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EDUCATION REFORM FOR RAISING ECONOMIC COMPETITIVENESS

ABSTRACT. Globalization has increased economic competition within and between countries and the world's regions. Economic competitiveness is commonly seen as a valid index for judging a country's level of economic prosperity. Many recent large-scale education reforms have been justified by the urgent need to increase labor productivity and promote economic development and growth through expanded and improved education. It is generally assumed that to increase economic competitiveness, citizens must acquire knowledge, skills and attitudes necessary for civic success and the knowledge-based economy. This article argues that what schools are expected to do in order to promote economic competitiveness often contradicts commonly accepted global education reform thinking. Experience in many countries indicates that increased standardization of teaching and learning, for example, may be counterproductive to the expectations of enhanced economic competitiveness. The conclusion is that rather than competition between education systems, schools and students, what is needed is networking, deeper co-operation and open sharing of ideas at all levels if the role of education in economic competitiveness is to be strengthened. The key features of education reform policies that are compatible with competitiveness are those that encourage flexibility in education systems, creativity in schools and risk-taking without fear on the part of individuals.

KEY WORDS: economic competitiveness, education reform, educational change, learning, teaching

1. Introduction

Globalization has not only increased competition in world economies but also within and between the education systems. Policies and strategies that drive educational reforms have been adjusted to the new realities by creating structures in education systems that allow assessing, comparing and rank-ordering national and regional education performances. Education reforms in different countries today share similar assumptions, values and characteristics due to the

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endless flow of information and harmonization of education policies through increased global educational borrowing and lending.

Research literature confirms the value of investing in education (Schweke, 2004). More precisely, evidence shows that both primary and secondary education significantly contributes to economic development and growth. This research recognizes people as human capital and demonstrates how increased investment in knowledge, skills and health provides future returns to the economy through increases in labor productivity (Bils & Klenow, 2000; Cohen & Soto, 2001; Hanushek & Kimko, 2000; Krueger & Lindahl, 2000). Moreover, better quality education increases average earnings and productivity and reduces the likelihood of social problems that, in turn, are harmful for economic development.

The body of educational change knowledge that forms the technical foundation of education reforms underway in practically all education systems has significantly expanded during the last three decades (Carnoy, 1999; Fullan, 2005; Hargreaves, Earl, Shawn & Manning, 2001). According to Hargreaves and Goodson (2006), education reform has gone through three consecutive phases. The first was the age of *optimism and innovation* (up to the late 1970s). This was the era of growing student populations and economic growth that promoted optimism about individual emancipation and technological enhancement through education. Education reforms were based on large-scale curriculum reforms, increased professional autonomy of teachers and school-driven improvement through innovations. The fact that student populations were relatively homogenous and students with special needs were taught in specific institutions increased the high expectations for implementing innovations. The second phase was the age of *complexity and contradiction* (late 1970s to mid-1990s). Education reforms focused on increasing external control of schools, teachers and students through inspections, evaluations and assessments that led to an increase of regulations in schools and decreased autonomy of teachers. At the same time, however, the neo-liberal movement increased the freedom of choice in education. Student populations became more diverse creating a need for inclusive approaches and shifting the emphasis to learning for all. The third phase is the age of *standardization and marketization* (mid-1990s to date). Education reforms have been designed based on centrally prescribed curricular, learning and assessment standards monitored through intensive assessment and

testing and on increased competition between schools. Therefore, teachers are losing their professional autonomy and learning is being focused on successful performance in standardized tests.

Many countries are reforming their education systems to provide their citizens with knowledge and skills that enable them to engage actively in democratic societies and dynamic knowledge-based economies (OECD, 2000; Riley, 2004). The fundamental requirement for this is that everyone has sufficient knowledge and skills in literacy, numeracy and information and communication technologies (ICTs). Rather than shifting emphasis onto standardized knowledge of content and mastery of routine skills, many of the advanced education systems are focusing on flexibility, creativity and problem solving through modern methods of teaching, such as co-operative learning, and using multilateral clusters, community networks and ICT in teaching. According to the existing body of educational change knowledge, it seems that many of the ongoing education development efforts are not likely to bring the improvements expected (Sarason, 1990). For example, the widespread approach of increasing external pressure on teachers and students in order to improve the quality and effectiveness of education has not been proved to be sustainable (Fullan, 2005; Hargreaves & Fink, 2005). As a reaction to the over-emphasis on knowledge-based teaching and learning, ministries in China, Japan, Singapore and in the European Union are developing more flexible forms of curriculum, introducing authentic forms of assessment and accountability, and supporting teachers to work together to find alternative instructional approaches that promote learning of essential knowledge and skills required in knowledge economies. Instead of focusing on single institutions, education reforms are beginning to encourage clustering of schools and communities. At the core of this idea is complementarity and co-operation between the members of the cluster. Clustering and networking appear to be the core factors in economic competitiveness.

Economic competitiveness is the key attribute of economic development and growth. In the knowledge-based economies in the last two decades expectations of education, especially the qualities desired in educated and trained people have dramatically changed. For example, Microsoft CEO Bill Gates (2005) argues that ''training the workforce of tomorrow with the high schools of today is like trying to teach kids about today's computers on a 50-year-old mainframe. It is the wrong tool for the times.'' Therefore, business

leaders, politicians and educators are looking for solutions for improving economic competitiveness and thereby economic growth. Market values like productivity, effectiveness, accountability and competitiveness are increasingly being embedded in global education reforms. This is based on the assumption that education will improve according to the logic of enhancing performance of market economies: opening doors to competition and choice. As a result, standardization and consequential accountability have been commonly proposed as solutions to improve the quality and effectiveness of teaching and learning in many school systems. The idea of marketization of education has been at the core of global education reforms since the early 1990s (Apple, 2001). In this article I assume that many education reforms are similar because of increasing global educational policy influenced by the common challenges brought by the network society and knowledge-based economies. Then my argument is that the educational requirements of building democratic societies and enhancing economic competitiveness often contradict the changes introduced in these global education reforms.

2. The Global Education Reform Movement

Globalization is a cultural paradox: it simultaneously unifies and diversifies people and cultures. It unifies national education policies by integrating them with the broader global trends. Because problems and challenges are similar from one education system to another, solutions and education reform agendas also are becoming similar. Due to international benchmarking of education systems by using common indicators and the international comparisons of student achievement, the distinguishing features of different education systems are becoming more visible. For example, the OECD's Program for International Student Assessment (PISA) has mobilized scores of education experts to visit other countries in order to learn how to redefine their own education policies.

Globalization has also accelerated international collaboration, exchange of ideas and transfer of education policies between the education systems (Carnoy, 1999; Steiner-Khamsi, 2004). Analyzing global policy developments and education reforms has become a common practice in many ministries of education, development agencies and regional administrations. Therefore, the world's education systems inevitably share some core values, functions and

structures. The question arises whether increased global interaction among policy-makers and educators, especially benchmarking of education systems through agreed indicators and borrowing and lending educational policies, has promoted common approaches to education reform throughout the world (Riley & Torrance, 2003).

Although improvement of education systems is a global phenomenon, there is no reliable recent comparative analysis of how education reforms in different countries have been designed and implemented. However, the professional literature indicates that the focus on educational development has shifted from structural reforms to improving of quality and relevance of education (Hargreaves & Goodson, 2006; Sahlberg, 2004). At the same time, primarily due to global declarations such as Millennium Development Goals and Education for All, increased efforts have been made to provide basic school education to all children and to expand access and relevance of secondary education (World Bank, 2005). As a consequence, curriculum development, student assessment and teacher evaluation, integration of information and communication technologies into teaching and learning and proficiency of basic competences, i.e. reading and writing skills, and mathematical and scientific literacy have become common priorities in education reforms around the world (Hargreaves et al., 2001; Sacks, 2000).

Today's education reform policies have been influenced by research and development in Anglo-Saxon countries. Through intellectual exchange and technical assistance that are often provided by the experts from these countries, educational change knowledge has been widely exported to transition countries and increasingly also to the developing parts of the world (Steiner-Khamsi, 2004). Hargreaves et al. (2001) and his research team have presented a useful synthesis of global education reform efforts that they call "a new education reform orthodoxy." They outline the logic and evolution of education development as most countries adjust their education systems to respond to fit new economic realities and social challenges. In this article I refer to this new reform policy in education as the Global Education Reform Movement.

The inspiration for the emergence of the Global Education Reform Movement comes from three sources. The first source of inspiration is the new paradigm of learning that became dominant in 1980s. The breakthrough of cognitive and constructivist approaches to learning gradually shifted the focus of education reforms from

teaching to learning (Brooks & Brooks, 1993; Littky & Grabelle, 2004; Marzano, Pickering & Pollock, 2001). According to this paradigm, intended outcomes of schooling emphasize greater conceptual understanding, problem-solving, emotional and multiple intelligences and interpersonal skills rather than the memorizing of facts or mastering irrelevant skills. At the same time, however, the need for proficiency in literacy and numeracy has also become a prime target of education reforms. The second inspiration is the public demand to guarantee effective learning for all pupils. Inclusive education arrangements and the introduction of common learning standards for all have been offered as means to promote the ideal of education for all (Peters, 2004). The third inspiration is the accountability movement in education that has accompanied the global wave of decentralization of public services. Making schools and teachers accountable for their work has led to introduction of education standards, indicators and benchmarks for teaching and learning, aligned assessments and testing and prescribed curricula. As a result, various forms of consequential accountability have emerged where school performance and raising the quality of education are closely tied to the process of accreditation, promotion and financing (Popham, 2004).

The Global Education Reform Movement has had significant consequences for teachers' work and students' learning in schools. Because this agenda promises significant gains in efficiency and quality of education, it has been widely accepted as a basic ideology of change, both politically and professionally. Table I describes some effects that the Global Education Reform Movement has had and is having in schools, especially on teaching and learning (Hargreaves et al., 2001; Sahlberg, 2004).

The Global Education Reform Movement emphasizes some fundamental new orientations to learning and to education administration. It suggests three strong directions to improve quality, equity and effectiveness of education: putting priority on learning, aiming at good learning achievement for all students and making assessment as an integral part of the teaching and learning process. Firstly and most importantly, the Global Education Reform Movement shifts the focus in education from what teachers should teach to what students should do and learn. It thus addresses the need to understand learning as a process of making meanings and building understanding rather than as recitation of facts and isolated knowledge (Brooks &

TABLE I
Consequences of the Global Education Reform Movement for teaching and learning

Component of the Global Education Reform Agenda	Description	Impact on teaching and learning
Deeper learning	Shifting the focus of teaching from a presentation-recitation mode of instruction towards constructivist, student-centered teaching for conceptual understanding, problem-solving, multiple intelligences and interpersonal skills	Teachers need more comprehensive understanding of learning processes and better pedagogical skills to plan and teach in alternative ways. Students need to understand better their own mental process
Literacy and numeracy	Attainment of basic skills of reading, writing and mathematics are the prime targets of education and apply to all pupils	More teaching time is devoted to basic knowledge and skills. Students will do more subject-based drills and less cross-disciplinary learning
Higher expectations through standards	Higher expectations are often expressed through standards that describe what all pupils should know and be able to do after determined phases of schooling. These expectations may also include standards for teaching, assessment, schools and education in general	Teaching will focus on predetermined targets based on students' level of competence. Students will know more precisely what they are expected to learn and will thus concentrate on these expected learning outcomes
Prescribed curriculum	Curriculum is prescribed and centralized or at least regionalized and ensures common and consistent coverage of what every school should teach and what all students should know and be able to do	Teaching will mostly rely on the prescribed curriculum and related textbooks. Teaching is therefore likely to be more standardized in terms of structure and methods used. Tendency towards conventional formal learning
Aligned assessments and tests	Assessment and testing are directly linked to the prescribed curriculum, learning standards and indicators, helping teachers to focus on high learning achievements for all students	When assessment is directly linked to standards, teachers are likely to teach for tests rather than for deeper learning. Students will learn that success is determined by test scores and therefore act accordingly
Consequential accountability	Consequential accountability, school performance and teachers' teaching are closely tied to the process of inspection, promotion and in some cases financing and rewarding (or punishment)	Teaching aims at high scores on standardized achievement tests. That typically leads to teacher-centered teaching and motivates students towards rote learning. Creativity and risk-taking will not be favored

Brooks, 1993; Marzano et al., 2001; Sarason, 2004). It puts a strong accent on mastering the basic skills of reading, writing, mathematical and scientific literacy for almost all students by defining explicit learning targets for students and teachers. Second, through a common curriculum it also tries to ensure that irrespective of school or teacher, each student will be provided with appropriate learning environments. Such environments feature problem-solving, critical thinking and co-operative learning. These types of "deep learning" are more compatible with the needs of the knowledge-based economy and the development of the network society than are conventional models of learning (Joyce & Showers, 1995). Third, new and alternative forms of assessment that are linked to learning objectives help both teachers and students to adjust their efforts to achieve the intended goals in school. Assessment becomes an integral part of the learning process using a variety of approaches, such as performance assessment, portfolio and self-assessments.

The impact of the Global Education Reform Movement in education systems becomes particularly interesting when analyzed in light of the expectations of economic development and growth. For example, the European Union has acknowledged that the region has been confronted with a quantum shift resulting from globalization and knowledge-driven economy. As a response to this challenge the EU has agreed that by 2010 it will "become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and with greater social cohesion" (European Commission, 2002). These targets require radical transformation of the European economy and a challenging program for the modernization of education systems. Similar demands for enhancing economic competitiveness and growth have been made on education authorities in the United States, Asia and in several transition economies (for example, Porter, Schwab, Sala-i-Martin & Lopez-Claros, 2004).

3. Economic Competitiveness and Education

Education for the knowledge-based economy has become a buzz phrase in education policy discourse throughout the developed world and the transition economies but also increasingly in developing countries. However, it has rarely been transformed into operational strategies or reform programs for education systems or educators.

Typically, education reform that is targeted on serving knowledge-based economies emphasizes mathematics and science, information and communication technologies, basic knowledge and skills in literacy and development of interpersonal skills. Moreover, a successful knowledge economy also requires advanced secondary and tertiary education provision able to boost labor productivity, research and innovation (Anon, 2004; World Bank, 2005). Many of the education reforms aimed at promoting economic competitiveness in the knowledge economies take the form of centrally steered structural and programmatic directives. Only rarely are these changes directly related to what teachers and students are doing in schools and classrooms.

Successful economies compete on the basis of high value, not only low cost. High value is best guaranteed by well-trained and educated personnel and flexible lifelong learning opportunities for all citizens. The most frequently presented general idea for increasing economic competitiveness is to equip people with the skills and attitudes for economic and civic success in an increasingly knowledge-based economy (Hargreaves, 2003; Schweke, 2004). This is rhetoric typically written into the strategies or policies that address the relation between economic competitiveness and development of education. In the midst of global education reforms it is difficult to answer the question that many teachers ask: ''What should we do differently in schools in order to contribute effectively to economic competitiveness and growth?'' Before exploring this question further, we need to examine what economic competitiveness means in order to understand better what schools should do differently.

Competitiveness is based on the determinants of the complex process of economic growth and development. When the competitiveness of economies is compared, a set of institutions, policies and structures is constructed using sub-indices that try to grasp the heterogeneity of different countries. The Economic Growth Competitiveness Index is built on three central ideas (Porter et al., 2004):

- Economic growth can be analyzed within the macro-economic environment, the quality of public institutions and technology.
- Technological advance is the ultimate source of growth but its origins may be different across countries.
- The importance of the determinants of economic competitiveness varies for core and non-core innovators.

Based on these commonly used determinants of economic competitiveness and various indicators of knowledge economy, three core domains have been utilized to explain economic growth:

- education and training (human capital),
- use of information and communication technologies,
- innovations and technological adaptation (Chen & Dahlman, 2004; Porter et al., 2004).

Education reforms have been classified in various ways. Using the three pillars above and combining them with the structural, qualitative and financing dimensions of education reforms to convert them to more concrete principles and actions for schools and teachers. Table II describes how the assumed three dimensions of education reforms have addressed the three determinants of economic competitiveness (see Sahlberg, 2004).

Governments have an essential role to play by offering and guaranteeing good education that adequately emphasizes the core determinants of economic competitiveness. However, it has been difficult to translate this central role of education into concrete actions and programs that lead to improved human capital and therefore contribute to the social and economic progress. According to Table II there are several aspects of economic competitiveness that have a direct relation to teaching and learning in schools. I have identified four key conditions that make teaching compatible with the needs of the knowledge economy. They are: rethinking innovation, revisiting the conception of knowledge, focusing on interpersonal skills and enhancing the will and skill to learn.

3.1. *Rethinking Innovation*

Living in and working for a world of innovations requires fundamentally different attitudes, knowledge and skills from the citizens. Technological adaptation and innovation have been the main drivers of economic growth in developed countries since the WWII and are proving to be important factors also in many developing countries (Chen & Dahlman, 2004). Therefore teachers and students need to work with and learn from innovations in order to be able to contribute successfully to the development of innovation in the knowledge economy. Innovations linked to economic development have three characteristics that are also relevant to education reforms (Aubert, 2004). First, the process of innovation is non-linear rather

TABLE II
Dimensions of education reform that focus on the determinants of economic competitiveness

Dimension of education reform	Determinants of economic competitiveness and their implications to education		
	Human capital (education and training)	Use of information and communication technologies	Innovations and technological adaptation
Restructuring and adjustment	Enrolment ratios and participation rates	Student/computer ratio	School-business partnerships
	Access and mobility	ICT in curriculum	Investments in tertiary education
	Length of schooling	Flexibility and choice	
Quality	Academic knowledge	Teacher readiness to use ICT in teaching	Use of varied teaching methods
	literacy	Schools' ICT infrastructure	Focus on both individual and team learning
	mathematics	Assessment and evaluation policies	Creativity and risk-taking
	science		
	Meta-cognitive and interpersonal skills		
Financing, infrastructure and management	Education spending	Information management system	Increasing higher education expenditures
	Lifelong learning	Investing in infrastructure	Increasing financing of research and development
	Decentralization and distributed accountability		

than linear. This implies that in order to work in an innovation-rich environment one has to develop mindsets able to identify and understand nonlinear, systemic processes. Teaching and learning have traditionally been conceptualized as linear, deterministic procedures. Therefore, shifting the focus of education to address the needs of working with innovations requires rethinking teaching and learning as non-linear, non-deterministic and complex processes. In professional development of teachers and in school improvement this means exploring and expanding the existing pedagogic conceptions and beliefs and upgrading the current knowledge base related to teaching and learning. Education policies and curricula should pay more attention to learning how to learn and how to understand the process, i.e. meta-cognition. Second, innovation is most often a collective process created and maintained by a group of people rather than by one inventor. In this sense innovation requires shared knowledge and complementary skills from more than one person. In order to promote these collective and creative qualities, education at all levels needs to focus on learning to learn together and work productively with other people, for instance through co-operative learning. Third, innovation is an organic entity that should be viewed from the systemic point of view. The process of innovation can be characterized as complex or even chaotic process of self-organization (Fullan, 2005; Littky & Grabelle, 2004). This means that knowledge and skills that are related to innovation are attained through active construction rather than direct instruction and accommodation. Therefore, teaching and learning in schools should be viewed as systemic processes that rely on principles of active participation, social interaction and reflection (social constructivism).

3.2. *A New Conception of Knowledge*

Human capital can be understood as a stock of educated and skilled citizens. Knowledge plays a key role in increasing human capital. Human capital is one of the main drivers of economic competitiveness. It is not primarily what individuals know or do not know, but more what are their skills in acquiring, utilizing, diffusing and creating knowledge that are important for economic progress and social change. Formal education, especially at pre-tertiary levels, has been criticized for outdated conceptions of knowledge. Traditionally the foundation of knowledge has been based on positivist scientific method. Conventionally knowledge has been viewed as objective and

knowledge-formation as a linear, cumulative process. In other words, the ideal of knowledge has been understood as static, eternal and free from subjective values and interpretations. Due to the breakthrough of new scientific paradigms in economics, mathematics, natural sciences, neuroscience, cognitive sciences and information technologies, knowledge is now understood in a new way. It is seen as relativistic and diverse in terms of its interpretations. It is created through multiple processes, including hermeneutic and subjective 'scientific' methods. This shift in the paradigm of knowledge has created a challenge for education. Teaching and learning in schools should focus not only on transmission of information but also on construction and transformation of knowledge that are fundamental processes in knowledge-intensive and innovation-rich societies. However, due to participation in the Global Education Reform Movement many countries are moving to opposite direction: what seems to be valued is conventional knowledge in selected core subjects that can be reproduced in tests using lower level intellectual processes.

3.3. *Focusing on Interpersonal Skills and Changing the Habits of Mind*

Success in the world of work requires different knowledge and skills from employees and managers than before. Operating in an innovation-rich environment and coping with increasing amounts of knowledge is changing the ways we think about education and schools. Individual performance and inventions created by one person only have given a way to collective intelligence, shared knowledge and team-based problem-solving (Reich, 2001; Hargreaves, 2003). Interestingly, successful economies are based on the idea of strategic alliances rather than raw competition for markets and clients. Indeed, economic competitiveness requires a stronger focus on the development of interpersonal skills throughout the cycle of education. More specifically, habits of mind and social skills that are necessary in productive group processes, whether in work or school, are becoming more important in the schools of those countries that are genuinely concerned about their economic competitiveness and sustainable development. Initiating and managing productive teamwork, problem-solving and continuous learning in schools and workplaces alike requires what is known as emotional intelligence. According to Goleman (1998) emotional intelligence adds value to cognitive intelligence and significantly improves labor productivity and

personal relations. The Global Education Reform Movement is, however, placing only a weak emphasis on emotional intelligences, on improving students' interpersonal skills or how they think.

3.4. *Enhancing Will to Learn and Skill to Change*

One of the typical features of almost any school system is that as pupils move from elementary to middle school and from middle school to secondary school, their interest in studying and learning in school tends to decline (Sarason, 1990). Lifelong learning requires students to leave school with the desire to learn more about themselves, other people and the world around them. The knowledge society is a learning society in which economic development and competitiveness depend on the will and skill of workers to keep on learning alone and from one another. Increased emphasis on standards and accountability has led in many countries to micro-management of teaching and thereby also of learning that, in turn, has eroded teachers' autonomy of judgment and conditions of work and decreased the meaningfulness of learning among students.

Because macro-economics, the quality of public institutions and the advance of technology vary greatly from one country to another, it is difficult to establish one universal approach to education reform that would benefit economic growth and competitiveness in particular. It has become clear that country-specific strategies addressing the country-specific constraints to growth are most likely to be successful (Schweke, 2004). Indeed, policy-makers should be cautious in drawing conclusions too hastily from how education reforms have been designed in other countries, when planning reforms to strengthen economic competitiveness and support continuous growth of their own countries. For example, if the country is so called non-core country in terms of innovation (see Porter et al., 2004), it would make more sense first to try to make the education system ready to utilize and benefit from the innovations created in the core countries. On the other hand, especially in the countries of advanced innovation and technological cultures, it is important to give teachers in schools and universities sufficient autonomy to maintain creative and open cultures of learning for their students. Competitive businesses need first and foremost individuals who are creative, who are capable and willing to take risks and who can use these skills both working independently and together in teams.

4. Implications for Schools

Teaching in schools is influenced by two change forces that often are more contradictory than complementary. The first force is the Global Education Reform Movement. It is shifting the focus of improving education towards basic knowledge and skills in some core subjects, common standards for teaching and learning, measurable knowledge and stronger accountability for results, especially at school level. The other force is the increasing external expectation that schools should do more to help the countries' economies to develop and become more competitive. Caught in the middle of these change forces are the teachers and students who often find it difficult and meaningless to react to these contradictory external pressures (Hargreaves & Goodson, 2006).

An analysis of the concrete consequences that each of these changes have fostered can clarify the contradiction. For the sake of simplicity, we can take one example from each level of education: the system level, school level and classroom level. I have argued above that economic competitiveness requires, among other things, flexibility, creativity and risk-taking. Flexibility is important at the education system level. This not only means providing flexible education and training opportunities for all in the society, young and old. It also refers to flexibility in the curriculum, in the organization of work in schools, in using various teaching and learning arrangements and in reporting on progress and achievements. Creativity becomes an important principle at the school level. Teachers who are catalysts of learning in the knowledge society must therefore be provided with incentives and encouraged to make their work place and classrooms creative learning organizations where openness to new ideas and approaches flourish. Finally, risk-taking needs to be encouraged in daily life and learning in schools. There is no creativity in schools without flexibility in the education system and no creativity without risk – the risk of trying a new idea, experimenting with an unfamiliar practice, being prepared to fail or look silly when trying something new, not taking setbacks to heart, being responsive rather than overly sensitive to critical feedback and so on (Hargreaves, 2003).

The Global Education Reform Movement is also fostering standardization in education, stronger accountability for results in schools and teaching for measurable results. Standardization has become a common change strategy at the education system level.

Standards for learning, teaching, curriculum and assessment have been introduced in many education systems as a means of securing unified 'delivery' of education services to all citizens (Apple, 2001; Sacks, 2000). The prevalence of standardized tests and other forms of assessment has gradually made schools and teachers more accountable than before for their students' learning. At the classroom level teachers are increasingly teaching for predetermined results and targets that are often described in centralized curriculum and national education standards documents.

Steering education systems towards producing intended outcomes requires congruence between teaching for the knowledge economy and what education reforms are expecting from teachers and students. In some cases, however, what schools are explicitly or implicitly assumed to do to improve their performance within ongoing education reforms contradicts what is needed from schools to support economic competitiveness. Comparison of these two change forces at the level of education systems, schools and classroom indicates some difficult incompatibilities and controversies. At the macro level, economic competitiveness demands an education system flexible enough to be able to react to weak signals and to produce a coordinated and collaborative response. Such a reaction and response is made possible by sustainable leadership. An education system's flexibility is promoted by freedom of choice, decentralized management and a culture of trust in professional communities, i.e. teachers and educational leaders. At the same time education reforms are equipping education systems with standards and regulations that set the criteria and targets for success and measurement. These education standards aim at raising the expectations of teaching and learning by specifying what every student should know and be able to do. At school level economic competitiveness needs the organization of work to enable alternative scheduling, integration of subjects and increased teacher collaboration. Creativity is promoted by using a wide spectrum of teaching methods, such as co-operative learning, and building bridges between the school and the community. Due to global education reforms, however, work in schools is influenced by prescribed curricula that are often used to determine the performance level and even, mistakenly, the quality of schools. Teachers tend to rely on traditional teaching arrangements and methods in order to minimize the risk of failure. Finally, teaching and learning for more competitive economies

requires teachers and students to work together in safe and stimulating learning environments that focus on broad learning objectives, encourage everyone to participate and use alternative approaches to achieve goals. Risk-taking in teaching and learning is promoted by co-operative cultures, mutual trust and feedback that recognize students' efforts as well as attainment.

As a result of typical education reforms, however, teaching and learning are often characterized by stress and fear as the focus is on being successful in achieving the predetermined learning outcomes. Therefore students primarily learn alone rather than co-operatively in small groups in order to minimize personal risks. Open and alternative teaching methods and task designs are not favored. Figure 1 summarizes the comparison of competitiveness and education reform factors mentioned above.

Standards-based curriculum reforms have become increasingly common in many parts of the world recently (England, Germany, many Central and Eastern Europe countries and most states in the United States, for example). In practice, as Hargreaves and his colleagues (2001) claim "the common, standards-based curriculum is

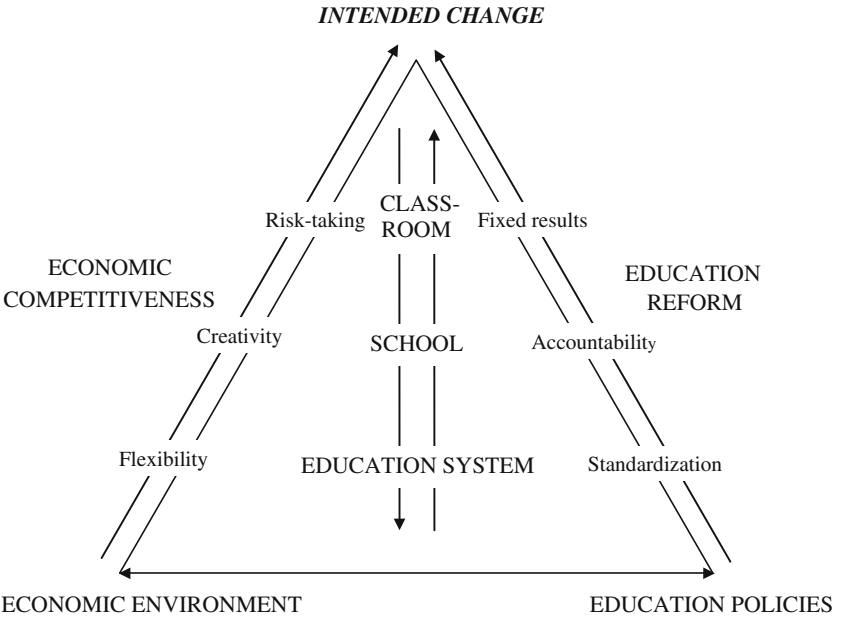

Figure 1. Certain factors of economic competitiveness and education reform.

often [...] a clinical and conventional curriculum in which literacy, numeracy and science are accorded supreme importance.'' In the 1988 national curriculum reform in England and Wales the so-called core subjects were mathematics, science and English. Similarly these same subjects have increased their status in many other countries due to the strengthened political significance of the international student learning comparisons and benchmarking. As a consequence, curriculum standards in many countries place too strong an emphasis on what Habermas (1972) has called *systemworld* of knowledge, i.e. structural knowledge of system, technical skills and cognition. Instead, successful and competitive knowledge economies draw upon the *lifeworld* of culture – especially beliefs, values, morality, meaning and social experiences (see also Sergiovanni, 2000). Both are important and both must be in balance for schools to be able to produce expected outcomes. Changing societies and complex knowledge economies require that students are educated equally for the artistic, social and critical lifeworld as much as for the rational systemworld of numeracy, literacy, scientific and technological competences. However, the situation in many countries is opposite: the importance of aesthetic and moral education and social sciences in school curricula, for example, has been reduced due to the need to strengthen the teaching of what some call fundamental or core subjects, i.e. mother tongue, mathematics and natural sciences (Hill & Crevola, 1999; Tucker & Codding, 1998). Although there is no evidence globally of any significant quantitative shifts within curricula (World Bank, 2005), international comparisons of student achievement and national high-stakes external evaluations are increasing the imbalance between systemworld and lifeworld knowledge that students learn in school. These comparisons and evaluations usually judge the quality of individual schools and education systems using test scores gained only in the core subjects. At best this represents a rationalistic, partial and extremely reductionist judgment of the subtle and complex process of education for the knowledge economy and democratic society.

5. Education Reform and Economic Competitiveness in Finland

Is there a correlation between the quality of education and economic competitiveness? Using available international studies and surveys

the answer is simply: 'No.' Countries like the United States (2nd) and Norway (6th) rank high in the 2004 global competitiveness ratings but only modestly or poorly in the assessments of their students' learning achievement, such as the OECD (2004) PISA study that is commonly seen as a forward-looking and relevant measure of educational quality. On the other hand, Korea, Canada and the Netherlands are high in the student learning comparisons but not at the top in economic competitiveness rankings (29th, 15th and 12th, respectively). Many countries seem to reach similar opposite positions in these two ratings, simultaneously at the high and low ends of the scales, therefore the assumption that these two measures correlation has to be avoided. Nevertheless, some countries seem to do consistently well in both rankings.

Finland has been ranked as the most competitive economy three times out of four in this decade (Porter et al., 2004). This is significant given that Finland experienced a severe economic crisis in early 1990s with 17 percent unemployment and more than a 10 percent drop in Gross Domestic Product (GDP). Becoming a global economic leader and one of the most advanced societies in terms of adopting information technologies required major restructuring of economy. Good governance, strong social cohesiveness and an extensive social safety net provided by the welfare state made an exceptionally rapid economic recovery possible. Interestingly, at the beginning of the 1990s Finland did not have a particularly good reputation in education, except in literacy. Finnish students' success in mathematics and science assessments was average if not below (Aho, Pitkänen & Sahlberg, 2006). In this decade, however, according to the PISA ratings, Finland has ranked top in both PISA cycles in mathematics, science and literacy (OECD, 2004).

Attempts to understand and explain the differences between education systems in terms of students' learning outcomes and variation of the quality of schools has raised some questions of the role of country-specific characteristics (Välijärvi et al., 2002). For example, authorities in countries that have not performed well in PISA have claimed that the tests used do not adequately measure what is taught in schools. Some of them also argue that winners in mathematics and science Olympiads are better proof of high quality education systems. It is true that standardized international tests are never able to completely match with teaching and learning practices and hence please all participating countries.

Some international observers have argued that Finland has been able to develop high performing education system because of its peculiar characteristics. It is important to realize that indeed education systems are operating as interconnected part of wider social and political systems. However, one has to be careful in establishing credible causal relationships between education system performance and national characteristics. The following four beliefs are myths often heard around the world regarding the Finnish educational success (Aho et al., 2006; Välijärvi et al., 2002).

5.1. *Finland is a Small Country*

It has been argued that good results in education are easier to achieve in a small country than in a large one. Although the size may matter in this case, it is hardly a significant explaining factor. Countries of similar size are performing differently, for example Norway, Denmark, Ireland or Luxemburg. Therefore, it is difficult to argue that the size of population would have significant affect on the results in the sample-based assessments.

5.2. *Finland is Socially and Culturally Homogeneous*

While this may have some impact on the learning results, it is difficult to make the link when other countries with similarly homogeneous populations do not do as well in international assessments as Finland. For example, Denmark, Norway, Hungary and Poland that all are in many ways similar to Finland in terms of their social and cultural structures have very different PISA results compared to Finland. Some countries have removed their immigrant pupils from the PISA sample in order to determine the affect of that sub-population on the gross sample. In Germany, for example, the overall rank in 2003 mathematics scale increased by two places In case of Finland it should be noted that Finland is a trilingual country with two official national languages, Finnish and Swedish, and growing number of ethnic minorities.

5.3. *PISA Tests Match the Finnish Curriculum*

Some observers have argued that the test items that are used in PISA cycles especially favor Finnish students because they are more aligned with the current curriculum in Finland than in many other countries. This belief may well be true and if it is, then the curriculum should

deserve more attention in understanding the educational success. However, it should be noted that each and every country has to accept all test items used in PISA and that way confirm that they are conform with what should be taught in schools.

5.4. *Finland is a Country with Severe Climate*

The most extreme statements expressed by some educational commentators claim that being a cold and dark arctic country the youth in Finland have less outdoor attractions and hence they spend more time with educational activities. This is simply nonsense. According to the international surveys Finnish pupils spend less time on homework than their international peers. Secondly, the climate in the parts of Finland where most people live does not significantly differ from the climate or amount of the daylight in other Nordic countries, Canada or the northern states of the US.

Education system performance has to be seen in the context of other systems in the society, e.g. health, environment, rule of law, governance, economy and technology. It is not only that education functions well Finland but it is a part of well-functioning democratic welfare state (Castells & Himanen, 2002; Lewis, 2005). Attempts to explain the success of the education system in Finland should be put in the wider context and seen as a part of overall function of democratic civil society. Economists have been interested in finding out why Finland has been able to become the most competitive economy in the world since 1990. The quality of a society is rarely a result of any single factor. The entire society needs to perform satisfactorily.

There are some interesting parallels between education and economic development policies in Finland during the period of transformation and related rapid growth in 1990s. Table 3 summarizes some of the key policies and strategies that have been driving education system development and economic growth since 1990. Four common features are often mentioned as contributory factors towards positive educational and economic progress. First, *policy development has been based on integration* rather than exclusive subsector policies (Aho et al., forthcoming). Education sector development is driven by medium-term policy decisions that rely on sustainable basic values, such as equal opportunities to good education for all, inclusion of all students in mainstream publicly financed education and strong trust in public education as a civil right rather than an obligation. These

TABLE III
Comparison of education reform and economic development policies in Finland since 1990

Education development	Economic development
Basic policy principles	
• Equal opportunities to receive a good education	• Integrated science and technology policies and innovation system with industrial clusters
• Strong belief in public education	• Maintained high public investments on research and development
• Comprehensive medium-term policies integrating education and research	
Strategic framework	
• Long-term view of comprehensive schooling that is the same for all pupils	• Long-term view of the knowledge-based economy and integrated approaches to development
• Flexibility at all levels of the education system	• Flexible regulatory framework
• Emphasis on creativity in organizing schooling and classroom work	• Investing in innovations and promotion of regional innovation strategies
Role of governance and institutions	
• Good governance and public institutions play an important role in policy-making and monitoring	• Strong governance and rule of law provide solid basis for economic development
• Development-oriented evaluation and accountability are spread throughout the system	• Flexible accountability
• Consensus on policies among education authorities, employers and trade unions fosters sustainable leadership	• Specific institutions, such as Committee of the Future, and the innovation system are shared by private and public representatives for consensus-making purposes
Human capital	
• Well-trained teachers	• Private sector participates actively in education and training policy formulation and implementation
• Recognized professionalism in schools and education institutions	• Significant financing of staff development
• Participatory planning, leadership and evaluation	• Encouraging lifelong learning and continuous professional development

medium-term policies integrate education and training and involve the private sector and industry in the creation and monitoring of their results. Similarly, economic and industrial policies have integrated science and technology policies and innovation system with industrial clusters (Routti & Ylä-Anttila, 2005). Integrated policies have enhanced systemic development and interconnectedness of these sectors and have thus promoted more sustainable and coherent political leadership for their successful implementation.

Second, strategic framework development and change have been built upon *longer-term vision*. National development strategies, for example Information Society Program (1995), National Lifelong Learning Strategy (1997) and Ministry of Education Strategy 2015 (2003) have served as overarching frameworks for the sector strategies. These and other strategies have emphasized increasing flexibility, coherence between various sectors and development of local and regional responsiveness and creativity in institutions.

Third, the *roles of governance and public institutions* have been central in policy developments and implementation of both education and economic reforms. Good governance, high quality public institutions and rule of law play important roles in policy development and implementation of planned changes. Evaluation approaches in both sectors are development-oriented and various players in the system are held accountable for process and outcomes. Specific institutions, such as the Committee of the Future and Vocational Education and Training Committees are shared by private and public representatives as well as the key stakeholders of the society for consensus-making purposes.

Fourth, a highly educated labor force and broad participation in education at all levels guarantee the stock of *human capital* that is necessary for both good education service delivery and economic growth. For instance, all teachers are required to hold a Masters degree and most workers are encouraged to participate in continuous professional development as part of their work. Teachers are professionals in their schools and therefore actively involved in planning and implementing changes in their work.

Flexibility is one of the key denominators of education and economic development in Finland. The education system went through a major transformation in early 1990s when most State regulations were abolished and pathways to education opportunities were dramatically increased (Aho et al., 2006; Routti & Ylä-Anttila, 2005).

Similarly, private sector regulations were loosened and more flexible standards were introduced, especially to foster networking between firms, universities, public research and development institutions.

Strong integrated policy frameworks and longer-term strategic visions have enhanced sustainable leadership in education and private sector developments. Due to this sustainability factor the education system has been quite passive in adopting the market-oriented principles of the Global Education Reform Movement. For example, learning and teaching standards, high-stakes tests or consequential accountability, have never been favored in Finnish education policies. Frequent and open dialogue between private and public education sectors has increased the mutual understanding of what is important in achieving the common good and promoting the development of knowledge economy. Indeed, active co-operation between education and industry has encourage schools to experiment with creative teaching and learning practices, especially in nurturing entrepreneurship and building positive attitudes towards work. Most importantly, the main principle in development of Finnish society has been encouraging intellectual growth and learning. Developing cultures of growth and learning in education institutions as well as in work places has proved to be one of the key success factors.

There are many attempts to explain Finland's educational success. The OECD's PISA compares cognitive competences that students have developed in literacy, mathematics and science in school. In other words, it is a forward-looking evaluation of how well students can use their knowledge and skills to solve real world problems rather than a test of whether they remember specific points of grammar or a formula to solve a physics problem.

During the "educational pilgrimage" to Finland since 2001, visitors hear a variety of possible reasons for the success of my country's education system. Teachers and resources certainly contribute. However, the key difference between Finland and most of the world is that Finnish schools are almost totally test-free. The only compulsory standardized test is the high school exit examination, taken at age 18. The learning environment is therefore safe and free from fear and anxiety often caused by failing in tests. External review of teachers' performance was abolished in early 1990s. Thus, as most Finnish teachers will tell you, they are free to focus on developing understanding, fostering an interest in learning and cultivating open trust-based relationships between teachers and students. Since stu-

dents are rarely coached for tests they can focus on the knowledge and skills they deem important. Creativity and risk-taking are common in Finnish classrooms. Parents trust teachers to tell them how well or poorly their children are learning in school.

6. Concluding Discussion

There has been a great temptation in many countries to imitate the education reform efforts designed and implemented in other countries. Part of the problem is that the actual results of education reforms are rarely analyzed simply because the most important outcomes are only visible in the longer-term, later than most administrators or politicians can wait. Another part of the problem is that it is common to complete a strategic development plan and then allocate mechanisms of accountability and support to implement the plan. What is often missing is the ability to modify change strategies by continuously shaping and reshaping intentions, ideas and actions.

The emergence of the network society and knowledge-based economies appears to be a powerful justification for education reforms in developed countries (Castells & Himanen, 2002; Hargreaves, 2003; Sahlberg, 2004). Schools and teachers are being asked to do more than they have done before but also in a different way. At the same time, globalization has generated education reform that also requires teachers to do more and differently. The key argument of this paper is that the changes in teaching and learning in schools required by big change forces are often contradictory and are rarely capable of being implemented. In order to utilize the potential of education to foster economic and social development we need an agenda based on existing educational change knowledge that is practical enough to help schools and teachers to take a lead in implementing the agenda.

Education reforms currently planned or implemented throughout the world need to include deeper and more comprehensive analysis of what and how schools and teachers should do in order to contribute to the development of economic competitiveness of their countries. This requires at least three actions. First, education reforms at the outset should provide a stronger pool of educational change knowledge to those who are involved in planning and implementing the education reforms. Fullan (2005) sees change knowledge as understanding and insight about the process of change and the key factors that lead to

success in practice. The possession of educational change knowledge does not necessarily lead to success, but its absence ensures failure. Second, analytical work on the knowledge economy and learning society should focus on moral purpose and on the processes of teaching and learning, not only on the structure and the content of education. Third, the sustainability and spread of educational change can only be understood by analyzing change efforts in a wider range of settings over a longer period of time (Hargreaves & Goodson, 2006). Most education reform literature, however, focuses on specific aspects of early implementation rather than the long term persistence of change.

Education reforms – if they are to make any significant impact on economic competitiveness – should address more clearly the aspects of teaching and learning that have been found in recent research to be related to economic competitiveness. In general, co-operation rather than competition or isolation is the key principle of change. Economic competitiveness can therefore be promoted and enhanced by fostering co-operation and interaction at three levels in education: schools, teachers and students.

Three other conclusions can be drawn from available knowledge base on educational change. First, supporting networking of schools has to be given a high priority in education reforms. Almost in any education system necessary innovations and ideas for improvement already exist in the system. The challenge is to share them between schools. Therefore, developing the education system in a way that encourages and enables schools to create partnerships and information exchange networks is likely to spread existing good practices. Second, helping teachers to work as professional communities should be emphasized in combating the isolation that is common to many teaching cultures. Learning to teach in new way is not easy. A safe and supportive professional climate in schools is a necessary condition for professional improvement of teachers. Designing education reforms in a way that will provide teachers with opportunities and incentives to collaborate more will increase the likelihood of sustainable implementation of intended changes. Third, making learning interesting for students is the imperative for sustainable development and change in schools. Economic competitiveness is above all about learning. When individuals or societies have severe learning difficulties the economic forecasts will not look good. If students do not learn in their schools and universities to love learning, they will not

find learning and change attractive afterwards. Therefore, education reforms should first and foremost try to make learning in schools interesting for all students without sacrificing the other important goals of education.

In this article I am offering a profound paradox: to prepare themselves for a more competitive economy, our schools and students must compete less. Schools should therefore increase internal collaboration against the external competition. Improving economic competitiveness requires well educated and trained people, technological and network readiness and knowledge and skills to work in an innovation-rich world. Co-operation and networking rather than competition and disconnectedness should therefore lead the education policies and development of education systems. Schools and other educational institutions should cultivate attitudes, cultures and skills that are necessary in creative and collaborative learning environments. Creativity will not flourish and be sustained in schools unless people feel secure to take risks and explore the unknown. Moreover, working with and understanding innovations require creative and risk-intensive contexts. In brief, economic competitiveness can be best promoted by developing fear-free learning and professional development environments in our schools. The fear-free school is a place where students are not afraid to try new ideas and ways of thinking. Equally importantly, in the fear-free school teachers and principals will step beyond their conventional territories of thinking and doing that are often conditions for making a difference in students' learning and schools' performance.

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