Fostering Local Knowledge and Wisdom in Globalized Education: Multiple Theories

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Invited Keynote Speech
Presented at
The 8th International Conference on "Globalization and Localization Enmeshed: Searching for a Balance in Education"
Organized by
Faculty of Education of Chulalongkorn University
in Collaboration of
Beijing Normal University
Hong Kong Institute of Education
Kyoto University of Education
SEAMEO RIHED
University of Melbourne
University of Sydney
Vietnam National University

November 18-21, 2002
Bangkok, Thailand

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(Abstract)

In facing up the challenges of globalization, there is a great demand for paradigm shift from the traditional paradigm of site-bounded education towards the new paradigm of triplization including globalization, localization and individualization in education with the support of information technology and various types of local and global networking. This keynote speech further expands this new paradigm with focus on fostering local knowledge and wisdom for the developments of individuals and the local community through integration of localization and globalization in education.

Given the increasing international concerns with both the positive and negative impacts of globalization on indigenous and national developments, how to manage the realities and practices of globalization and localization in education for maximizing the benefits and minimizing the disadvantages for the developments of individuals and local community inevitably becomes a key concern in educational development particularly in the developing countries. After clarifying the related concepts of local knowledge and global knowledge in a context of globalization, a typology of multiple theories of fostering local knowledge is proposed to address this key concern, namely as the theory of tree, theory of crystal, theory of birdcage, theory of DNA, theory of fungus, and theory of amoeba.

These theories have varied emphasis on global dependence and local orientation and therefore they have their own characteristics, strengths, and limitations in conceptualizing and managing the process of fostering local knowledge. Clearly, their implications for design of curriculum and instruction and their expected educational outcomes in globalized education are correspondingly different. The theories of tree, crystal, birdcage, DNA, fungus, and amoeba provide different approaches such as cultural roots for growth, local seeds for crystallization, ideological boundaries for protection and filtering, replacement of poor components, digestion of global knowledge, and total openness to localize global knowledge in the process of globalizing education.

Each country or local community may have its unique social, economic and cultural contexts and therefore, its tendency to using one theory or a combination of theories from the typology in globalized education may be different from the other. To a great extent, it is difficult to say one better than other even though the theories of tree, birdcage and crystal may be more preferred in some culturally rich countries. For those countries with less cultural assets or local values, the theories of amoeba and fungus may be an appropriate choice for development. However, this typology can provide a wide spectrum of alternatives for policy-makers and educators to conceptualize and formulate their strategies and practices in

fostering local knowledge for the local developments.

The relationship between localization and globalization in education is dynamic and interactive. Localized globalization in education can create more values for local developments if local creativity and adaptation can be induced in the process of operational change and cultural change. There may be four scenarios of localization and globalization in education, including “totally isolated”, “totally globalized”, “totally localized” and “both highly localized and globalized”. All these four scenarios represent the efforts pursuing different sets of social and organizational values in education. From a perspective of long-term local and global developments, the scenario with emphasis on integration of both localization and globalization should be a preferable choice.

Based on the multiple theories and related concepts, the keynote speech further presents how to facilitate individual learning and organizational learning in fast changing local and global environment and how to foster both individual knowledge and institutional knowledge in schools as the major contribution to the growth of local knowledge in globalized education. Furthermore, implications are drawn for building up a networked human and IT environment to support formulation of learning communities and fostering local knowledge.

There are five types of local knowledge and wisdom to be pursued in globalized education, including the economic and technical knowledge, human and social knowledge, political knowledge, cultural knowledge, and educational knowledge for the developments of individuals, school institutions, communities, and the society. How the multiple theories can be used to foster these types of local knowledge is still a blank area for further research in coming years.

It is hoped that the theories and ideas raised in this keynote speech can benefit the ongoing international efforts for globalization and localization in education for the future of our next generations in the new millennium.

Introduction: Towards Triplization in Education

In response to the challenges of globalization, information technology, international competitions, knowledge-based economy, and fast societal developments in the new millennium, there are numerous education reforms in nearly all countries in the Asia-Pacific Region.

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 my research (Cheng, 2000), there should be multiple globalizations, including *Technological Globalization, Economic Globalization, Social Globalization, Political Globalization, Cultural Globalization, and Learning Globalization* in the new millennium.

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). In addition, facing the increasing demands for the various developments of individuals and local communities in the new century and for maximizing the support to and effectiveness of education, not only globalization but also localization and individualization are necessary in ongoing educational reforms. Efforts and initiatives for a paradigm shift towards globalization, localization and individualization in education have been gradually evident in some countries in recent years.

In the new paradigm of education proposed by Cheng (2000), all of these processes as a whole can be taken as a *Triplization Process* (i.e., triple + izations) that should be necessary in re-conceptualizing educational processes and formulating the new pedagogic methods and environment for students' life-long learning and development of contextualized multiple intelligence (CMI) including technological intelligence, political intelligence, social intelligence, economic intelligence, cultural intelligence, and learning intelligence. The new paradigm of triplization in education including globalization, localization, and individualization is summarized as shown in Table 1 and Figure 1.

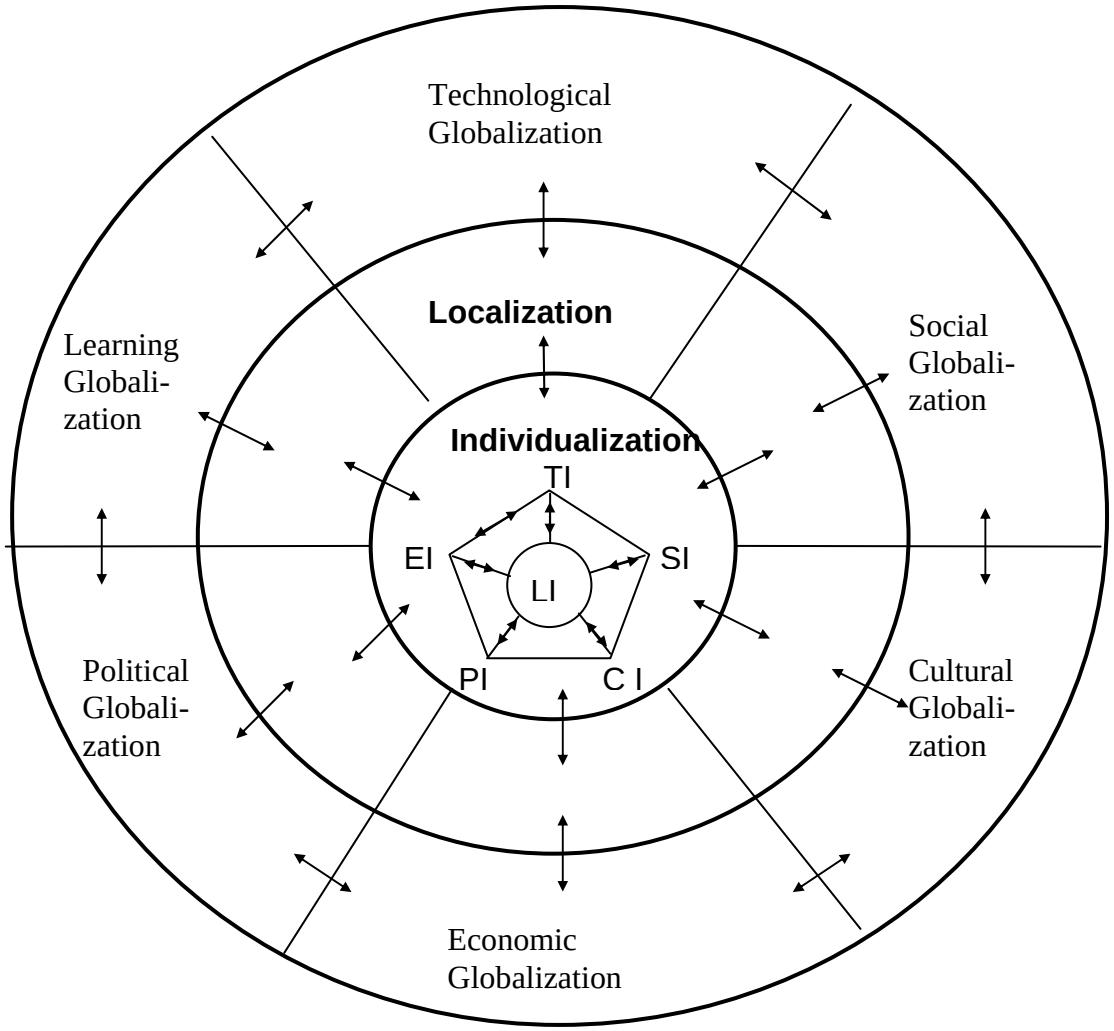
Globalization. To different scholars, the definition of globalization may be different. According to Cheng (2000), it may refer to the transfer, adaptation, and development of values, knowledge, technology, and behavioral norms across countries and societies in different parts of the world. The typical 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 areas, international alliances and competitions, international collaboration and exchange, global village, multi-cultural integration, and use of international standards and benchmarks.

From a positive and instrumental perspective, the implications of globalization for 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 learning, teaching and research (Daun, 1997; Holmes, 1999).

Some ongoing examples and common evidence of globalization in 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 education.

Figure 1:
Globalization, Localization, and Individualization



TI=technological intelligence, PI=political intelligence, SI=social intelligence, EI=economic intelligence, CI=cultural intelligence, and LI=learning intelligence

Table 1: Triplization in Education

Triplization	Conceptions and Characteristics	Triplization in 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 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 learning, teaching and research: e.g. • Community Involvement • Public- Institutional Collaboration • Institutional-based Management &Accountability/ School-based Management • 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 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 Teachers • Meeting Special Needs • Development of Contextualized Multiple Intelligences

Localization: In a general sense, localization 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.

The implications of localization to 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 education; privatization in education; public-institutional collaboration; assurance of institutional accountability; implementation of institutional autonomy, school-based management 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 education is to maximize motivation, initiative, and creativity of students and teachers in 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, teachers, and education institutions are "triplized" (i.e. *globalized*, *localized*, and *individualized) during the process of triplization.* **W**ith these concepts of triplization in education, a paradigm shift of education for the new millennium from *the traditional site-bounded paradigm* to *the new triplization paradigm* is illustrated by Cheng (2000). 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 education, the modes of learning and teaching. For the detail, please refer to Cheng (2000).

Even though globalization seems to be unavoidable to many countries and numerous initiatives and efforts have been made to adapt to it with aims at taking the opportunities created from it to develop their societies and people, in recent years there are also increasing international concerns with the dangerous impacts of globalization on indigenous and

national developments. Various social movements have been initiated to against the threats of globalization particularly on developing countries. The negative impacts of globalization include various types of economic, political and cultural colonization by advanced countries on those developing and under-developed countries. Inevitably, how to maximize the opportunities and benefits from globalization to support local developments and reduce the threats and negative impacts of globalization will be major concerns in both national and indigenous developments.

Positive and Negative Impacts of Globalization

As mentioned above, globalization is creating numerous opportunities for sharing knowledge, technology, social values, and behavioral norms and promoting developments at different levels including individuals, organizations, communities, and societies across different countries and cultures. In particular, the advantages of globalization may include the following (Cheng, 2000; Brown, 1999; Waters, 1995):

1. Global sharing of knowledge, skills, and intellectual assets that are necessary to multiple developments at different levels;
2. Mutual support, supplement and benefit to produce synergy for various developments of countries, communities, and individuals;
3. Creating values and enhancing efficiency through the above global sharing and mutual support to serving local needs and growth;
4. Promoting international understanding, collaboration, harmony and acceptance to cultural diversity across countries and regions; and
5. Facilitating multi-way communications and interactions, and encouraging multi-cultural contributions at different levels among countries.

But at the same time, it is potentially creating serious negative impacts on the indigenous developments, particularly those developing or underdeveloped countries. This is also the major reason why there have been so many ongoing social movements in different parts of the world to against the trends of globalization particularly in economic and political areas. The potential negative impacts of globalization are various types of political, economic, and cultural colonization and overwhelming influences of advanced countries to developing countries and rapidly increasing gaps between rich areas and poor areas in different parts of the world. In particular, the potential negative impacts include the following: (Table 2)

1. Increasing the technological gaps and digital divides between advanced countries and less developed countries that are hindering equal opportunities for fair global sharing;
2. Creating more legitimate opportunities for a few advanced countries to economically and politically colonize other countries globally;
3. Exploiting local resources and destroying indigenous cultures of less advanced countries to benefit a few advanced countries;

4. Increasing inequalities and conflicts between areas and cultures; and
5. Promoting the dominant cultures and values of some advanced areas and accelerating cultural transplant from advanced areas to less developed areas

Table 2: Potential Positive and Negative Impacts of Globalization

Globalization Negative Impacts (Threats) Moderated by **Education & Other Local & International Factors** Positive Impacts (Opportunities)	
● Increasing the technological gaps and digital divides between advanced countries and less developed countries that are hindering equal opportunities for fair global sharing	● Global sharing of knowledge, skills, and intellectual assets that are necessary to multiple developments at different levels
● Creating more legitimate opportunities for a few advanced countries to economically and politically colonize other countries globally	● Mutual support, supplement and benefit to produce synergy for various developments of countries, communities, and individuals
● Exploiting local resources and destroying indigenous cultures of less advanced countries to benefit a few advanced countries	● Creating values and enhancing efficiency through the above global sharing and mutual support to serving local needs and growth
● Increasing inequalities and conflicts between areas and cultures	● Promoting international understanding, collaboration, harmony and acceptance to cultural diversity across countries and regions
● Promoting the dominant cultures and values of some advanced areas and accelerating cultural transplant from advanced areas to less developed areas	● Facilitating multi-way communications and interactions, and encouraging multi-cultural contributions at different levels among countries

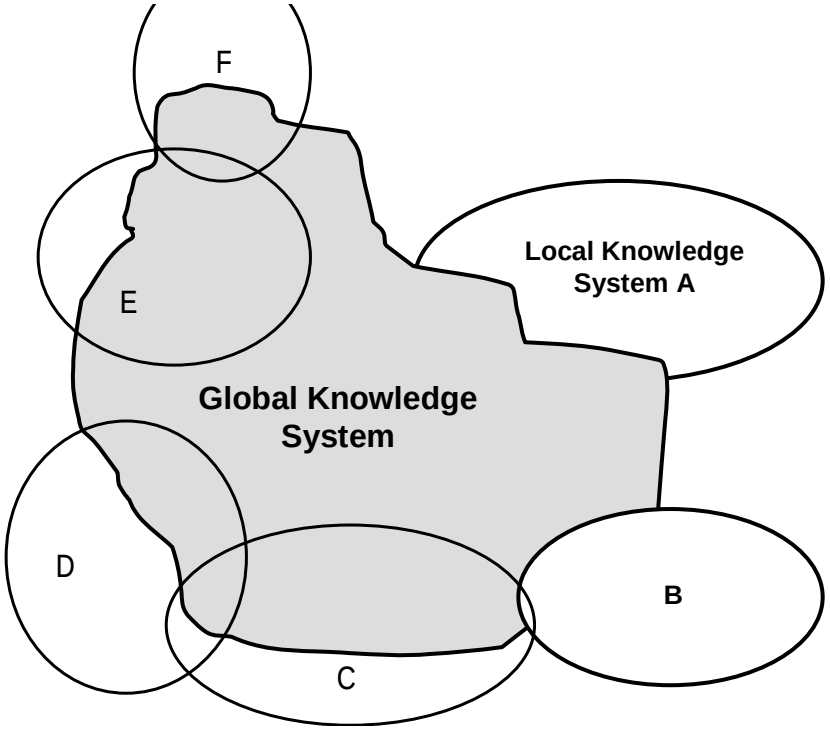
Clearly, the management and control of the impacts of globalization are related to some complicated macro and international issues that may be far beyond the scope of this paper. But in general, many people believe, education is one of key local factors that can be used to moderate some impacts of globalization from negative to positive and convert threats into opportunities for the development of individuals and local community in the inevitable process of globalization. How to maximize the positive effects but minimize the negative impacts of globalization is a major concern in current educational reform for national and local developments. Specifically, what is the relationship between the local knowledge systems and the global knowledge system in globalization? How can we foster local

knowledge and wisdom for individual and local developments through globalization in education and from the global knowledge system, particularly in those developing countries that are facing the challenges of losing local identity in overwhelming globalization.

Local Knowledge and Global Knowledge in Globalization

Local knowledge is the knowledge that has been tested valid in a local context and accumulated by the local community or people**.** To different local communities, the existing social context, cultural assets and historical backgrounds may be completely different and therefore the knowledge and wisdom they have found useful and valid and accumulated in the past years may be different. Therefore, it is not a surprise that the knowledge systems of local communities are different from each other. As shown in Figure 2, the local knowledge system of community A may be different from those of communities B, C, D, E, F, and many others.

Figure 2: Local Knowledge Systems and the Global Knowledge System



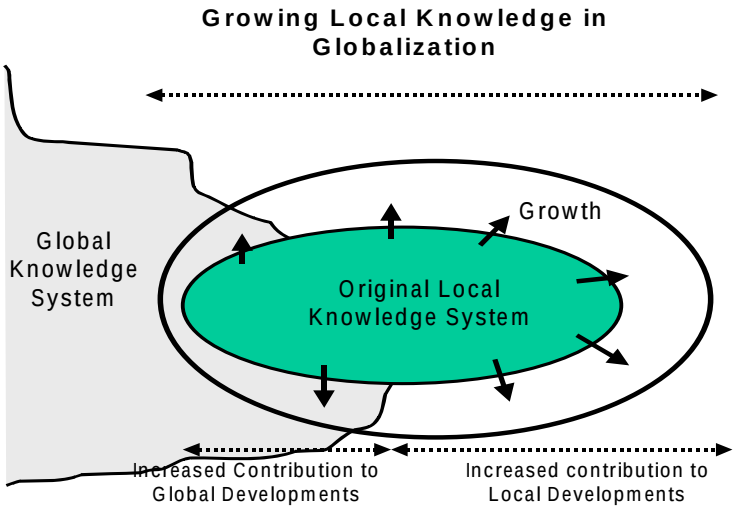
Global knowledge is a vague concept. To different scholars or researchers, the concept of global knowledge may be differently defined. Some may define the *global knowledge* roughly as the knowledge that is valid and common in many, if most, countries and areas in the world. If we accept this definition, it means that some parts of the local knowledge may contribute to the pool of global knowledge if they are valid in many countries; and other parts of the local knowledge may not become global knowledge because they are valid only in this local context but not the other. As shown in Figure 2, parts of local knowledge system A become part of global knowledge but the other parts are unique and valid only in community

A.

Due to the rapid globalization accelerated by the advances in information technology and the wide international networking, communication, interaction, and competition, the influences and impacts of some knowledge systems particularly of the advanced countries are disseminated globally and fast to other countries. How local people and a local community can learn from the global knowledge to foster their local knowledge and wisdom to support their local developments in globalization will be an interesting question in educational reform. As shown in Figures 3 and 4, there are two types of interactions between local knowledge development and global knowledge dissemination in globalization: Growing local knowledge and disappearing local knowledge in globalization.

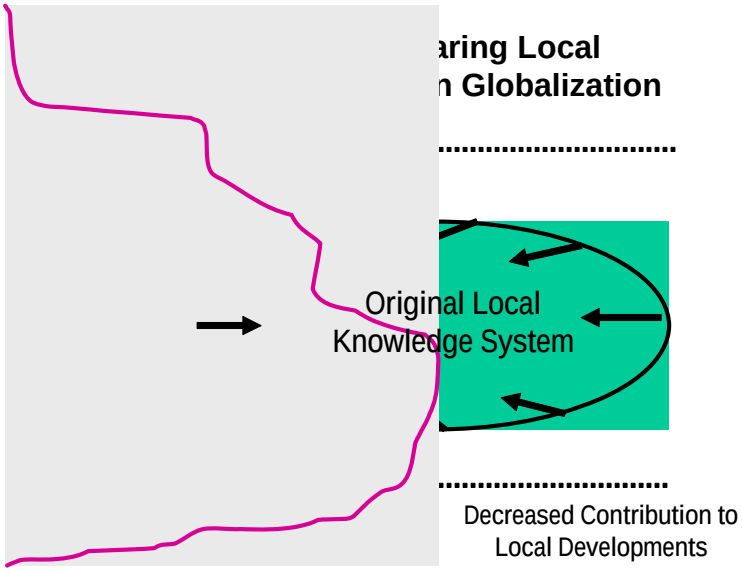
As shown in Figure 3, if the local knowledge can be fostered in globalization, there will be increased contribution to local developments and also likely increased contribution to the growth of global knowledge and global developments if this increased local knowledge is also valid to other communities.

Figure 3: Growth of Local Knowledge in Globalization



As shown in Figure 4, if the local knowledge is overwhelmed and even replaced by the external knowledge in globalization, the local knowledge will be unable to grow and will gradually disappear. In turn, there will be decreased contribution to local developments due to the inappropriateness of external knowledge and the lack of appropriate local knowledge for the development of local community.

Figure 4: Disappearing Local Knowledge in Globalization



Multiple Theories of Fostering Local Knowledge in Globalized Education

According to the past experiences of Asia countries interacting with the Western countries in the past century as well as my recent observations, I would like to propose a typology of multiple theories that can be used to conceptualize and practice fostering local knowledge in globalization particularly through globalized education, as shown in Table 3. All these theories have their characteristics, strengths and limitations in globalizing education.

1. Theory of Tree

Many Asia countries such as China, Japan, Thailand, and Korea, which have experienced a long history to build up their fruitful cultural traditions are making great efforts to maintain their cultural assets and local identities in facing the challenges of globalization. They often tend to use the theory of tree to foster local knowledge in globalization particularly in education.

The theory of tree assumes that the process of fostering local knowledge should have its roots in local values and traditions but absorb external useful and relevant resources from the global knowledge system to grow the whole local knowledge system inwards and outwards. Therefore, fostering local knowledge in globalized education needs local identity and cultural roots and the curriculum design should be based on local values and cultural assets but absorbs suitable global knowledge and technology to support the development of the local community and individuals as local citizens. The selection of global knowledge in

instruction will mainly depend on the needs of the local community and cultural preference but not the popularity in the outside world. The expected outcome in globalized education will be *to develop a local person with international outlook, who will act locally and develop globally*.

The strength of this theory is that the local community can maintain and even further develop its traditional values and cultural identity as it grows and interacts with the input of external resources and energy in accumulating local knowledge for local developments. Since the process is mainly based on the cultural roots, it will be stable and gradual. To a certain extent, the successful growth of a local community and its local knowledge system will contribute to the growth of the global community and knowledge, as shown in Figure 3.

But, if the cultural roots of the local community are poor and narrow, the growth of individuals and local community will be tightly bounded and suffering. The conversion of global knowledge into local knowledge may be very selective and limited subject to the cultural bias. Furthermore, it is not a surprise that without any cultural changes, the developments and growths of individuals and the local community may be mainly short-term technical changes and the knowledge to be accumulated may be only technical knowledge.

2. Theory of Crystal

Some countries may worry the total exposure to globalization leading to loss of local identity and values and they prefer to focus on fostering local knowledge in globalization on a given local aspect. The Theory of Crystal reflects this concern. The key of the fostering process is to have “local seeds” to crystallize and accumulate the global knowledge along a given local expectation and demand. Therefore, fostering local knowledge is to accumulate global knowledge around some “local seeds” that may be existing local demands and values to be fulfilled in these years.

According to this theory, the design of curriculum and instruction is to identify the core local needs and values as the fundamental seeds to accumulate those relevant global knowledge and resources for education. In globalized education, the understanding of local knowledge structure is a necessary base for students to accumulate the global knowledge and wisdom. The expected educational outcome is to develop a local person who remains a local person with some global knowledge and can act locally and think locally with increasing global techniques.

With local seeds to crystallize the global knowledge, there will be no conflict between local needs and the external knowledge to be absorbed and accumulated in the development of local community and individuals. In practice, it is easy to identify what the local community wants or doesn’t want from the overwhelming global inputs and to avoid being over-globalized. But, at the same time, it is also not easy to find a set of good local seeds or values that can be used to crystallize and localize the powerful and fruitful global knowledge and wisdom. Since the original nature and type of local seeds themselves may crystallize only those similar to them but not other, the knowledge to be fostered may be limited. Given the nature of one-way crystallization, there will be no clear contribution to the growth of global knowledge and community.

Table 2: Multiple Theories of Fostering Local Knowledge and Wisdom in Globalized Education

Multiple Theories	Characteristics	Implications for Curriculum and Instruction	Expected Educational Outcomes	Strengths	Limitations
Theory of Tree	The process has its roots in local values and traditions but absorb external useful and relevant resources to grow outwards; Fostering local knowledge in globalized education needs local and cultural roots	The curriculum is based on local values and cultural assets but absorbs suitable global knowledge and technology to support the development of the local community and individuals as local citizens; The selection of global knowledge in instruction will mainly depend on the needs of the local community and cultural preference	A local person with international outlook; Act locally and develop globally;	The local community can maintain its traditional values and cultural identity and accumulate local knowledge as it grows and interacts with the input of external resources and energy; The successful growth of a local community will contribute to the growth of the global community and knowledge;	If the cultural roots are poor and narrow, the growth of individuals and local community will be tightly bounded and suffering; The conversion of global knowledge into local knowledge may be very selective and limited subject to the cultural bias; Without any cultural changes, the developments and growths may be mainly short-term technical changes
Theory of Crystal	The key of the process is to have local seeds to crystallize and accumulate the global knowledge along a given local shape; Fostering local knowledge is to accumulate global knowledge around local seeds	The design of curriculum and instruction is to identify the core local needs and values as the fundamental seeds to accumulate those relevant global knowledge and resources for education; The understanding of local knowledge structure is a necessary base for students to accumulate the global knowledge and wisdom	A local person remains a local person with some global knowledge; Act locally and think locally with increasing global techniques	There is no conflict between local needs and the global knowledge to be absorbed and accumulated in the development of local community and individuals; It is quite easy to identify what the local community wants or doesn't want from the overwhelming global inputs and to avoid being over-globalized;	It is not easy to find a set of good local seeds or values that can be used to crystallize and localize the powerful and fruitful global knowledge and wisdom; The original nature and type of local seeds themselves may crystallize only those similar to them but not other; No contribution to the growth of global knowledge and community
Theory of Birdcage	The process is open for incoming global knowledge and resources but limiting the local developments and related interactions with the outside world to a fixed framework; Fostering local knowledge in globalized education needs a local framework for protection and filtering	It is necessary to set up a local framework with clear ideological boundaries and social norms for curriculum design such that all educational activities can have a clear local focus when benefiting from the exposure of wide global knowledge and inputs; Local loyalty and concerns should be core parts of education	Local person with bounded global outlook; Act locally with filtered global knowledge	The framework can help to ensure local relevance in globalized education; It helps to avoid any loss of local identity and concerns during globalization or international exposure; It may protect the local interests from the over-globalization	It is difficult to build up appropriate cultural or social boundaries to filter the global impacts and ensure local relevance; The boundaries may be too tight and closed to stop any necessary interactions with the outside world and limit the growth of local knowledge

continued

Theories	Characteristics	Implications for Curriculum and Instruction	Expected Educational Outcomes	Strengths	Limitations
Theory of DNA	The process identifies and transplants the better key elements from the global knowledge to replace the existing weaker local components in the local development; Fostering local knowledge is to replace the invalid local knowledge with the vital global knowledge	The curriculum design should be very selective to both local and global knowledge with aims to choose the best elements from them; The understanding of weak and strong elements in both local and global knowledge is necessary in education; Students are encouraged to be open for transplanting any good elements into local contexts	A person with locally and globally mixed elements; Act and think with mixed local and global knowledge	It is open for any rational investigation and transplant of valid knowledge and elements without any local barrier or cultural burden; It seems to be the efficient way to learn and improve the existing local practices and developments	It may not be true that the identification of weak and strong elements is culturally and socially easy; It may be too mechanical to assume that the transplant and replacement can be carried out easily without any cultural resistance and negative social impacts on the developments of individuals and local community
Theory of Fungus	The process is to digest certain types of global knowledge for nutrition of individual and local developments; Fostering local knowledge is to digest some global knowledge and convert it as local nutriment for development of individuals and local community	The curriculum and instruction should aim at enabling students to identify and learn what global knowledge is valuable and necessary to their own developments; The design of education activities should digest the complex global knowledge into appropriate forms that can feed individuals and their growth	A person equipped of certain types of global knowledge; Act and think dependently of relevant global knowledge	It is easier to digest and absorb the useful elements of global knowledge than to produce local knowledge from the beginning; The roots for growth and development are based on the global knowledge instead of local culture or values	The process will be mainly one-way digestion and absorption of external knowledge; Its contribution to the growth of the global knowledge and resources is very limited; There is no clear local identity and base for its growth but dependent of external resources and knowledge
Theory of Amoeba	The process is to make full use of the global knowledge with minimal local constraints; Fostering local knowledge is to fully use and accumulate global knowledge in the local context	The curriculum should include the full range of global perspectives and knowledge; To achieve broad international outlook and apply global knowledge locally and globally is crucial in education; Cultural burdens and local values can be minimized in the design of curriculum and instruction in order to let students be totally open for global learning	A flexible and open person without any local identity; Act and think globally and fluidly	It is completely flexible and open to all global exposure; It has least local and cultural constraints in accumulating global knowledge and resources such that the developments of individuals and local community can have larger opportunities to be benefited from advanced experiences in different parts of the world	There will be loss of local values and cultural identity; Potentially, the local community will lose its direction and social solidarity during overwhelming globalization; It is not so clear what local contribution can be made to the growth of global knowledge and development

3. Theory of Birdcage

How to avoid the overwhelming and dominating global influences on the nation or local community is often one of key concerns in the processes of globalization and modernization. The theory of birdcage is often considered as one of important approaches to tackle this issue in fostering local knowledge in globalized education.

This theory contends that the process of fostering local knowledge can be open for incoming global knowledge and resources but at the same time efforts should be made to limit or converge the local developments and related interactions with the outside world to a fixed framework. It means that fostering local knowledge in globalized education needs a local framework for filtering the incoming external knowledge and protecting the local developments from the negative global influences.

In globalized education, it is necessary to set up a framework with clear ideological boundaries and social norms for curriculum design such that all educational activities can have a clear local focus when benefiting from the exposure of wide global knowledge and inputs. Clearly, local loyalty and concerns should be a core part of education. The expected educational outcome is *to develop a local person with bounded global outlook, who can act locally with filtered global knowledge*.

The theory can help to ensure local relevance in globalized education and avoid any loss of local identity and concerns during globalization or international exposure. Particularly the local framework may protect the local interests from the over-globalization. But in practice, it is often very difficult to build up appropriate cultural or social boundaries to filter the global impacts and ensure local relevance because the boundaries may be too tight and closed to stop any necessary and meaningful interactions with the outside world and limit the growth of local knowledge or because the boundaries may be too loose and lose their functions for filtering and protection.

4. Theory of DNA

In the contemporary history of Asia countries, numerous initiatives and reforms have made to remove dysfunctional local traditions and structures and replace them with new ideas borrowed from other countries particularly the western countries. The theory of DNA represents this line of thinking and initiatives. This theory emphasizes on identifying and transplanting the better key elements from the global knowledge to replace the existing weaker local components in the local developments. It means that fostering local knowledge is mainly a process to replace the invalid local knowledge with the vital global knowledge through globalization or globalized education.

In globalizing education, the curriculum design should be very selective to both local and global knowledge with aims to choose the best elements from them. Therefore, the understanding of weak and strong elements in both local and global knowledge is necessary in education. Students are strongly encouraged to be open for transplanting any good elements into local contexts. And the expected educational outcome is *to develop a person with locally and globally mixed elements, who can act and think with mixed local and global knowledge*.

The strength of this theory is its openness for any rational investigation and transplant of

valid knowledge and elements without any local barrier or cultural burden. It can provide an efficient way to learn and improve the existing local practices and developments. Clearly, in practice, it may not be true that the identification of weak and strong elements is culturally and socially easy. Sometimes, it may be too mechanical to assume that the transplant and replacement with a good will can be carried out easily without any cultural resistance and negative social impacts on the developments of individuals and local community. Many reforms in the past years have already given us good lessons on the failure of transplant of oversea initiatives to local contexts.

5. Theory of Fungus

Due to various historical, geographical or economic reasons, the development of some countries may depend heavily on some other countries. It is not a surprise that their expectation and practice of fostering local knowledge also depend very much on the selective global knowledge closely related to those countries they are depending on. The theory of fungus reflects this mode of fostering local knowledge in globalization. This theory assumes that it is a faster and easier way to digest and absorb certain relevant types of global knowledge for nutrition of individual and local developments, than to create their own local knowledge from the beginning. Therefore, the process of fostering local knowledge is to digest the types of global knowledge significant and relevant to local developments and convert it as local nutriment for the development of individuals and the local community.

From this theory, the curriculum and instruction should aim at enabling students to identify and learn what global knowledge is valuable and necessary to their own developments as well as significant to the local community. In globalizing education, the design of education activities should aim at digesting the complex global knowledge into appropriate forms that can feed the needs of individuals and their growth. The expected educational outcome is to develop a person equipped certain types of global knowledge, who can act and think dependently of relevant global knowledge and wisdom.

This theory has its strengths. Particularly for some small countries, it is easier to digest and absorb the useful elements of global knowledge than to produce their own local knowledge from the beginning. The roots for growth and development are based on the global knowledge instead of local culture or value. Clearly, the process will be mainly one-way digestion and absorption of external knowledge and thus, its contribution to the growth of the global knowledge and resources is very limited. There is no clear local identity and vision for its growth but dependent of external resources and knowledge.

6. Theory of Amoeba

For some countries or areas without too much cultural background, they may not be so concerned with conservation of local values and cultural assets. What they are most concerned may be the adaptation to the fasting changing global environment and the economic survival in serious international competitions. Therefore, they may tend to use the theory of amoeba that aims to make full use of the global knowledge with minimal local constraints. This theory considers that fostering local knowledge is only a process to fully use and accumulate global knowledge in the local context. Whether the accumulated knowledge is really local or the local values can be preserved is not a major concern.

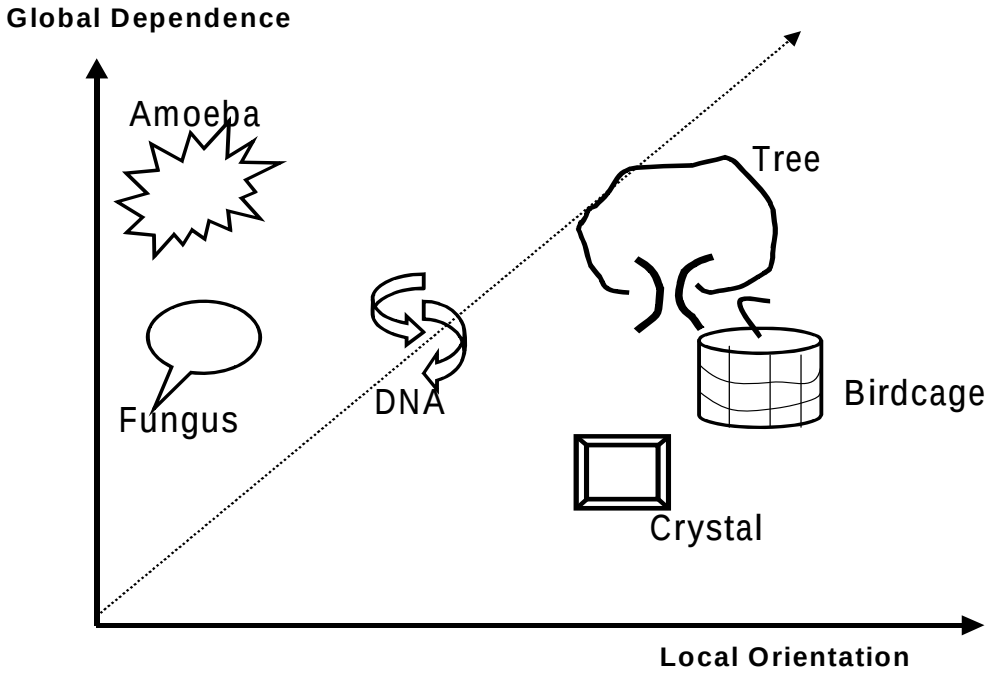
According to this theory, the curriculum design should include the full range of global perspectives and knowledge to totally globalize education in order to maximize the benefit from global knowledge and become more adaptive to changing environment. Therefore, to achieve broad international outlook and apply global knowledge locally and globally is crucial in education. And, cultural burdens and local values can be minimized in the design of curriculum and instruction in order to let students be totally open for global learning. The expected educational outcome is to develop a flexible and open person without any local identity, who can act and think globally and fluidly.

The theory encourages the local community to be completely flexible and open to all global exposure such that it has least local and cultural constraints in accumulating global knowledge and resources. Then, the developments of individuals and local community can have larger opportunities to be benefited from advanced experiences in different parts of the world. Of course, the strengths of this theory are also its limitations particularly in some culturally fruit countries. There will be potential loss of local values and cultural identity in the country and the local community will potentially lose its direction and social solidarity during overwhelming globalization. In a larger perspective, it is not so clear what local contribution can be made to the growth of global knowledge and development.

The above theories have their own strengths and limitations in application. To different countries and communities, their contextual conditions and characteristics may be very different. It is difficult to conclude one or two of theories better than the others. However, these theories can provide a typology for policy-makers, educators and researchers to consider conceptualization and implementation of strategies and measures to maximize the advantages of globalization and grow local knowledge and wisdom for the developments of individuals and the local community and to minimize the negative impacts of globalization on the local developments. Given the complexity of a country or a local community, it would be recommendable to consider the possible combinations of various theories in conceptualizing ways of fostering local knowledge and globalizing education.

According to the extents of the dependence of global knowledge and the orientation towards local values and culture, the characteristics of these theories can be roughly plotted as shown in Figure 5. The theories of amoeba and fungus have the least local orientation but stronger global dependence. Comparatively, the theories of tree, crystal, and birdcage have the stronger local orientation but weaker global dependence. The theory of DNA may rely between these two groups of theories.

Figure 5: Characteristics of Multiple Theories



Dynamics Between Localization and Globalization in Education

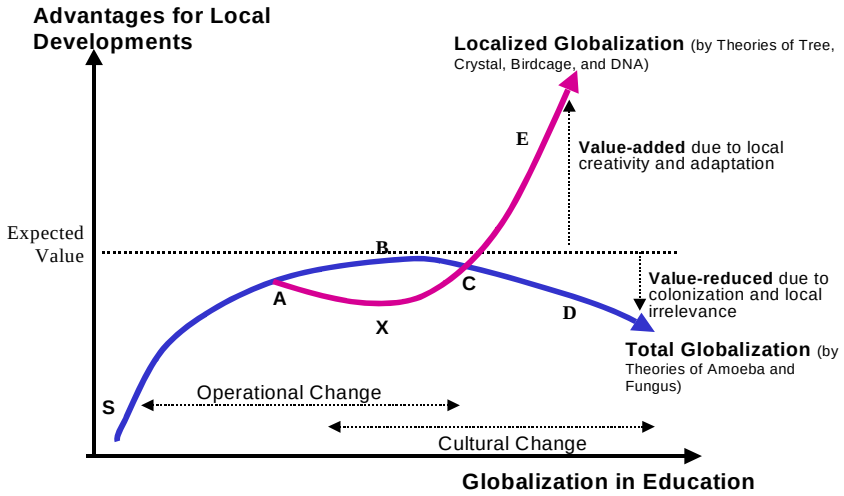
From the above discussion, we can see that fostering local knowledge and wisdom from the global environment is in fact a process of *localization of global knowledge* for local developments. Also the growth of local knowledge and wisdom may contribute back to the pool of global knowledge system and generate impacts on other countries. This becomes a part of *globalization of local knowledge*. It means that there is a dynamic relationship between localization and globalization.

Localized Globalization in Education

The theories of tree, crystal, birdcage and DNA provide different approaches including such as cultural roots, local seeds, ideological boundaries, and replacement of poor local components to localize global knowledge in the process of globalizing education.

The process of localized globalization and its contribution to the local developments can be illustrated as shown in Figure 6. The life cycle of globalization in education is indicated by SABCD or SAXCE.

Figure 6: Localized Globalization in Education



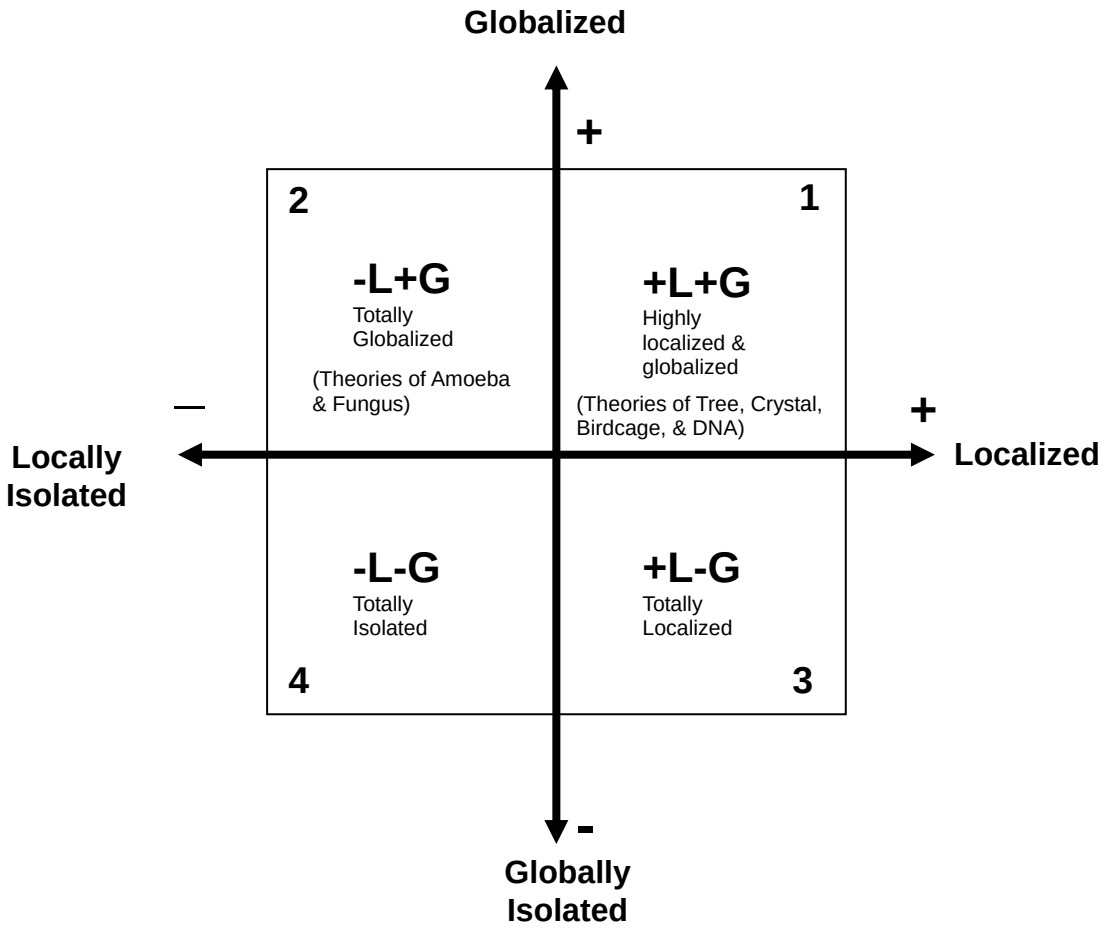
If the theories of amoeba and fungus are adopted in globalization in education, there will be nearly no local orientation or concerns in the process. It means that it will be a *total globalization* as shown in life cycle SABCD. At the beginning (i.e. SAB), the contribution to the local development will be increased quickly particularly due to the operational change or technical change got from the global knowledge input. But after that, the contribution may be gradually decreased from B to CD due to value-reduced from the effect of colonization and irrelevance to the local needs. The local culture will be changed towards submissive colonial culture, losing its local identity and creativity.

In contrast, if the theories of tree, crystal, birdcage, and DNA are employed to localize global knowledge in education, it will be *localized globalization* as shown in life cycle SAXCE. Since there may need time and effort for adaptation due to inducing the local elements (such as values, concerns, and ideas) at the point A in the process of globalization, the contribution to the local developments may be decreased during the period of adaptation from A to X. But after that, the contribution to local developments will be quickly increased from C to E due to the value-added from the local relevance and adaptation. The increased advantages to local developments will be mainly based on the success of both operational change and cultural change towards local self-determination and creativity.

Scenarios of Globalization and Localization in Education

Given the importance of both localization and globalization in education as well as the additional values created from their interaction as discussed above, there may be four scenarios in educational development: Highly Globalized and Localized; Totally Globalized; Totally Localized and Totally Isolated, as shown in Figure 7

Figure 7: Four Scenarios of Globalization and Localization in Education



Scenario 1: Highly Globalized and Localized Education. This is an ideal scenario emphasizing both localization and globalization in education and to a great extent, integrating them through the theories of tree, crystal, birdcage and DNA. This scenario aims at localizing the global knowledge and resources and making them valid and relevant to the local context and also aims at globalizing the educational opportunities and experiences for students and broadening their international outlook.

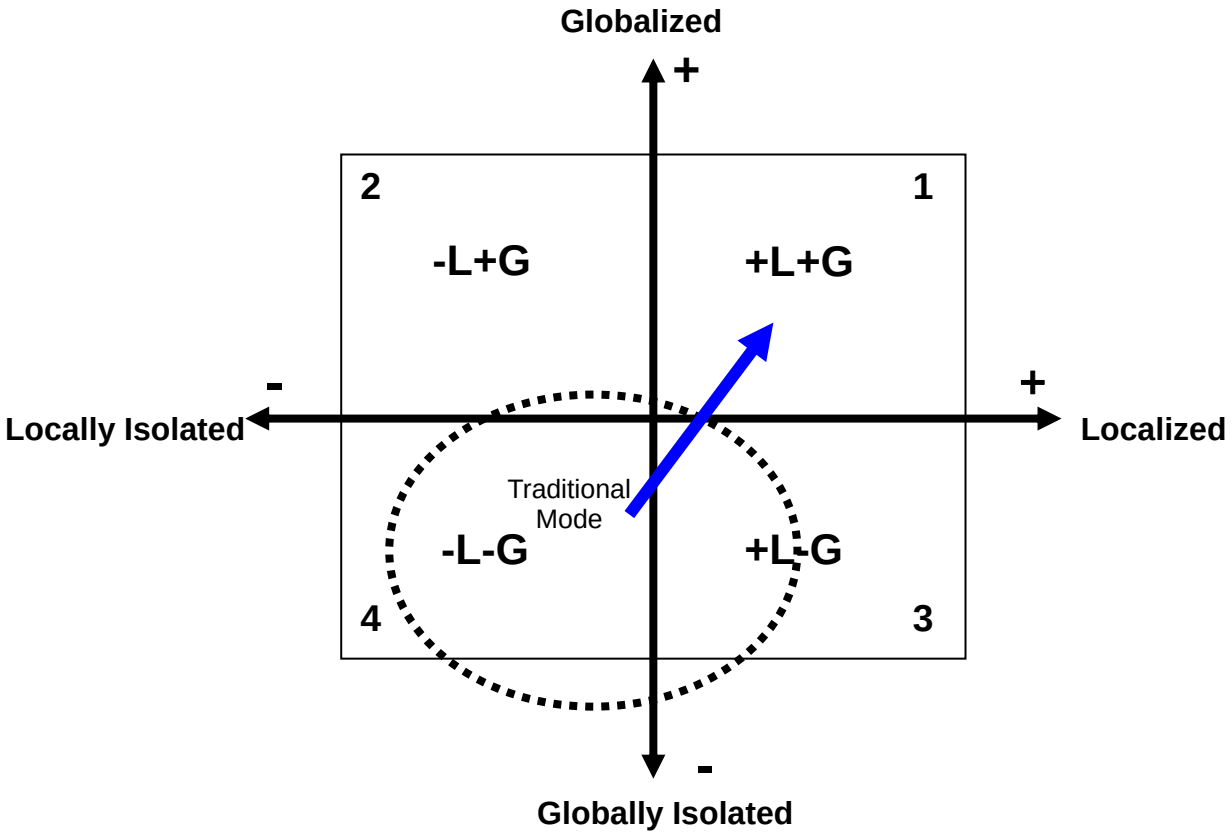
Scenario 2: Totally Globalized Education. This scenario is mainly based on the theories of amoeba and fungus, emphasizing on the global orientation and dependence and ignoring the local orientation and values in designing educational aims, curriculum and instruction. The educational activities are mainly global oriented. In some Asian countries or areas, the international schools established for the elite class often adopt this model.

Scenario 3: Totally Localized Education. This scenario totally ignores the global knowledge and influence but strongly emphasize on local relevance and community involvement in educational design and practice. Existing local values, cultural identity, community experiences and local knowledge are the core part of education.

Scenario 4: Totally Isolated Education. This scenario represents the traditional mode of site-bounded education that is isolated from the local community and the outside world. The educational aims, curriculum content, and pedagogical practice have been maintained unchanged many years and have very little relevance to the daily community experiences, real work life, and changing local developments. There is a big gap between the education provided and the local and global realities.

Traditionally, the major mode of school education is mainly in scenario 4 and partly in scenario 3. The developments of individuals and the local community are often suffering from this traditional mode of education in facing the serious challenges in a new era of globalization and transformation (Cheng, 2000). The current educational reforms in different parts of the world are making efforts to shift education from scenarios 3 and 4 towards scenario 1, highly globalized and localized education, as shown in Figure 8.

Figure 8: Reform towards Scenario 1- Highly Globalized and Localized Education



Fostering Individual Knowledge as Local Knowledge in Globalized Education

From the above multiple theories of fostering local knowledge and wisdom and the relationship between localization and globalization in education, we can discuss further how to foster local knowledge and wisdom at the individual level and the school organization level with localization and globalization in education and the support of information technology and various types of international and local networking.

Mok and Cheng (2001) has proposed a theory of self-learning in a networked human and technology environment. We can use this theory to illustrate how local knowledge and wisdom are fostered at the individual level in the process of localizing and globalizing education.

Based on the concepts of action learning (Yuen & Cheng, 1997, 2000; Argyris & Schön, 1974; Argyris, Putnam, & Smith, 1985), Mok and Cheng (2001) conceptualised the process of self-learning as a cyclic process in a networked human and IT environment as shown in Figure 9. It subdivides a learning episode into a sequence of three components such as mental condition (mind-set), action, and outcome, linked by four processes including planning, monitoring, feedback to mental condition and feedback to action. There are two types of feedback from the monitoring process and outcomes to the learner: One to the mind-set and the other one directly to action. The feedback to mind-set will help the learner to reflect on and change his/her own mental models including meta-cognition, thinking methods, meta-volition, and knowledge and then to change the planning process as well as the action of learning. The learning associated with change in mental-set or mental models is often referred as ***the second order learning or double-loop learning***.

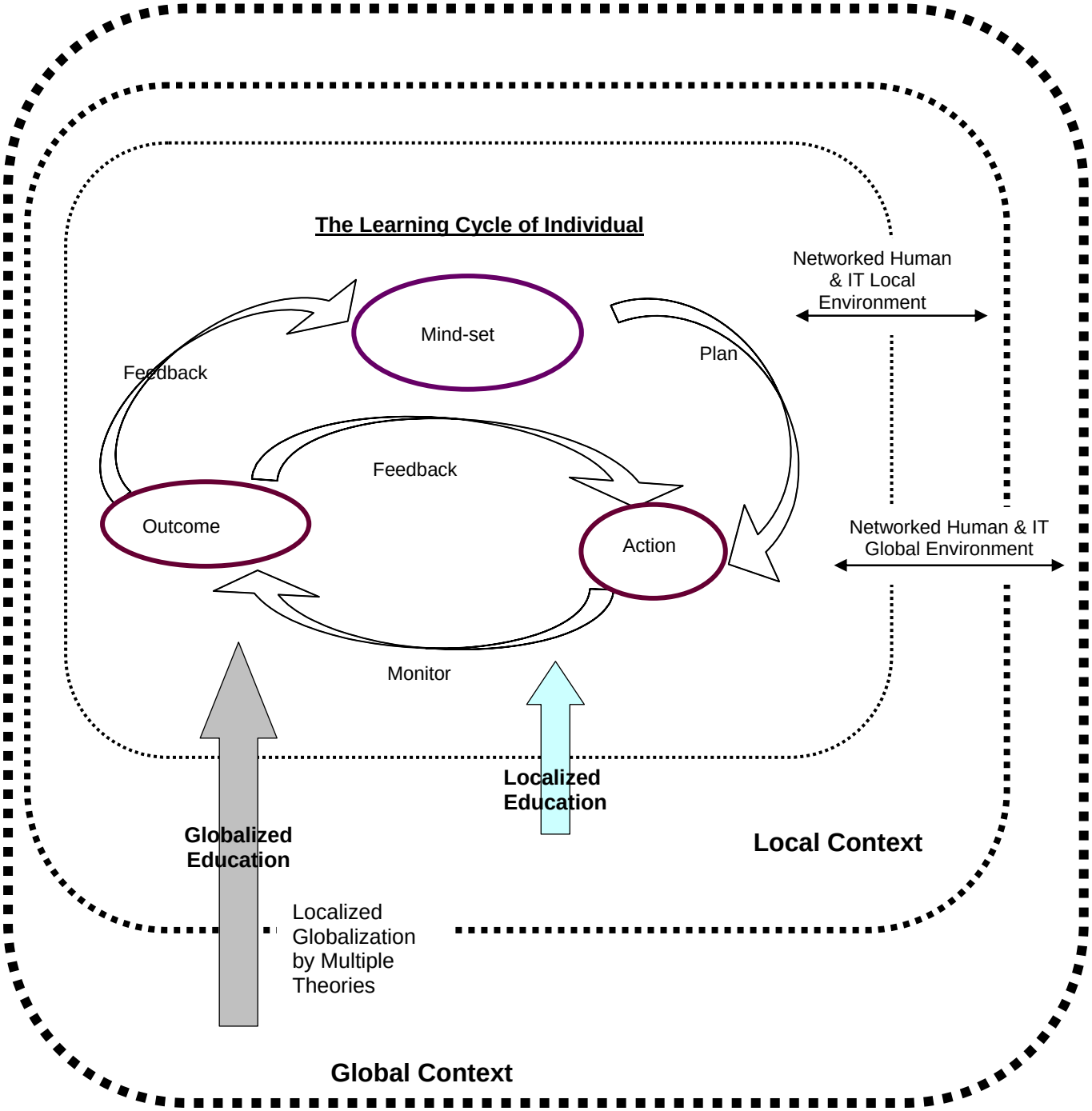
The feedback directly to action of learning will help the learner to adapt his/her learning behaviors. The learning associated with change in behaviors or actions is often referred to as ***the first order of learning or the single loop learning***. Since this type of learning has not changed the mental conditions of the learner, it may not produce long lasting learning effects at a higher level.

As illustrated in Figure 9, education can be globalized and localized with the multiple theories and the support of networked human and IT environment in both local and global contexts. With different theories of fostering local knowledge in globalized education, the expected educational outcomes, curriculum designs and even pedagogical methods are different (see Table 2). But no matter what theories to be used in globalized education, the fostering of local knowledge and wisdom at the individual level should happen in the first order learning and the second order learning. In the first order learning, students can achieve the types of operational knowledge and skills that are directly relevant and contributive to the local developments. In the second order learning, students can achieve the types of high-level knowledge such as wisdom, meta-cognition, values and beliefs that are crucial and necessary to the long-term developments of the local community.

Since the knowledge achieved has been gone through individual students' effort, action, self-reflection and self-construction in the first order learning and second order learning, they are not only local knowledge but also *individual knowledge* including new elements and individual discovery and contribution to the pool of local knowledge and global knowledge. Therefore, the fostering local knowledge should not be a static concept but a dynamic

concept including the *growth and contribution of individual knowledge*. The increase in individual knowledge will result in the growth of local knowledge for both short-term and long-term local developments.

Figure 9: Growth of Individual Knowledge as Local Knowledge in Globalized and Localized Education



Fostering Institutional Knowledge as Local Knowledge in Globalized Education

There is a strong reform movement in different parts of the world to promote schools as learning organizations or communities such that they can learn to be adaptive and effective in facing up the various challenges from the fast changing educational environment in this new era of globalization and transformation. The school reform towards school-based management is one important worldwide initiative to promote school self-initiative and autonomy for enhancing effectiveness and educational quality at the site-level. Based on the idea of strategic management (Cheng, 1996), school-based management can be organized as a self-management process at the three levels includes five stages, namely environmental analysis, planning and structuring (affiliating), staffing (developing) and directing, implementation, and monitoring and evaluating (Cheung & Cheng, 1996), as shown in Figure 10.

To a great extent, this self-management process is also a self-learning cycle for continuous learning and self-improvement of a school in a context of globalization and localization in education (Cheng, 1996). Similar to the growth of individual knowledge in globalized education, the local knowledge can be fostered at the school organization level during the self-management process or self-learning cycle. The fostering of local knowledge at the school organizational level can also be considered as the *growth of institutional knowledge* because this knowledge is generated, accumulated and owned by the school institutions through the institutional thinking, planning, action, experience, evaluation, and reflection.

There are three levels of fostering local knowledge in school organization during the multi-level self-management process: the individual member level, group level and organizational level. It means that individual members, groups, and the whole school can learn and accumulate knowledge from their daily action and interaction with the local and global environments as institutional knowledge or local knowledge in globalized education. Of course this accumulated and validated institutional knowledge can be disseminated and shared with other institutions and the local community through various types of networks and channels for improving educational practices and enhancing local developments of the community.

As discussed above, the organizational learning and institutional knowledge fostering are in a context of globalization and localization in education. The process of organizational learning and knowledge fostering can benefit from the global knowledge and be affected by the theories of fostering local knowledge used to localize global knowledge (see Table 2). Based on different theories used to foster local knowledge, the characteristics of organizational learning, knowledge fostering and expected organizational performance may be different, as summarized in Table 3.

Figure 10: Growth of Institutional Knowledge as Local Knowledge in Self Management Cycle at Individual, Group and School Levels

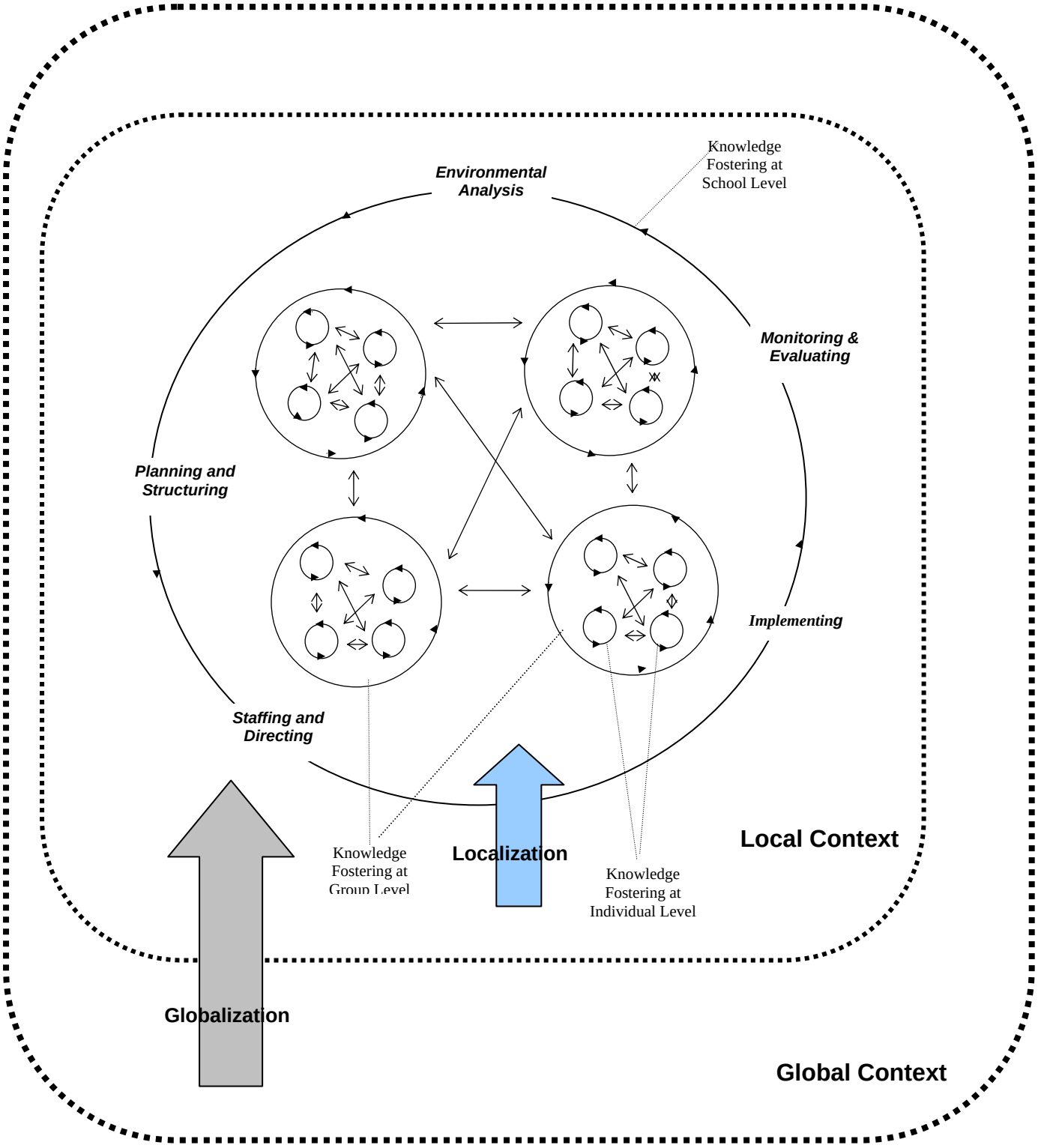


Table 3: Fostering Institutional Knowledge in Globalized Education and Multiple Theories

Multiple Theories	Characteristics of Organizational Learning and Knowledge Fostering	Expected Organizational Performance
Theory of Tree	The process has its roots in local values and traditions but absorb external useful and relevant resources to grow outwards; Fostering institutional knowledge in globalized education needs local and cultural roots	A local organization with international outlook; Act locally and develop globally;
Theory of Crystal	The key of the process is to have local or organizational concerns to crystallize and accumulate the global knowledge along a given local value; Fostering institutional knowledge is to accumulate global knowledge around certain local concerns and needs	A local organization remains local with some global knowledge; Act locally and think locally with increasing global techniques
Theory of Birdcage	The process is open for incoming global knowledge and resources but limiting the organizational developments and related interactions with the outside world to a fixed framework; Fostering institutional knowledge in globalized education needs a local framework for protection and filtering	A local organization with bounded global outlook; Act locally with filtered global knowledge
Theory of DNA	The process identifies and transplants the better key elements from the global knowledge to replace the existing weaker organizational components in the development; Fostering institutional knowledge is to replace the invalid local and institutional knowledge with the vital global knowledge	An organization with locally and globally mixed elements; Act and think with mixed local and global knowledge
Theory of Fungus	The process is to digest certain types of global knowledge for nutrition of organizational developments; Fostering institutional knowledge is to digest some global knowledge and convert it as local nutriment for organizational development in the local community	An organization equipped of certain types of global knowledge; Act and think dependently of relevant global knowledge
Theory of Amoeba	The process is to make full use of the global knowledge with minimal local constraints; Fostering institutional knowledge is to fully use and accumulate global knowledge in the local context	A flexible and open organization without any local identity; Act and think globally and fluidly

Building Up Networked Learning Communities for Fostering Local Knowledge in Global Environment

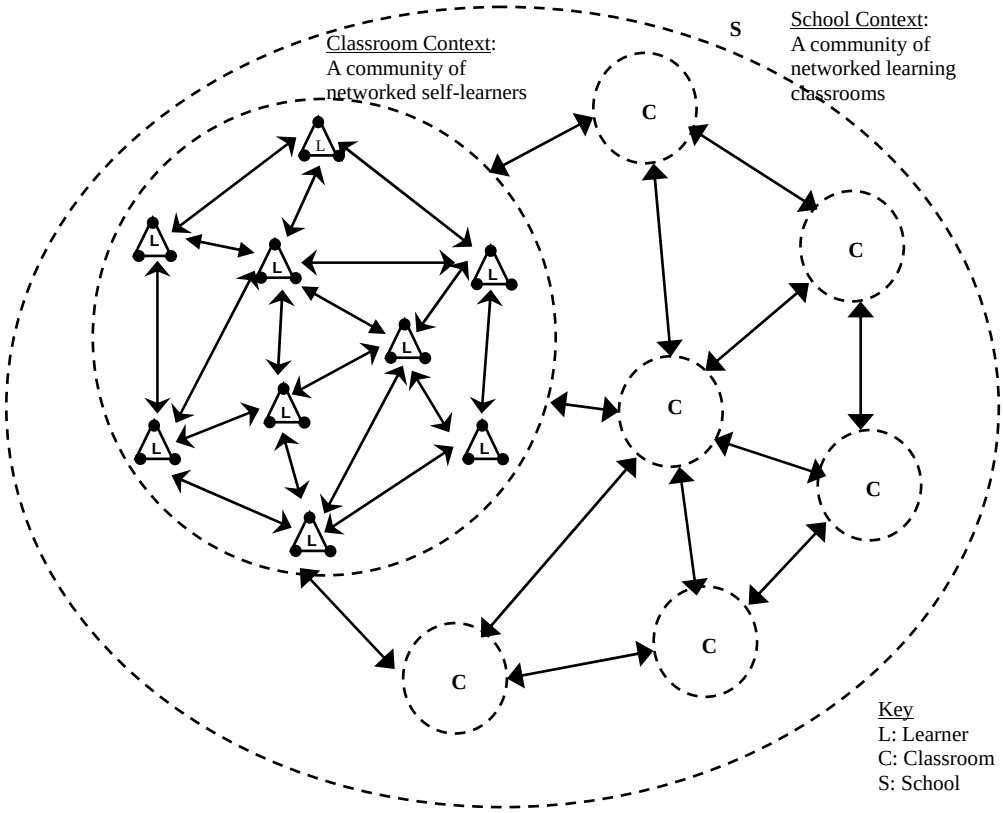
According to Mok and Cheng (2001), building up a networked human and IT environment can facilitate not only individual learning but also development of learning communities and sharing of knowledge and wisdom fostered in the processes of action and globalization. In other words, through this networked environment, the individual knowledge and institutional knowledge earned by individuals and schools in globalized education can be disseminated, shared, further validated, refined, and consolidated to be the local knowledge and wisdom in the local community.

When individual learners, classrooms, schools and communities are local and globally networked with the support of IT, as shown in figures 11 and 12, there may be multiplying effect on the amount of available information as well as human touches and interactions that will become fruitful sources and stimuli to individual learning and organizational learning. The networked individual learners, teachers, parents and other professionals may form a learning system to support various types of learning and fostering individual knowledge, institutional knowledge and local knowledge in the globalized education. Learners, teachers and parents are networked to form a learning classroom; classrooms are networked to form a learning school; schools and the community are networked to form a learning society; learning societies are networked across nations (Mok & Cheng, 2001).

IT speeds up the process of providing social messages and informative feedback to the learners and members in the learning system. This speed, coupled with the massive amount of information available via the informative network, not only means that this will be the information-rich era, but also, it implies that a closely networked social environment needs to be in place for promoting and supporting individual learning and organizational learning in the fasting changing local and global environment. The learning is no longer the acquisition of information of individual learners or individual schools in an isolated context. Instead, effective individual learning and organizational learning occur in such a networked human and IT environment that can facilitate higher level of intelligence and motivation of learners as well as other members in the human network and provide the necessary social networks and interactions, technology and hardware to foster, validate, accumulate, and disseminate the various types of individual knowledge and institutional knowledge and convert them into local knowledge.

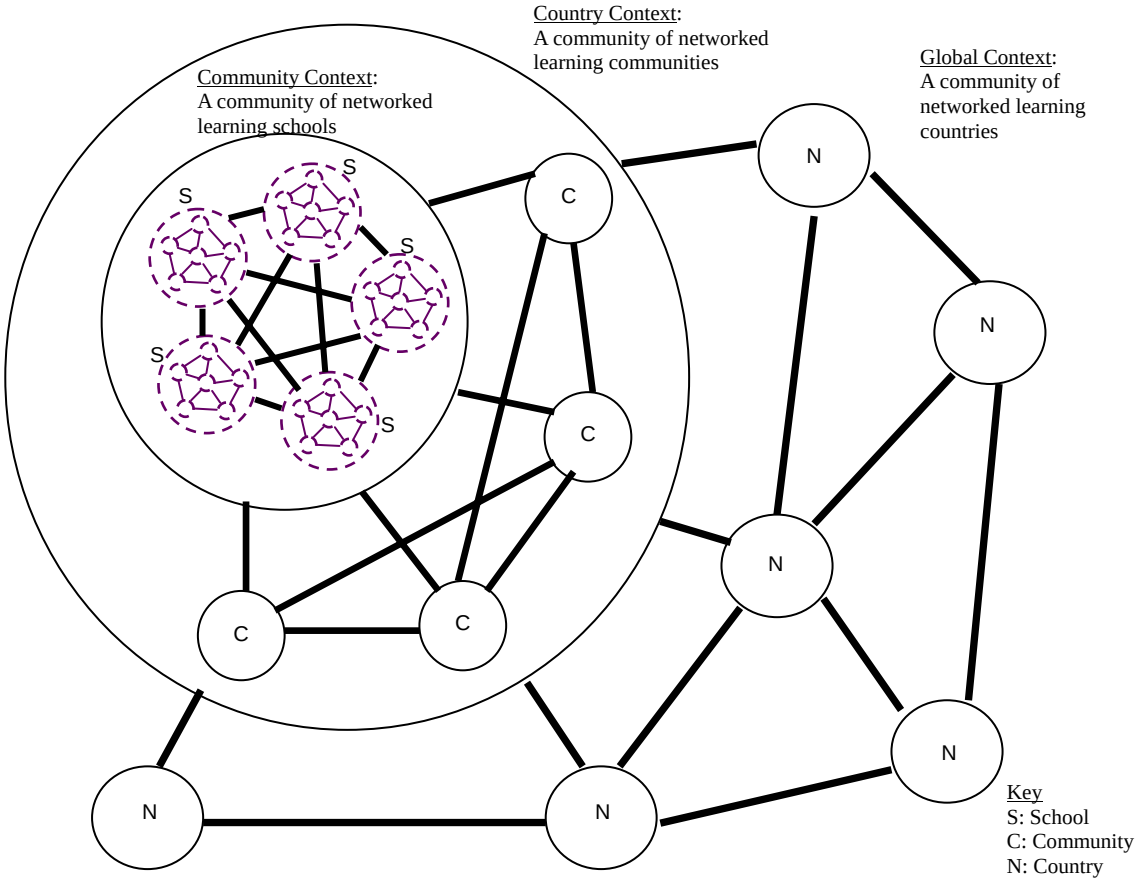
Based on different theories of fostering local knowledge, the design and characteristics of the networked human and IT environment may be conceptual and methodologically different, as shown in Table 4.

Figure 11. Networked School, Learners and Classrooms for Fostering Local Knowledge



From Mok & Cheng (2001)

Figure 11. Networked Schools, Communities and Countries for Fostering Local Knowledge



From Mok & Cheng (2001)

Table 4: Characteristics of Networked Human and IT Environment and Multiple Theories

Multiple Theories	Characteristics of Networked Human and IT Environment
Theory of Tree	The environment is characterized with local values, cultural traditions and assets in the design and content for guiding the search and use of external useful and relevant resources to facilitate individual and institutional learning and serve local developments.
Theory of Crystal	The design of the environment is based on certain ongoing crucial concerns and needs of local community with aims to accumulate the global knowledge for learning and development to address these given concerns and needs;
Theory of Birdcage	The environment is characterized with some ideological and social boundaries or filters in order to protect the learning activities of individuals and school organizations from the negative impacts from the over-globalization even though it is open for incoming global knowledge and resources.
Theory of DNA	The design of environment is mainly to facilitate the process of identifying and transplanting the better key elements from the global environment to replace the existing weaker components in the local developments of individuals and schools;
Theory of Fungus	The environment is designed mainly as a networked platform for digesting and transforming certain types of global knowledge to feed the needs individuals and schools in fostering individual knowledge and institutional knowledge.
Theory of Amoeba	The environment is characterized with the total openness in access of the global environment and related resources and knowledge with minimal local constraints in facilitating individual and institutional learning.

What Local Knowledge to be Fostered in Globalized Education

The above discussion has proposed a typology of multiple theories and related applications on how to foster local knowledge and wisdom in globalization of education. But what local knowledge should be fostered and pursued is still an unanswered question.

According to Cheng (1996), there may be five types of local knowledge and wisdom to be pursued in globalized education, including the economic and technical knowledge, human and social knowledge, political knowledge, cultural knowledge, and educational knowledge for the developments of individuals, school institutions, communities, and the society, as shown in Table 5.

Technical/Economic Knowledge. In planning education, we need the local knowledge about what schools can contribute to the technical or economic developments and needs at different levels in a local context. We can expect, schools can help students to acquire knowledge and skills necessary to survive and compete in a competitive economy, and provide staff job training and opportunity. Schools are service organizations providing quality service; also they serve as a life place or work place for staff and all those concerned. Also, schools serve the economic or instrumental needs of the local community, supply quality labor forces to the economic system, modify or shape economic behaviors of students, and contribute to the development and stability of the manpower structure of the economy (Cheng, Ng, & Mok, 2002).

Table 5: Local Knowledge of Local Developments in Globalized Education

Local Developments	Technical/ Economic Knowledge	Human/ Social Knowledge	Political Knowledge	Cultural Knowledge	Educational Knowledge
Individual Developments	• Knowledge & skills training • Career training • Job for staff	• Psychological developments • Social developments • Potential developments	• Development of civic attitudes and skills	• Acculturation • Socialization with values, norms, & beliefs	• Learning how to learn & develop • Learning how to teach & help • Professional development
Institutional Developments	• As a life place • As a work place • As a service organization	• As a social entity/system • As a human relationship	• As a place for political socialization • As a political coalition • As a place for political discourse or criticism	• As a center for cultural transmission & reproduction • As a place for cultural re-vitalization & integration	• As a place for learning & teaching • As a center for disseminating knowledge • As a center for educational changes & developments
Community Developments	• Serving the economic or instrumental needs of the community	• Serving the social needs of the community	• Serving the political needs of the community	• Serving the cultural needs of the community	• Serving the educational needs of the community
Society Developments	• Provision of quality labor forces • Modification of economic behavior • Contribution to the manpower structure	• Social integration • Social mobility/ social class perpetuation • Social equality • Selection & allocation of human resources • Social development & change	• Political legitimization • Political structure maintenance & continuity • Democracy promotion • Facilitating political development s & reforms	• Cultural integration & continuity • Cultural reproduction • Production of cultural capital • Cultural revitalization	• Development of the education professions • Development of education structures • Dissemination of knowledge & information • Learning society

adapted from Cheng (1996a).

Human/Social Knowledge. We need the local knowledge about the contribution of schools to human developments and social relationships at different levels of the society. Schools can be expected to help students to develop themselves psychologically, socially, and physically, and help them develop their potential as fully as possible. A school is a social entity or social system composed of different human relationships. Also schools serve the social functions of the local community, support social integration of multiple and diverse constituencies of society, facilitate social mobility within the existing class structure, select and allocate competent people to appropriate roles and positions, and contribute to social change and development in the long run (Cheng, 1995). It is possible that schools reproduce the existing social class structure and perpetuate social inequality (Blackledge & Hunt, 1985).

Political Knowledge. The local knowledge about the contribution of schools to the political developments in the local contexts is also necessary in planning educational development in the new century. Schools are expected to help students to develop positive civic attitudes and skills to exercise the rights and responsibilities of citizenship. Schools act as a place for systematically socializing students into a set of political norms, values and beliefs, or for critically discussing and reflecting on the existing political events. Schools play an important role to serve the political needs of the local community and the society, legitimize the authority of the existing government, maintain the stability of political structure, promote awareness and movement of democracy, and facilitate the planned political developments and changes.

Cultural Knowledge. The educational development needs the local knowledge of the contribution of schools to the cultural transmission and development in the local contexts. Schools are expected to help students to develop their creativity and aesthetic awareness and to be socialized with the successful norms, values, and beliefs of society. Schools act as a place for systematic cultural transmission to and reproduction of the next generation, cultural integration among the multiple and diverse constituencies, and cultural re-vitalization from the outdated poor traditions. Also schools often serve as a cultural unit carrying the explicit norms and expectations of the local community, transmit all the important values and artifacts of the society to students, integrate the diverse sub-cultures from different background, and revitalize the strengths of the existing culture. But it is also possible that schools reproduce and perpetuate cultural inequality within the society.

Education Knowledge. The local knowledge about the contribution of schools to the development and maintenance of education in the local contexts is necessary for school reform in a new era of transformation. Due to the rapid development and change in nearly every aspect of the world, people begin to accept education in itself as an important value or goal (Chapman, 1996). Schools are expected to help students to learn how to learn and help teachers to learn how to teach. Also, facilitating teachers' professional development is one of the key education functions. Schools serve as a place for systematic learning, teaching, and disseminating knowledge, and as a center for systematically experimenting and implementing educational changes and developments (Cousins, 1996). Schools provide service for different educational needs of the local community, facilitate developments of education professions and

education structures, disseminate knowledge and information to the next generation, and contribute to the formation of a learning society.

Interdisciplinary Knowledge. To different academic disciplines, the emphasis on types and levels of local knowledge on education may be different too. For example, local knowledge at the individual level may receive more attention in educational psychology. For sociology of education, local knowledge at the society level, particularly those related to social mobility, equality and class stratification, may attract more concern. Obviously, economics of education often focuses on the economic knowledge at different levels. In the field of school management or organizational behavior, local knowledge at the institutional level is inevitably the major topic. Obviously different academic disciplines have different foci when they are used to pursue local knowledge and wisdom. In order to achieve a comprehensive local knowledge base for understanding education in localization and globalization, an interdisciplinary approach, if not multiple disciplines, should be encouraged to develop knowledge. Particularly it would be very interesting to know how the multiple theories of fostering local knowledge can be applied to understand these five types of knowledge for the developments of individuals, institutions, communities and the society.

Conclusion

In facing up the challenges of globalization, there is a great demand for paradigm shift from the traditional paradigm of site-bounded education towards the new paradigm of triplization including globalization, localization and individualization in education with the support of information technology and various types of local and global networking. This keynote speech has further expanded this new paradigm with focus on fostering local knowledge and wisdom for the developments of individuals and the local community through integration of localization and globalization in education.

Given the increasing international concerns with both the positive and negative impacts of globalization on indigenous and national developments, how to manage the realities and practices of globalization and localization in education for maximizing the benefits and minimizing the disadvantages for the developments of individuals and local community inevitably becomes a key concern in educational development particularly in the developing countries. After clarifying the related concepts of local knowledge and global knowledge in a context of globalization, a typology of multiple theories of fostering local knowledge has been proposed to address this key concern, namely as the theory of tree, theory of crystal, theory of birdcage, theory of DNA, theory of fungus, and theory of amoeba.

These theories have varied emphasis on global dependence and local orientation and therefore they have their own characteristics, strengths, and limitations in conceptualizing and managing the process of fostering local knowledge. Clearly, their implications for design of curriculum and instruction and their expected educational outcomes in globalized education are correspondingly different. The theories of tree, crystal, birdcage, DNA, fungus, and amoeba provide different approaches such as cultural roots for growth, local seeds for crystallization, ideological boundaries for protection and filtering, replacement of poor components, digestion of global

knowledge, and total openness to localize global knowledge in the process of globalizing education.

Each country or local community may have its unique social, economic and cultural contexts and therefore, its tendency to using one theory or a combination of theories from the typology in globalized education may be different from the other. To a great extent, it is difficult to say one better than other even though the theories of tree, birdcage and crystal may be more preferred in some culturally rich countries. For those countries with less cultural assets or local values, the theories of amoeba and fungus may be an appropriate choice for development. However, this typology can provide a wide spectrum of alternatives for policy-makers and educators to conceptualize and formulate their strategies and practices in fostering local knowledge for the local developments.

The relationship between localization and globalization in education is dynamic and interactive. Localized globalization in education can create more values for local developments if local creativity and adaptation can be induced in the process of operational change and cultural change. There may be four scenarios of localization and globalization in education, including “totally isolated”, “totally globalized”, “totally localized” and “both highly localized and globalized”. All these four scenarios represent the efforts pursuing different sets of social and organizational values in education. From a perspective of long-term local and global developments, the scenario with emphasis on integration of both localization and globalization should be a preferable choice.

Based on the multiple theories and related concepts, the keynote speech has further presented how to facilitate individual learning and organizational learning in fast changing local and global environment and how to foster both individual knowledge and institutional knowledge in schools as the major contribution to the growth of local knowledge in globalized education. Furthermore, implications have been drawn for building up a networked human and IT environment to support formulation of learning communities and fostering local knowledge.

There are five types of local knowledge and wisdom to be pursued in globalized education, including the economic and technical knowledge, human and social knowledge, political knowledge, cultural knowledge, and educational knowledge for the developments of individuals, school institutions, communities, and the society. How the multiple theories can be used to foster these types of local knowledge is still a blank area for further research in coming years.

It is hoped that the theories and ideas raised in this keynote speech can benefit the ongoing international efforts for globalization and localization in education for the future of our next generation in the new millennium.

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