a higher percentage of residents in rural areas reported adverse motor vehicle events than those working in urban areas. They conclude with a call to action, the need for which is supported by these data. Wijerathne and Rathnayake used computer-assisted spot tests with medical students in Sri Lanka and found they were well received by the medical students. While they note that the HCTC is resource-intensive they recommend both: This could free curriculum planners to combine researched features of classical curriculum designs in creative ways. Razik and Slessarev examined resident work-hour restrictions from a Canadian perspective and delineate some of the reasons why changes to the current call structure may have potentially deleterious effects to all those concerned. They advise us against a top-down approach to change based on erroneous cultural assumptions that we can make things better within the highly complex and interdependent world of hospital medicine by simply imposing, however well intentioned, our pet innovations. They conclude with a plea that all stakeholders consider the potential unintended consequences of a change adopted with the best of intentions. Their caution towards change is different than mine but connected and complementary. Together we implore leaders and change agents to move forward more slowly, to consider the resistance more carefully, to heed contraindications, and to be vigilant for adverse side effects. Englewood Cliffs, New Jersey: Educational Technology Publications; Ginn and Company; Lucas F, et al. The human side of change: The new meaning of educational change. Teachers College Press; Organizational culture and leadership. Royal College of Physicians and Surgeons of Canada; Culture eats strategy for breakfast!.