Paradigm Shift in Higher Education:
Globalization, Localization, and Individualization

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Abstract

To meet the challenges of the new century, this presentation aims to explain why and how higher education should be shifted from a traditional site-bounded paradigm towards a new triplization paradigm. The new paradigm urges to develop the contextualized multiple intelligences (CMI) of tertiary students including technological intelligence, economic intelligence, social intelligence, political intelligence, cultural intelligence, and learning intelligence such that they can become CMI leaders and contribute to build up a CMI society and a CMI global village. Also, the presentation explains why triplization including globalization, localization, and individualization as a whole in education is necessary to reform higher learning and teaching; and describes how they can create unlimited opportunities and pool up world class intellectual assets and resources for life-long learning, development, and research of both students and professors, with the help of information technology and boundless multiple global and local networking. Examples of ongoing innovations and implications will be drawn to illustrate the international trends of higher education reform towards triplization and contextualized multiple intelligences.

Introduction

The challenges of the new millennium such as the rapid globalization, the tremendous impacts of information technology, the international transformation towards knowledge-driven economy, the strong demands for societal developments, and the international and regional competitions have driven numerous educational changes in the different parts of the world (Cheng & Townsend, 2000). Policy-makers and educators in each country have to think how to reform higher education for preparing their young leaders to more effectively cope with the challenges in the new era (Armstrong, Thompson, & Brown, 1997; EURYDICE European Unit, 2000; Hirsch & Weber, 1999; Kogan & Hanney, 2000; Lick, 1999; Mauch & Sabloff, 1995; Mingle, 2000). In facing the fast changing environment, many policy-makers and educators get confused with uncertainties and ambiguities and lose their directions in the rapid globalization. There is urgent need of a comprehensive framework for understanding the impacts of rapid developments and

advancing implications for innovations in higher education. In response to this need, my previous work Cheng (2000) has pointed the necessity of paradigm shift in education and reforms to meet the challenges in both local and international communities in the new millennium. Adapted from the key theories in this work, my paper aims to illustrate how higher education can be transformed from a traditional site-bounded paradigm towards a new triplization paradigm. In the new higher education, the development of Contextualized Multiple Intelligence (CMI) of tertiary students and the processes of globalization, localization, and individualization in education will be the core to create unlimited opportunities for tertiary teaching and learning and to develop a new generation of CMI leaders and citizens in both local society and global village.   The aims, theory, content and practice of higher education are completely different from the traditional thinking. It is hoped that the proposed paradigm shift in higher education will provide innovative ideas and possibilities for reforming higher education in Africa and other parts of the world to meet the challenges for the future.

Contextualized Multiple Intelligences & Higher Education

Howard Gardner (1993) suggested that there are seven human intelligences, including musical intelligence, bodily-kinesthetic intelligence, logical-mathematical intelligence, linguistic intelligence, spatial intelligence, interpersonal intelligence, and intrapersonal intelligence. This biological perspective of multiple intelligences may be useful to understand individual's cognitive competence in terms of a set of basic abilities or "intelligences" (Gardner, 1993). When we want to develop a new generation of leaders to lead the community in a context of complicated technological, economic, social, political, and cultural environments, this perspective may be too " basic" and limited and does not have a strong relevance to higher education. Comparatively, this biological typology of multiple intelligence may be useful to design curriculum and pedagogy for early children education or lower primary education to develop their basic abilities, but it is not so sophisticated enough for higher education that should be highly contextualized to the social, economic, political, cultural, and technological developments (Berman, 1995; Guild & Chock-Eng, 1998; Guloff, 1996; Mettetal & Jordan, 1997; Teele, 1995).

According to Cheng (2000), the human intelligence can be contextualized and categorized into the following six *Contextualized Multiple Intelligences* (CMI), including *Technological Intelligence, Economic Intelligence, Social Intelligence, Political Intelligence, Cultural Intelligence,* and *Learning Intelligence*.

Table 1:
Contextualized Multiple Intelligences and Expected Outcomes of Higher Education

Human Nature in Social Contexts	Contextualized Multiple Intelligence	Definition of the Contextualized Multiple Intelligence	Expected Outcomes of Higher Education
• **Technological Person**	• **Technological Intelligence**	• It refers to the ability to think, act and manage technologically and maximize the benefits of various types of technology	• **A technologically intelligent leader and citizen** who can contribute to the technological development of the society
• **Economic Person**	• **Economic Intelligence**	• It refers to the ability to think, act and manage economically and to optimize the use of various resources	• **A economically intelligent leader and citizen** who can contribute to the economic development of the society
• **Social Person**	• **Social Intelligence**	• It refers to the ability to think, act and manage socially and to effectively develop harmonious interpersonal relationship	• **A socially intelligent leader and citizen** who can contribute to the social development of the society
• **Political Person**	• **Political Intelligence**	• It refers to the ability to think, act and manage politically and to enhance win-win outcomes in situations of competing resources and interests	• **A politically intelligent leader and citizen** who can contribute to the political development of the society
• **Cultural Person**	• **Cultural Intelligence**	• It refers to the ability to think, act, and manage culturally, to optimize the use of multi-cultural assets and to create new values	• **A culturally intelligent leader and citizen** who can contribute to the cultural development of the society
• **Learning Person**	• **Learning Intelligence**	• It refers to the ability to learn and think creatively and critically and to optimize the use of biological/ physiological abilities	• **A continuously earning leader and citizen** who can contribute to the learning development of the society
• **Contextualized Multiple People**	• **Contextualized Multiple Intelligences (CMI)**	• It refers to the comprehensive ability including technological, economic, social, political, cultural and learning intelligences as well as intelligence transfer and creation	• **A CMI leader and citizen** who can creatively contribute to the technological, economic, social, political, cultural and learning developments of the society

The definitions of these contextualized multiple intelligences can be summarized as shown in Table 1. It is assumed that human nature in the complicated contexts can be classified as technological person, social person, economic person, political person, cultural person, learning person, and even contextualized multiple person. To different persons, they may have different strengths in their contextualized intelligences because of different reasons such as their previous education, personal innate characteristics, family backgrounds, community culture, etc. Some persons are stronger in technological intelligence or economic intelligence but the other may be stronger in social intelligence or cultural intelligence.

Given the societal and global contexts are so complicated, diverse, multiple, fluid, and challenging, it is quite reasonable to expect that the new generations should have at least some of the contextualized multiple intelligences to meet the diverse challenges in such complicated contexts in the new millennium. It means that higher education in this new era of globalization, diversity and information technology should develop students as CMI leaders and citizens to lead the new society and the new world, even though they may still have one or two specializations in their future career.

Traditionally, higher education in many parts of the world emphasizes on development of specialists with focus only on one or two types of intelligence such as technological intelligence, economic intelligence or social intelligence, but ignoring the other. It is often assumed that most higher education graduates will have only one to three careers in the same area during their whole life such that other types of intelligences or knowledge may not be necessary and relevant to their future development. This kind of thinking sets a very tight limit to the development of graduates in such a fast changing environment involving huge transformations in economy, manpower structure and social infra-structure. We can expect that frequent change in career tends to be necessary in the future life of our new generations. Therefore, the traditional higher education with focus narrowly on one to two types of intelligence will not meet the challenges and needs of the future anymore.

In the new century, graduates from higher education should not be limited to be technicians or expects in certain areas but also be intelligent leaders and citizens for development of the society in different areas. They will be technologically intelligent leaders, economically intelligent leaders, socially intelligent leaders, politically intelligent leaders, culturally intelligent leaders or continuously learning leaders. In other words, they have not only professional skills and knowledge but also higher-level intelligence and creativity for further development and innovation. Particularly, they have the potential to become contextualized multiple intelligent leaders to creatively and wisely lead the development of the whole society or the global village in facing up challenges in the new century. How can we develop such CMI leaders and citizens from higher education? It is really a crucial question we will explore in this paper.

## Pentagon Theory of CMI in Higher Education

Based on the above contextualized multiple intelligences, a Pentagon Theory of CMIs development proposed by Cheng (2000) can be used to reconceptualize higher education, as depicted in Figure 1 - as follows:

1. **Development of CMI.** The development of tertiary students' contextualized multiple

intelligences is the core condition for developing a new generation of leaders for the future of a society in the technological, economical, social, political, cultural and learning aspects. Therefore, the tertiary education should be reformed with clear relevance and concrete linkages with the development of CMI.

2. **Encouraging CMI Interactions**: The relationships among these six CMI are interactive and mutually reinforcing with the Learning Intelligence at the central as shown by a pentagon as in Figure 1. The design of education should encourage and facilitate such interactions and reinforcements among CMI if we want to have citizens with a broad mind sets or multiple intelligences to deal with the diverse challenges in the new era.

3. **Facilitating Intelligence Transfer & Creativity:** Intelligence transfer from one type to other types (e.g., from economic intelligence to political intelligence or social intelligence) should be encouraged and facilitated to achieve a higher level of intelligence or meta-thinking in one area or other. The transfer itself can represent a type of intellectual creativity and generalization. The more the students can transfer their intelligence from one type to other, the more creative they will be no matter in the original area or other areas. To a great extent, intelligence transfer represents the potential of creativity that is the crucial asset in the emerging knowledge-driven economy. If students can have achieved contextualized multiple intelligences, they have higher potential to make intelligence transfer from one type to other type, than those strong only in one type of intelligence. It means that they have a higher potential of creativity. Therefore, higher education should encourage achievement of CMI as well as intelligence transfer and creativity. This will be very important to the development of innovative knowledge-based economy and the creation of a high level thinking society and an intelligent global village.

4. **Taking Learning Intelligence at the Central**. To accelerate the development of all other CMI, the development of Learning Intelligence can play a central role (Figure 1). Instead of teaching and learning huge volume of information and factual materials, the content of higher education should put emphasis on developing students' ability to persistently learn how to learn systematically, creatively, and critically. This may partly reflect why the current educational reforms in different parts of the world emphasize the ability and attitude to life-long learning (Education Commission, 1999; Townsend & Cheng, 1999).

Figure 1:

Pentagon Theory of CMI development
For Higher Education
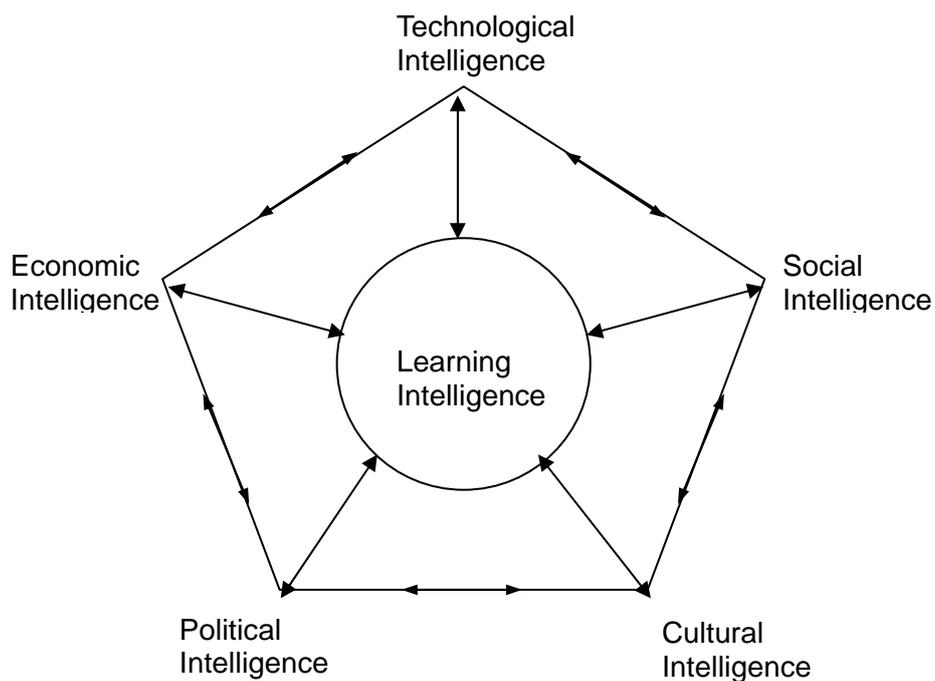
5. **Globalization, Localization, and Individualization of Education:** In order to maximize the opportunities for development of CMI for tertiary students, globalization, localization, and individualization in tertiary teaching and learning are important and necessary. The following paragraphs will highlight their conceptions and implications for higher education reforms.
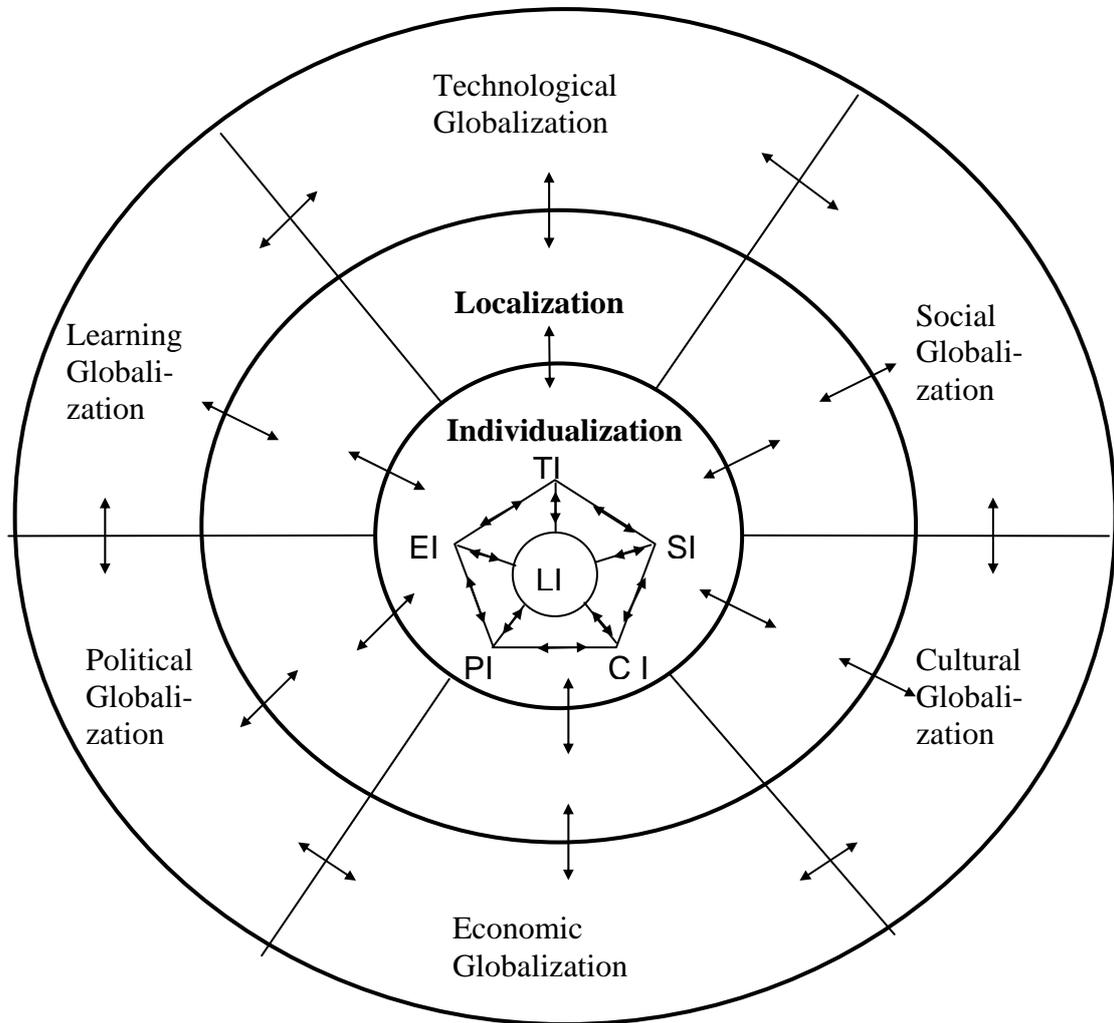
Triplization in Higher Education

Rapid globalization is the one of the most salient aspects of the new millennium particularly since the fast development of information technology in the last two decades (Brown, 1999). To different observers, different types of globalization can be identified even though most of the attention is in the areas of economy, technology, and culture (Brown & Lauder, 1996; Waters, 1995). According to Cheng (2000), there should be multiple

globalization, including *Technological Globalization, Economic Globalization, Social Globalization, Political Globalization, Cultural Globalization, and Learning Globalization* in the new millennium (Figure 2).

Inevitably, how education should be responsive to the trends and challenges of globalization has become a major concern in policy making in these years (Ayyar, 1996; Brown & Lauder, 1996; Fowler, 1994; Green, 1999; Henry, Lingard, Rizvi, & Taylor, 1999; Jones, 1999; Little, 1996; McGinn, 1996; Pratt & Poole, 2000; Curriculum Development Council, 1999). Cheng (2000) argued that not only globalization but also localization and individualization are necessary in ongoing educational reforms. All of these processes as a whole can be taken as a *Triplization Process* (i.e., triple + izations) that can be used to discuss educational reforms and formulate the new pedagogic methods and environment to implement new curriculum for enhancing CMI of tertiary students. The implications of globalization, localization, and individualization are summarized as shown in Table 2 and Figure 2.

Globalization: It refers to the transfer, adaptation, and development of values, knowledge, technology, and behavioral norms across countries and societies in different parts of the world. The typical phenomena and characteristics associated with globalization include growth of global networking (e.g. internet, world wide e-communication, and transportation), global transfer and interflow in technological, economic, social, political, cultural, and learning aspects, international alliances and competitions, international collaboration and exchange, global village, multi-cultural integration, and use of international standards and benchmarks. Implications of globalization for higher education should include maximizing the education relevance to global development and pooling up the best intellectual resources, support and initiatives from different parts of the world for tertiary learning, teaching and research (Daun, 1997; Holmes, 1999). Some ongoing examples and common evidences of globalization in tertiary education are web-based learning; use of the Internet in learning and research; international visit/immersion programs; international exchange programs; international partnership in teaching and learning at the group, class, and individual levels; interactions and sharing through video-conferencing across countries, communities, institutions, and individuals (Holmes, 1999; Jung & Rha, 2001; Van Dusen, 1997; Lick, 1999; Klor de Alva, 2000). Many such examples of initiatives can be found in Hong Kong, Europe, Australia and USA. Further, the development of new curriculum content on technological, economic, social, political, cultural, and learning globalization is also important and necessary in new higher education.

Figure 2:
Globalization, Localization, and Individualization

Table 2: Implications of Triplization for Higher Education

Triplization	Conceptions and Characteristics	Implications for Higher Education
Globalization	Transfer, adaptation, and development of values, knowledge, technology and behavioral norms across countries and societies in different parts of the world: • Global Networking • Technological, Economic, Social, Political, Cultural, and Learning Globalization • Global Growth of Internet • International Alliances and Competitions • International Collaboration & Exchange • Global Village • Multi-cultural Integration • International Standards and Benchmarks	**To maximize the education relevance to global development and pool up best intellectual resources, support, and initiatives from different parts of the world for tertiary learning, teaching and research**: e.g. • Web-based Learning • International Visit/Immersion Program • International Exchange Program • Learning from Internet • International Partnership in Teaching and Learning at group, class, and individual levels • Interactions and Sharing through Video-Conferencing across Countries, Communities, Institutions, and Individuals • Curriculum Content on Technological, Economic, Social, Political, Cultural, and Learning Globalization
Localization	Transfer, adaptation, and development of related values, knowledge, technology, and behavioral norms from/to the local contexts: • Local Networking • Technological, Economic, Social, Political, Cultural, and Learning Localization • Decentralization to the Local Site Level • Indigenous Culture • Community Needs and Expectations • Local Involvement, Collaboration and Support • Local Relevance and Legitimacy • Community-based Needs and Characteristics • Social Norms and Ethos	**To maximize the education relevance to local developments and bring in community support and resources, local partnership, and collaboration in tertiary learning, teaching and research: e.g.** • Community Involvement • Public- Institutional Collaboration • Institutional-based Management &Accountability • Inter-institutional Collaboration • Community-related Curriculum • Curriculum Content on Technological, Economic, Social, Political, Cultural, and Learning Localization
Individualization	Transfer, adaptation, and development of related external values, knowledge, technology, and behavioral norms to meet the individual needs and characteristics: • Individualized Services • Development of Human Potential in Technological, Economic, Social, Political, Cultural and Learning Aspects • Human Initiative and Creativity • Self-actualization • Self-managing and Self-governing • Special Needs	**To maximize motivation, human initiative, and creativity in tertiary learning, teaching and research**: e.g. • Individualized Educational Programs • Individualized Learning Targets, Methods, and Progress Schedules • Self Life-long Learning, Self Actualizing, and Self Initiative • Self Managing Students and Professors • Meeting Special Needs • Development of Contextualized Multiple Intelligences

Localization: It refers to the transfer, adaptation, and development of related values, knowledge, technology, and behavioral norms from/to the local contexts. Some characteristics and examples of localization are as follows: local networking; adaptation of external technological, economic, social, political, cultural, and learning initiatives to local communities; decentralization to the community or site level; development of indigenous culture; meeting community needs and expectations; local involvement, inter-institutional collaboration, and community support; local relevance and legitimacy; and concern for community-based needs and characteristics and social norms and ethos (Kim, 1999).

The implications of localization to higher education reform are to maximize the education relevance to local development and bring in community support and resources, local partnership, and collaboration in learning, teaching and research. Some examples for practice of localization include community involvement in higher education; privatization in higher education; public-institutional collaboration; assurance of institutional accountability; implementation of institutional autonomy, and community-based curriculum (Wang, 2000; Altbach, 1999; James, 1994). More and more such examples can be found not only in developed countries like USA, UK and European countries but also in many developing areas in the Asia-Pacific Region (Cheng & Townsend, 2000). The development of new curriculum content related to localization in technological, economic, social, political, cultural, and learning aspects of the society is also receiving growing attention.

Individualization: It refers to the transfer, adaptation, and development of related external values, knowledge, technology, and behavioral norms to meet the individual needs and characteristics. The importance of individualization to human development and performance is based on the concerns and theories of human motivation and needs (e.g. Maslow, 1970; Manz, 1986; Manz & Sims, 1990; Alderfer, 1972). Some examples of individualization are the provision of individualized services; emphasis of human potentials; promotion of human initiative and creativity; encouragement of self-actualization; self-managing and self-governing; and concern for special needs. The major implication of individualization in higher education is to maximize motivation, initiative, and creativity of students and professors in tertiary learning, teaching, and research through such measures as implementing individualized educational programs; designing and using individualized learning targets, methods, and progress schedules; encouraging students to be self learning, self actualizing, and self initiating; meeting individual special needs; and developing students' contextualized multiple intelligences.

Students, professors, and higher institutions are "triplized" (i.e. _globalized, localized,_ and _individualized) during the process of triplization._

Paradigm Shift in Higher Education

With these concepts of contextualized multiple intelligences and triplization in education, a paradigm shift of higher education for the new millennium can be initiated from *the traditional site-bounded paradigm* to *the new CMI-triplization paradigm*. There are contrasting differences between them on the assumptions about the future of the world, the human nature, the developments of individuals and the society, the aims of higher education, the modes of higher learning and teaching.

The Future of the World, Human Nature, and Development

In the new paradigm, the future of the world is assumed to be in multiple globalization including technological, economic, social, political, cultural, and learning globalizations. Also, these globalizations are increasingly interacting in the whole world. The world is moving very fast to become a global village, in which different parts of the world are rapidly networked and globalized through internet and different types of IT, communications, and transportation (Albrow, 1990; Naisbitt & Aburdence, 1991; Ohmae, 2000). All countries and areas have more and more common concerns and sharing. Also, the interactions between nations and people become boundless, multi-dimensional, multi-level, fast, and frequent. They become more and more mutually dependent with international collaborations, exchanges, and interflows (Ohmae, 2000).

In the new paradigm, the human nature in a complicated social context of the new millennium is assumed to be multiple, as a technological person, economic person, social person, political person, cultural person, and learning person in a global village of information, high technology, and multi-cultures. Both individuals and the society need multiple developments in the technological, economic, social, political, cultural, and learning aspects. Life-long learning individuals and a learning society are necessary to sustain the continuous multiple developments of individuals and the society in a fast changing era (Drucker, 1993, 1995; Mok & Cheng, 2001 in press). From the viewpoint of the CMI theory, the society has to become towards a multiple intelligence society that can provide the necessary knowledge and intelligence base and driving force to support the multiple developments. And the individuals have to become towards a multiple intelligence citizen who can contribute to the development of a multiple intelligence society.

In contrast, the traditional paradigm perceives that the world has limited globalization, mainly in the economic and social aspects. All the nations in different parts of the world are loosely related, if not isolated, in only some limited areas especially in the economic aspect. They have serious competitions and conflicts more than sharing and

collaboration. There are very limited, loose, and weak interactions between nations and people. As a whole, they are loosely coupled with some limited international collaborations and interflows (Beare & Slaughter 1993; Naisbitt, 1984).

The human nature in such a context is mainly assumed as an economic person or a social person in an industrial or business society. Both individuals and the society pursue narrowed developments, mainly on some aspects such as economic, social, or political developments. Higher education is assumed necessary to providing the needed manpower for certain developments of a society at some stages (Cheng, Ng & Mok, in press; Cheng, 1995). Therefore, the need for life-long learning or for a learning society may not be so important. The society is an industrial or agricultural society emphasizing on some types of intelligence or knowledge related to the existing stage of development of a society. Individuals are expected to be a citizen with bounded type of knowledge or skill that meet the need of society at a certain stage of development.

The Education Environment and Aims of Education

Following the assumptions about the world and development, the new century paradigm assumes that the education environment is inevitably characterized by triplization, including globalization, localization, and individualization at the different levels (macro, messo, and micro) and different aspects of the education system. As the education environment is very fast changing and becoming very complicated and full of uncertainties and ambiguities, the boundaries of higher institutions as well as the education system become unclear and disappearing. Tertiary students and professors often interact frequently and intensively with the "real world" in learning, teaching and research (Townsend, 1999; Mingle, 2000). Continuous educational reforms and developments are inevitable due to various local and global challenges emerging from this changing education environment. In such a context, the aim of higher education is to support students to become contextualized multiple intelligence (CMI) leaders and citizens who will be engaged in life-long learning (Liu, 1997) and will creatively contribute to the building up of a multiple intelligence society and a multiple intelligence global village (Table 3).

In contrast, the traditional paradigm assumes that the education environment is mainly characterized by the needs of local community, of which is slowly changing with moderate uncertainty and complexity. Thus, the boundaries of higher institutions and the education system are assumed to be relatively stable and certain. Professors and students rarely interact with the "real world" in their research, teaching and learning. Students enter the 'real world' only after graduation or leaving higher institutions. Educational reforms are often limited and superficial mainly as a reaction to the raised public accountability and local

concern. From this paradigm, the aim of higher education is to equip students with the necessary skills and knowledge to survive in a local community or to support the development of a society particularly in the economic and social aspects at a certain stage.

Table 3:   Paradigm Shift in Higher Education:
Education Environment and Aims of Education

New CMI-Triplization Paradigm	Traditional Site-Bounded Paradigm
About the Higher Education Environment	
• **Triplization**: Education environment is characterized by globalization, localization, and individualization • **Fast Changing** • **Disappearing Boundary** • **Continuous Development**: Continuous educational reform and development are inevitable due to various local and global challenges	• **Local Needs**: Education environment is mainly characterized by the needs of local community • **Slowly Changing** • **Stable Boundary** • **Limited Reform**: Limited and superficial educational reforms due to the public accountability and local concern
About the Aim of Higher Education	
• **Develop Multiple Intelligence Leaders**: To support students to become CMI leaders and citizens who will be engaged in life long learning and will creatively contribute to building up a multiple intelligence society and a multiple intelligence global village	• **Equip Citizens with Knowledge and Skills**: To equip students with the necessary skills and knowledge to survive in a local community or to support the development of a society particularly in the economic and social aspects at a certain stage

Paradigm Shift in Tertiary Learning

New Paradigm of Tertiary Learning. In the new paradigm, tertiary learning should be individualized, localized, and globalized. (Table 4)

Individualized Tertiary Learning: Student is the centre of higher education. Students' learning should be facilitated to meet their needs and personal characteristics, and develop their potentials particularly CMI in an optimal way. Individualized and tailor-made programs (including targets, content, methods, and schedules) for different students is necessary and feasible. Students can be self-motivated and self-learning with appropriate guidance and facilitation, and learning is a self-actualizing, discovering, experiencing, and reflecting process. Since the information and knowledge are accumulated in a unbelievable speed but outdated very quickly, it is nearly impossible to make any sense if higher education is mainly to deliver skills and knowledge, particularly when students can find the knowledge and information easily with the help of information technology and Internet.

Therefore, the focus of tertiary learning is on learning how to learn, research, think, and create. In order to sustain learning is life long, learning should be facilitated as enjoyable and self rewarding (Mok & Cheng, in press).

Localized and Globalized Tertiary Learning: Students' learning should be facilitated in such a way such that local and global resources, support, and networks can be brought in to maximize the opportunities for their developments during learning process. Through localization and globalization, there are multiple sources of learning. Students can learn from multiple sources inside and outside their higher institutions, locally and globally, not limited to a small number of professors in their institutions. Participation in local and international learning programs can help them achieve the related community and global outlook and experiences beyond tertiary institutions. Now, more and more examples of such kind of programs can be found in Japan, Hong Kong, France and USA. Also their learning is a type of networked learning. They will be grouped and networked locally and internationally. Learning groups and networks will become a major driving force to sustain the learning climate and multiply the learning effects through mutual sharing and inspiring. We can expect that each student can have a group of life long partner students in different corners of the world to share their learning experiences.

It is expected that learning happens everywhere and is life-long. Higher education is just the preparation for a high level life-long learning and discovery (Liu, 1997; Mok & Cheng, 2001 in press). Learning opportunities are unlimited. Students can maximize the opportunities for their learning from local and global exposures through Internet, web-based learning, video-conferencing, cross-cultural sharing, and different types of interactive and multi-media materials (Ryan, Scott, Freeman, & Patel, 2000; Education and Manpower Bureau, 1998). Students can learn from world-class professors, experts, peers, and learning materials from different parts of the world. In other words, their learning can be a world-class learning.

Traditional Paradigm of Tertiary Learning. In the traditional thinking, students' learning is part of the reproduction and perpetuation process of the existing knowledge and manpower structure to sustain developments of the society, particularly in the social and economic aspects (Cheng, Ng & Mok, in press; Blackledge & Hunt, 1985; Hinchliffe, 1987; McMahon, 1987). Higher education is perceived as a process for students and their learning being "reproduced" to meet the needs of manpower structure in the society. The profiles of student and learning are clearly different from those in the new paradigm (see Table 4).

Reproduced Tertiary Learning: In higher education, students are the followers of their professors. They go through standard programs of education, in which students are taught in the same way and same pace even though their ability may be different. Individualized programs seem to be unfeasible.   The learning process is characterized by absorbing certain types of knowledge: students are "students" of their professors, and they absorb knowledge from their professors. Learning is a disciplinary, receiving, and socializing process such that close supervision and control on the learning process is necessary. The focus of tertiary learning is on how to gain some professional or academic knowledge and skills. Learning is often perceived as hard working to achieve external rewards and avoid punishment.

Site-Bounded Tertiary Learning: In the traditional paradigm, all learning activities are institution-bounded and professor-based. Students learn from a limited numbers of institutional professors and their prepared materials. Therefore, professors are the major sources of knowledge and learning. Students learn the standard curriculum from their textbooks and related materials assigned by their professors. Students are often arranged to learn in a separated way and are kept responsible for their individual learning outcomes. They have few opportunities to mutually support and learn. Their learning experiences are mainly institutional experiences alienated from the fast changing local and global communities. Learning happens only in higher institution within a given time frame. Graduation tends to be the end of students' learning.

Table 4:   Paradigm Shifts in Tertiary Learning

New CMI-Triplization Paradigm	Traditional Site-Bounded Paradigm
Individualized Tertiary Learning: • Student is the centre of education • Individualized Programs • Self-Learning • Self-Actualizing Process • Focus on How to Learn • Self Rewarding	**Reproduced Tertiary Learning:** • Student is the follower of tertiary teacher • Standard Programs • Absorbing Knowledge • Receiving Process • Focus on How to Gain • External Rewarding
Localized and Globalized Tertiary Learning: • Multiple Sources of Learning • Networked Learning • Life-long and Everywhere • Unlimited Opportunities • World-Class Learning • Local and International Outlook	**Institution-Bounded Tertiary Learning:** • Tertiary Teacher-Based Learning • Separated Learning • Fixed Period and Within Tertiary Institution • Limited Opportunities • Site-Bounded Learning • Mainly Institution-based Experiences

Paradigm Shift in Tertiary Teaching

New Paradigm of Tertiary Teaching. In the new triplization paradigm, tertiary teachers' teaching should be triplized: individualized, localized, and globalized. (Table 5)

Individualized Tertiary Teaching: Professors and their teaching are facilitated in a way such that their potentials can be maximized to facilitate students' learning in an optimal way. Tertiary teaching is considered a process to initiate, facilitate, and sustain students' self-learning, self-exploration and self actualization; therefore, professors or tertiary teachers should play a role as a facilitator or mentor who support students' learning. The focus of teaching is to arouse students' curiosity and motivation to think, act, and learn. Also, tertiary teaching is to share with students the joy of the learning process and outcomes. To professors themselves, teaching is also a life long learning process involving continuous discovery, experimenting, self actualization, reflection, and professional development. Tertiary teachers are CMI professors who can set a model for students in developing their multiple intelligences. Each professor has his/her own potential and characteristics, and different professors can teach in different styles to maximize their own contributions.

Localized and Globalized Teaching: The new paradigm emphasizes that tertiary teaching should be facilitated in such a way such that local and global resources, supports and networks can be brought in to maximize the opportunities for professors' developments in teaching and research and for their contribution to students' learning. Through localization and globalization, there are multiple sources of teaching, for example, self learning programs and packages, web-based learning, outside experts, and community experiental programs, inside and outside their institutions, locally and globally. Professors can maximize the opportunities to enhance effectiveness of their teaching from local and global networking and exposure through Internet, web-based teaching, video-conferencing, cross-cultural sharing, and different types of interactive and multi-media materials (Holmes, 1999; Ryan, Scott, Freeman, & Patel, 2000; Education and Manpower Bureau, 1998). With their help, tertiary students can learn from the world-class materials, experts, peers, and professors in different parts of the world such that tertiary teaching can become world-class teaching. Through participation in local and international development and research programs, professors can achieve global and regional outlook and experiences beyond institutions. Furthermore, their teaching is a type of networked teaching. Tertiary teachers are grouped and networked locally and globally to develop and sustain a new professional culture and multiply their teaching effects through mutual sharing and inspiring. They become world class and networked professors through localization and globalization. It is not a surprise that each professor can have a group of life long partner professors in other

parts of the world to continuously share and discuss their experiences and ideas of professional practice and research.

Traditional Paradigm of Tertiary Teaching. As discussed in the traditional site-bounded paradigm of learning, tertiary teaching is often perceived as part of the reproduction and perpetuation process of the existing knowledge and manpower structure to sustain developments of the society. As in Table 5, the characteristics of tertiary teaching are contrastingly different from the new paradigm.

Reproduced Tertiary Teaching.   Professors are the centre of education. They have some technical, social, and professional competencies to deliver knowledge to students. Professors teach in some standard styles and patterns to ensure standard knowledge to be taught to students even though their own potentials and personal characteristics may be different. Their major task is to transfer some knowledge and skills they have to students, and therefore tertiary teaching is often a disciplinary, delivery, training, and socializing process. Also, teaching is often perceived as hard working to achieve some external standards in examinations.

Site-bounded Tertiary Teaching: In the traditional paradigm, tertiary teaching is often bounded within the institution.   Higher institutions are the major venues for teaching and professors are the major sources of knowledge. Professors are often arranged to teach in a separated way and are kept responsible for their teaching outcomes. They have few opportunities to mutually support and learn.   Their teaching is often bounded such that tertiary teachers teach the standard curriculum with their textbooks and related materials approved by their institutions or related authority.   The teachers and their teaching are often alienated from the fast changing local communities or international contexts.   From this traditional perspectives, tertiary teachers are clearly institution-bounded and separated, who will rarely have any global and regional outlook to develop a world-class higher education for their students in the new century.

Table 5: Paradigm Shift in Tertiary Teaching

New CMI-Triplization Paradigm	Traditional Site-Bounded Paradigm
Individualized Tertiary Teaching	**Reproduced Tertiary Teaching**
• Professor is the facilitator or mentor to support students' learning • Multiple Intelligence Professor • Individualized Teaching Style • Arousing Curiosity • Facilitating Process • Sharing Joy • As Life-long Learning	• Professor is the centre of higher education • Partially Competent Professor • Standard Teaching Style • Transferring Knowledge • Delivery Process • Achieving Standard • As a Practice of Previous Knowledge
Localized and Globalized Tertiary Teaching:	**Site-bounded Tertiary Teaching:**
• Multiple Sources of Teaching • Networked Teaching • World-Class Teaching • Unlimited Opportunities • Local and International Outlook • As World-Class and Networked Tertiary Teacher	• Site-Bounded in teaching • Separated Teaching • Bounded Teaching • Limited Opportunities • Mainly School Experiences • As Site-bounded and Separated Tertiary Teacher

Paradigm Shift in Tertiary Curriculum and Pedagogy

Following the paradigm shift in learning and teaching, there should also be paradigm shift in design of tertiary curriculum and pedagogy, as shown in Table 6.

Shift in Tertiary Curriculum Aims.

Traditionally, curriculum often aims to equip students with the necessary knowledge and skills to survive a local community or meet the manpower needs of a society in the economic and social developments. But with the triplization paradigm, the aims of new curriculum should be to develop tertiary students as triplized life-long learning CMI leaders and citizens of a CMI society and a CMI global village with multiple developments in technological, economic, social, political, cultural, and learning aspects.

Shifts in Curriculum Characteristics

Towards MI/Triplization-Focused Curriculum: In the traditional paradigm, the focus of tertiary curriculum design is on the content and delivery of subject knowledge in certain specialization areas. The structure of a curriculum is mainly based on the structure of subject knowledge and the needs for same standard contents and same arrangements for the same

cohort of tertiary students. Therefore, the curriculum structure is often linear, step by step, and subject content dependent. Whether the curriculum is globalized (or world-class), localized and individualized is not the concern.

In contrast, the new paradigm focuses the design of curriculum on developing students' CMI and ability to make triplization for their own learning and development. Therefore, the design is based on characteristics of development of CMI and maximizing development opportunities for students' individualized, localized, and globalized learning**.** The tertiary curriculum structure is often hybrid, integrative, and interactive with the support of IT, networking, local and global exposure, and field experience and virtual reality, to meet the diverse needs of students and the society in the future development.

Towards World-Class and Globalzied Curriculum**:** The new tertiary curriculum content should be the world-class and globalized, pooling up the world-class materials and designs for the learning and teaching processes and maximizing the global relevance and exposure to the future developments of individuals and the society. The curriculum content is also relevant to the globalization of technology, economy, social development, political development, culture, and learning. Whether it is subject-based or discipline-based is not the major concern.

Localized Curriculum**:** The curriculum also includes local resources, materials, and concerns to ensure the local relevance and community involvement for maximizing opportunities for students' localized learning. Community-based curriculum is one typical practice to increase the local relevance and support in the field (Smylie, 1991, 1994). Technological, economic, social, political, cultural, and learning localization is also important area of new century curriculum.

Individualized Curriculum: The curriculum design and content are flexible and adaptable and can be indivdualized - in terms of learning targets, content, methods, and schedules - to meet the developmental needs of individual students, facilitate their self-learning and self actualization, and optimize their potentials as triplized CMI leaders and citizens.

Shift in Pedagogy Characteristics

The traditional pedagogy emphasizes delivering subject knowledge and skills to students. Inevitably, the pedagogy is mainly to ensure students' learning as a disciplinary, receiving, and socializing process and assumes that close supervision is necessary during the learning process. The opportunities for traditional learning are often very limited in a fixed

period within a site-bounded but IT-absent environment. Also, the pedagogy has no clear linkage with CMIs development of students, and it is often driven by the delivery of subject knowledge and external standards in examinations. Contrastingly different from the traditional paradigm, the new pedagogy has the following characteristics (see Table 6):

Facilitating Self Learning: The new pedagogy is to ensure students' learning as a self-actualizing, discovering, experiencing, enjoyable, and reflecting process. Tertiary teachers' inspiring and students' own motivation and self-rewarding are crucial to this self-learning process.

Multiple Sources for Learning: There are multiple sources for student learning - for example, self learning programs and packages, interactive multi-media materials, web-based learning, outside experts, community experiental programs, etc. - inside and outside the tertiary institutions, locally and globally. Through different types of partnership and collaboration, other tertiary institutions, local and overseas organizations, and other sectors such as social services, business, and industry are actively involved in different types of education programs for students.

Globally and Locally Networked Learning: Student learning is locally and globally networked through, for example, the Internet, e-communications, visiting programs, local and global exchange programs, and sharing by video-conferencing. The networked learning can provide a wide spectrum of learning experiences and maximize opportunities for students to benefit from various settings and cultures.

World-wide Networked Pedagogical Environment: In order to make triplizing higher education possible, it is necessary to build up a world-wide IT pedagogical environment for student learning and teacher teaching. It should include some typical and important components such as world-wide networking through the Internet, web-based learning, interactive self learning, multi-media facilities and learning materials, and video-conferencing for local and international sharing and exposure (Ryan, Scott, Freeman, & Patel, 2000). Through the help of this environment, boundless and unlimited opportunities can be provided to tertiary students' learning and teachers' professional development inside and outside institutions.

Table 6: Paradigm Shift in Designing Tertiary Curriculum and Pedagogy

New CMI-Triplization Paradigm	Traditional Site-Bounded Paradigm
New Tertiary Curriculum Aims • To develop students as CMI leaders and citizens who will creatively contribute to the formation of a CMI society and a CMI global village	**Traditional Tertiary Curriculum Aims** • To equip students with the necessary knowledge and skills to survive a local community or meet the manpower needs of a society
New Tertiary Curriculum Characteristics • CMI-Focused Curriculum • Triplized Curriculum Structure • World-Class and Globalzied Curriculum • Localized Curriculum • Individualized Curriculum	**Traditional Tertiary Curriculum Characteristics** • Subject Focused Curriculum • Standard Subject Curriculum Structure • Subject-Bounded Curriculum
New Tertiary Pedagogy Characteristics • Facilitating Students' Life Long Self Learning • Multiple Sources of Learning and Teaching • Globally and Locally Networked Learning and Teaching • Worldwide Networked Pedagogical Environment • Boundless and Unlimited Opportunities for Learning Inside and Outside Institution • Pedagogy is Based on Pentagon Theory of CMI Development	**Traditional Tertiary Pedagogy Characteristics** • Delivering Knowledge and Skills to Students • Site-bounded Sources of Learning and Teaching • Separated Learning and Teaching • Classroom-Bounded Pedagogical Environment • Fixed Period, within Institution, and Limited Opportunities for Learning • Pedagogy lacks a clear linkage with CMI development and it is often driven by the delivery of subject knowledge and external standards in examinations
• **New Tertiary Quality Assurance relies on:** 1. How well learning and teaching are triplized 2. How well students' learning opportunities are maximized through IT environment, networking, and CMI professors 3. How well students' self-learning is facilitated and sustained as potentially life long **4.** How well students' CMI and ability to triplize their self-learning are developed	• **Traditional Tertiary Quality Assurance relies on:** 1. How well learning and teaching are organized to deliver knowledge and skills 2. How well the delivery of knowledge can be ensured through the improvement of teaching and learning 3. How well professors' teaching can be improved and developed in a given time period 4. How well students can arrive at a given standard in examination

Based on Pentagon Theory of CMI: The pedagogy should be also based on the Pentagon Theory of CMI. It should encourage students' CMI interactions and facilitate intelligence transfer among learning, economic, political, social, cultural, and technological intelligences. Through development of CMI and intelligence transfer, students' creativity in one specialization area or other areas can be substantially enhanced. Also, developing students' learning intelligence should be at the core part of pedagogy. Students should be facilitated to learn how to learn, think, and create particularly in the triplized local and global contexts.

New Tertiary Quality Assurance: Since the traditional paradigm emphasizes the delivery of knowledge and skill, the quality assurance of higher education is often focused on how well learning and teaching are organized to deliver the necessary knowledge and skills to students; how well the delivery of knowledge and skills to students can be ensured through the improvement of teaching and learning; how well tertiary teachers' teaching can be improved in a given time period; and how well students can arrive at a given standard in examinations. Clearly, the paradigm shift towards triplization induces a new conception of quality assurance of higher education. It can be based on the following major questions:

1. How well tertiary learning and teaching are triplized?   (This question aims to ensure that students' learning and professors' teaching can be well placed in a globalized, localized, and individualized context.)

2. How well tertiary students' learning opportunities are maximized through the IT environment, networking and CMI professors? (This question intends to ensure the maximizing of opportunities for students' learning and development in a triplized CMI environment.)

3. How well tertiary students' self learning is facilitated and sustained as potentially life long ? (This question tries to ensure the maximized opportunities for students' self-learning are sustainable to life long.)

4. How well tertiary students' CMI and their ability to triplize their self learning are developed ? (This question focuses on ensuring the relevance and outcome of student learning in terms of multiple intelligences and ability of triplizing self-learning.)

Conclusion

From the above discussion, we can see that the proposed CMI-triplization paradigm for rethinking and re-engineering higher education is contrastingly different from the traditional thinking.

In the new millennium, our world is moving towards multiple globalizations and becoming a global village with boundless interactions among countries and areas. Our society is becoming more diverse and multiple and moving towards a learning CMI society. Our new generations should be prepared as a CMI person in such a fast changing and interacting local and global environment. The aims of higher education should be to develop students as CMI leaders and citizens who will creatively contribute to the formation of a CMI society and a CMI global village with multiple developments in technological, economic, social, political, cultural, and learning aspects.

We expect, our higher education will be triplized in the new century. In fact, the ongoing higher education reforms in different parts of the world have already provided evidence that many countries are making effort in this direction through various types of initiatives in globalization, localization and individualization. We believe, our tertiary learning and teaching will be finally globalized, localized, and individualized with the help of the information technology and boundless multiple networking. We will have unlimited opportunities and multiple global and local sources for life-long learning, development and research of both students and tertiary teachers. New tertiary education should facilitate the triplized learning and make its process interactive, self-actualizing, discovery, enjoyable, and self-rewarding. New curriculum and pedagogy should be triplized and also CMI-based, that can provide world-class learning for students. Students can learn from the world-class professors, experts, peers, and learning materials from different parts of the world in any time frame and get local, regional, and global exposure and outlook as CMI leaders and citizens. We believe, professors, as the key actors, will play a very crucial role in the whole process of triplization in higher education. They will learn to develop themselves as triplized CMI tertiary teachers, transform their higher institutions as triplized CMI institutions, and facilitate their students become triplized CMI leaders. Also, they will help to transform tertiary curriculum and pedagogy as world class to meet the challenges and needs in the new millennium.

Finally, I have a dream:

- All our tertiary students will become *Triplized CMI Students*. They fully enjoy life-long self-learning and actualization and become CMI leaders and citizens for the new world.
- All our tertiary teachers will become *Triplized CMI Professors*. They share the joy of triplized learning, teaching and research with their students and pursue life-long professional development.
- All our tertiary institutions will become *Triplized CMI Institutions.* All educators and professors are dedicated to make contribution to triplization in learning, teaching and research and create unlimited opportunities for all students' life-long learning and development in the new century.

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[*] Note: This paper is mainly based on the theory and materials in Cheng (2000) with adaptation to higher education.

[**] The brief CV of professor Yin Cheong CHENG:

Yin Cheong CHENG is the Professor and Director of the Centre for Research and International Collaboration of the Hong Kong Institute of Education. He is also the Head of the Asia-Pacific Centre for Education Leadership and Education Quality. He serves as a full member of the University Grants Committee and a panel member of Research Grants Council of the Hong Kong SAR Government. Previously, he was a member of the Education Quality Fund Steering Committee of the Hong Kong SAR Government, the associate director of the Hong Kong Institute of Educational Research and professor in the Department of Educational Administration and Policy of the Chinese University of Hong Kong.

Prof. Cheng holds a doctorate from Harvard University. He has had extensive experiences in both education and research as a teacher, vice-principal, consultant, and researcher. He has undertaken a number of research projects on education effectiveness, education quality, and school management reform, with the support of Competitive Earmarked Research Grants from the Research Grants Council. Prof. Cheng has published 8 books and nearly 150 book chapters and academic journal articles in Australia, Hong Kong, Korea, Netherlands, Germany, Slovenia, Israel, Taiwan, Thailand, USA, and UK. Among his books are *The Function and Effectiveness of Education* (Wide Angle Press, 1995), *School Effectiveness and School-based Management: A Mechanism for School Development* (Falmer Press, 1996), *The Improvement of School Management: Theory, Reform and Practice, The Pursuit of School Effectiveness: Research, Management and Policy* (the Chinese University, 1996), *Handbook on Educational Policy in Hong Kong* (the Hong Kong Institute of Education, 1998) and *Educational Change and Development in the Asia-Pacific Region: Challenges for the Future* (with Tony Townsend, Swets and Zeitlinger, 2000). Recently, he has co-edited three new books on teacher education and teaching effectiveness with K.W. Chow, M.M.C. Mok and K.T. Tsui, respectively (Hong Kong Institute of Education & Kluwer Press, 2001). He is the editor in chief of the *Asia Pacific Journal of Teacher Education and Development*. He is at present serving on the advisory boards of a number of international journals.

Prof. Cheng's research has won him a number of international awards and recognition including the Awards for Excellence from the Literati Club in UK in 1994, 1996-98 and 2001. A number of his articles were also awarded "Citation of Excellence" by the ANBAR Electronic Intelligence of U.K. In 1999, he was awarded as Research Fellow of the Hong Kong Educational Research Association. He had been a keynote speaker of a number of international and regional conferences. He has conducted research seminars and workshops in Australia, The Netherlands, India, China, Thailand, Scotland and Hong Kong. He has served as panel member, researcher, consultant, external examiner or reviewer of local and international universities and research institutions. Since 1994, Prof. Cheng has also been invited to give over 22 keynote/plenary presentations by national and international organizations such as APEC, UNESCO, UNICEFF, ICER, ICSEI (Australia, Hong Kong and Canada), SEAMEO RIHED (with Chulagongkorn University), NIEAP, NCERT (India), ONEC (Thailand), ACEA (Australia), NIER (Japan), Ministry of Education (Israel, Hungary), Japanese Society for

the Studies on Teacher Education, Chinese Society of Higher Normal Education (Mainland), Chinese Educational Research Association and three other associations (Taiwan). Some of his publications have been translated into Chinese, Hebrew, Korean, Spanish and Thailand languages.

Globalization of Modern Education. Accordingly, globalization is not only something that will concern and threaten us in the future, but something that is taking place in the present and to which we must first open our eyes. Ulrich Beck (German sociologist). Globalization is seen as a process of international, economic, political and cultural integration. Cultural globalization is characterized by convergence of business and consumer culture between different countries, the widespread use of foreign languages (especially English) for international communication, the growth of international tou Globalization is about the interconnectedness of people and businesses across the world that eventually leads to global cultural, political and economic integration. It is the ability to move and communicate easily with others all over the world in order to conduct business internationally. Â 6. Discuss the importance of teaching globalization in higher education. In 2010 a global study entitled Attributes of a Global Engineer was performed by the American Society for Engineering Education (ASEE) and the International Federation of Engineering Education Societies (IFEES) to determine the skills and experiences that today's engineering student need to develop in school and throughout their career to successfully compete in a global workplace. Also, the presentation explains why triplization including globalization, localization, and individualization as a whole in education is necessary to reform higher learning and teaching; and describes how they can create unlimited opportunities and pool up world class intellectual assets and resources for life-long learning, development, and research of both students and professors, with the help of information technology and boundless multiple global and local networking. Â @inproceedings{Cheng2001ParadigmSI, title= {Paradigm shift in higher education: Globalization, localization, and individualization}, author={Yin Cheong é„ç‡•ç¥¥ Cheng}, year={2001} }. Yin Cheong é„ç‡•ç¥¥ Cheng.