

Full Length Research Paper

A shift of higher educational paradigm with scientific development from isolation to integrative/holistic global education in the twenty-first century.

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We moved from the Newtonian physical world of the industrial age to Einstein's relativistic/quantum physical world of the twenty-first century. In the Newtonian science of the industrial age, where space, time, and matter were regarded as separate and non-integrated, our educational methods were based on non-integrated disciplines focused primarily on transmission of fragmented knowledge. However, in the information society of the 21st century, universities and students alike have called out for a whole-person education based integrating different academic disciplines. The integrative holistic education paradigm resembles and parallels the integration of space-time-matter/energy in the universe. The three essential attributes of integrative-holistic education for the interconnected universe of the twenty-first century are: "globalization", the movement from finite-borders to infinite-borderlessness, "humanization", human advancement beyond materialism, and "futurization", an emphasis on future-eternal values rather than immediate results. The direction of the twenty-first century education must transcend mere economic considerations and incorporate deeper dimensions of morality and spirituality for achieving global peace and prosperity in the twenty-first century.

Keywords: Integrative, holistic education, quantum physics, globalization, humanization, futurization

INTRODUCTION

We are now living in an unprecedented age. Never before has the world seemingly been so accessible to all of us. Yet, around the world we see poverty, terrorism, war, revolution, despair, destruction, and environmental challenges. The twenty-first century university stands in dire need of a paradigm shift, calling for a revolutionary and fresh approach. We have to prepare our young students to live and work in an increasingly complex and challenging dynamic global world.

The university is faced with "supercomplexity" (Barnett, 1999), in which our very frames of understanding, action and self-identity are all continually challenged. Indeed, the university has to live with uncertainty in this chaotic world.

"Higher education itself is confronted therefore with formidable challenges and must proceed to the most radical change and renewal it has ever been required to undertake, so that our society, which is currently undergoing a profound crisis of values, can transcend

mere economic considerations and incorporate deeper dimensions of morality and spirituality (UNESCO Reforming Higher Education 2009)."

In the State of the Union Address on January 23, 1997, former President Bill Clinton of the USA stated, "I challenge all our schools to teach character education, to teach good values and good citizenship". Michael Davis published an article about what is wrong with character education and, along the way, what is wrong with certain conceptions of character or virtue (Davis, 2003).

The educational paradigm that will be successful in the twenty-first century will be far different from that of the twenty century. Today in many disciplines, factual knowledge taught on the first year of college may become obsolete before graduation. The learning process now needs to be increasingly based on the capacity to find, access, and apply knowledge to problem-solving. In this new paradigm, where to learn, learning to transform information into new knowledge,

and learning to transfer new knowledge into applications is more important than mere information. Primacy should be given to information seeking, analysis, the ability to reason, and problems-solving. In addition, competencies such as learning to work in teams, peer-teaching, creativity, resourcefulness, and the ability to adjust to change are also among the new skills that employers value in the knowledge economy.

The middle of the 1990s was the epoch-making years for entering into the information technology driven global community. The commercial use of the World Wide Web (www) began in 1994. Then GATT (General Agreement on Tariffs and Trade) was changed to the WTO (World Trade Organization), which gave impetus to the global economy. The opening of Handong Global University (HGU) in Pohang, South Korea (www.handong.edu) in 1995 coincides with the opening of the twenty-first century IT-driven global world.

This paper is concerned, first, with the revolutionary change of educational paradigm with scientific development from the industrial era to the knowledge age of the twenty-first century, toward a trans-disciplinary education which integrates rather than isolates the academic disciplines. Second, this paper also discusses how this shift in higher educational paradigm parallels scientific developments, particularly the shift from Newtonian physics to Quantum Mechanics. Third, the three essential attributes of the twenty-first century education: globalization, humanization, and futurization will be presented. Finally, a case study showing actual implementation of an integrative/holistic global education at Handong Global University (HGU) will be described.

A New Era Demands a New Educational Paradigm

Human civilization began with hunting/gathering, progressed to an agrarian economy and later advanced to an industrial economy. We have now entered into the information economy. Each era produces its problems as well as its own benefits, with the problems getting progressively more serious as we march into successive eras (Davis, 2001). As the problems get more complex, so becomes the need for education, carrying progressively higher dimensions of significance. The industrial age was accompanied by pollution and environmental degradation that started out affecting a local, national, and then, the global world of today. A major problem, for example, in this information era is the constant struggle between access to information and infringement of the human right to privacy. Furthermore, the power and distribution of information are so great that a single reported fact or event, whether it is true or not, can cause a major global disruption in international commerce and markets. The validity and source of

information has become critical. In the bio-economy era of the future, the issues are on a greater scale. The very existence of human beings and all living species on the globe depend—on the ethical limitations which are imposed on technological power.

The only way to address and alleviate these problems is through comprehensive higher education for future global leaders addressing not only academic issues but also all human, moral, and social issues with an overall global perspective. A proper global and holistic understanding is necessary to evaluate solutions to modern problems. For example, it is commonly assumed that environmentalism harms national economies because environmental regulations constrain economic activity and create incentives for firms to move production and investment to other countries. However, pro-environmental countries may be better in terms of economic growth, investment and size of their industrial and service sectors (Schofer, 2006). Likewise, environmentalism may lead to greater human satisfaction and ethical fulfillment.

Various paradigm shifts in science have been seen as human civilization progressed. *As people moved into the new century, they moved from the Newtonian physical world of the industrial age to Einstein's relativistic/quantum physical chaotic world of the 21st Century* (Marquardt & Berger, 2000). We are now moving into the biotechnology and green economy age. In the future, we will move into an age of ubiquitous convergence, not only of technology but also of morality, ethics and spirituality.

In the development of the information economy, we have progressed from the data age in the early 1950s to the information age of the 1980s to the knowledge age of the 1990s, and finally to the wisdom age of the twenty-first century. The most important economic development in recent years has been the rise of a new system for creating wealth, based no longer on muscle and machine, but on knowledge. Labor in an advanced economy no longer consists of working on "things," but of people acting on information and information acting on people. In the information age of the present century, the real power of a nation is determined by its knowledge capacity, which is the amount of knowledge that its people possess, i.e., understanding, creativity, ingenuity and wisdom. Knowledge serves as a wealth and force multiplier (Toffler, 2001). The yardstick for measuring the knowledge capability of a nation within an information-based society is the education level of its people, upon which its economic and social development is based. Due to the direct dependence of a nation's power on the education level of its people in contemporary information societies, the importance of education cannot be over emphasized.

Such change in human civilization and science also

required a shift of focus in education. However, the required refocus of education is missing. The pace at which knowledge changes is accelerating and the life cycle for new information and knowledge is getting shorter. As such, education can be based no longer on mere memorization as it was during the twentieth century, but rather on teaching students how to explore the unknown, to challenge the impossible, and to develop the ability to be creative. We must move away from a mechanical education, which attempts to teach students through memorization.

In this complex chaotic world of the twenty-first century, life is not a series of multiple-choice questions (Hersh, 2010). We have to learn to use our critical thinking and analytical reasoning skills to assemble and reconcile seemingly contradictory information to deal with problems that are not easily defined. We must be able to cogently communicate with others as we together solve the problems we share. Higher education must include teaching students how to access data, to judge what is most useful and appropriate, to think critically, and to write cogently and coherently. These higher-order skills are critical to the development of human capital and citizenship in the twenty-first century (Benjamin, 2010). The ability to access, structure, and use information becomes more critical than just accumulating facts. The Organization of Economic Co-Operation and Development (OECD) has embarked on a feasibility study to explore the viability of developing an international "Assessment of Higher Education Learning Outcomes (AHELO)" which would measure learning outcomes in ways that are valid across culture and languages. To measure learning outcomes in terms of generic skills, the OECD AHELO feasibility study has adapted the Collegiate Learning Assessment (CLA), developed by the Council for Aid to Education (CAE : www.cae.org) in the United States, for an international context. OECD has selected Korea, Finland, Mexico, and Norway for the AHELO Feasibility Study (OECD, 2009).

Another challenge facing university education in the twenty-first century is to impart broad knowledge that transcends the barriers of academic disciplines. The problems and challenges in today's world do not occur along the lines of predetermined academic fields. For instance, an issue that arises in a steel mill is not just confined to metallurgical engineering. It can encompass other fields such as mechanical, electrical, and electronic engineering. It can include operations management and eventually involve socio-economic issues. Therefore, a solution to a particular issue may require broad knowledge and know-how from many interrelated technical and non-technical fields. To educate future leaders, today's university education must emphasize interdisciplinary and trans-disciplinary training that networks various academic fields. Interdisciplinary

education provides opportunities for students to major in more than one interrelated field such as economics and business management. On the other hand, trans-disciplinary education allows students to major in unrelated or dissimilar academic fields such as art and science. It is reported that an increasing numbers of faculty in the United States are teaching in interdisciplinary settings, including honors programs, general education programs, women's studies, cultural studies, international studies, and environmental studies (Kinnick, 2004).

Another new challenge facing university education in the twenty-first century is the changing role of professors. Various technical advancements in communication and multi-media have made possible for learners to acquire information and knowledge, at anytime and anywhere, without professors in the physical environment such as classrooms. The role of professor, simply as a conveyor of knowledge only, is diminishing rapidly. Because of rapidly developing knowledge and information technologies, professors must become "the students of the future" who, together with students, pursue answers and solutions (Pulliam, 1995).

The information age, characterized by fast moving technology, rapidly expanding markets and the blurred demarcation between different disciplines as mentioned above, is vividly exemplified by the merging of computation and the Internet. For example, this was recently seen in the emergence of the iPhone from Apple and other similar smart phone products from Microsoft and Google. In the information age, companies having their own core competency in their products and services now find themselves competing and collaborating at unprecedented levels. The competition and collaboration between IT companies, such as Microsoft, Google, HP, and Cisco, have not only expanded to the realm of telecommunication companies wireless, fixed-line and broadband providers, such as Verizon or Comcast and AT&T, but also to entertainment companies, such as Disney, Time Warner and others. The convergence of computation and the Internet has truly fused and disrupted the definition of markets and complicated the distribution and pricing of all services. The new leaders of business and government must be able to grasp the changes brought about by convergence and the ramifications on their decisions about policy and practices.

Given this context, the new education system should be based on focus on the following points. First, the new education system should be based on understanding the most up-to-date knowledge and know-how used today. Second the education system should train students how to directly apply and test their ideas on real-life problems. Third, the education system should help students cultivate skills to view projects comprehensively, based on multi-disciplinary skills, even if they are working on

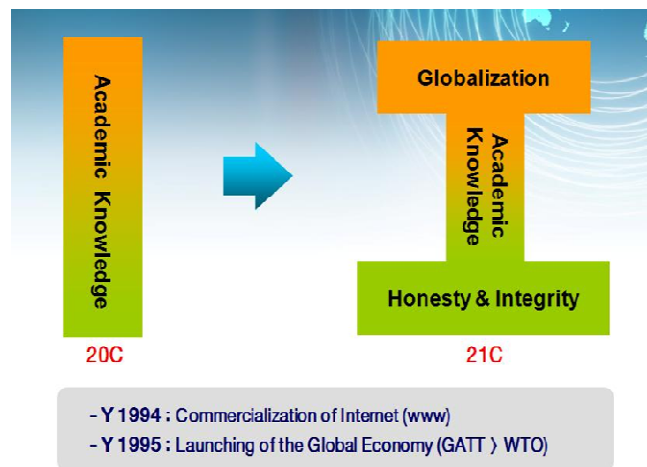


Figure 1. Shift in Educational Paradigm from the 20th to the 21st Century

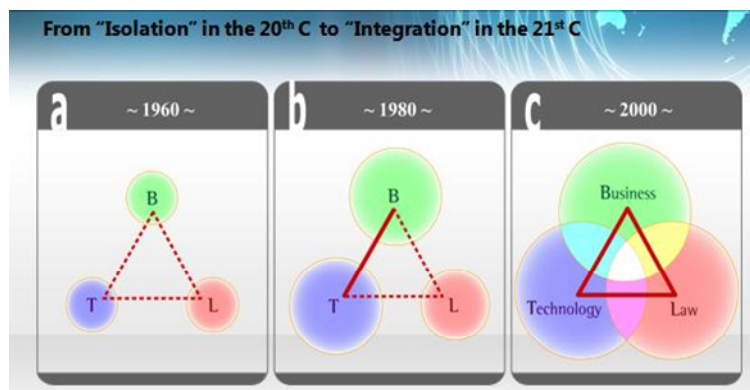


Figure 2. Change of Technology, Business and Law Domains over Time

one specific part of a project. Finally, the new education system will have to focus on helping students understand different perspectives of culture and beliefs. This will help the students understand the possible ethical and moral implications of their solutions and ideas.

From Isolation in the Twentieth Century to Integration in the Twenty-first Century

We now live in a complex, chaotic, and globalized world. Twenty-first century universities stand in dire need of a paradigm shift, calling for a fresh revolutionary approach to education, as shown in Figure 1. The path that modern education must take can be depicted as the Chinese letter signifying “Engineering, 工” shown in Figure 1. The base of the letter 工 structure corresponds to the moral

aspects of education that forms the basis of any education. The vertical column signifies the knowledge content. The upper horizontal bar signifies the globalization aspect of education. The stability of the entire structure depends on the strength of its foundation. Knowledge accumulated without a firm foundation results in the weakening or even the collapse of the entire educational structure, and can harm rather than help society. In the global world of the twenty-first century, the education of the whole person—complete with academic, moral and spiritual development in a global perspective—is becoming more essential than ever.

In the industrial era of the 1960s, technological, business, and legal disciplines were largely separate and unrelated to each other with each domain relatively small, as shown in Figure 2 below. As technology advanced in the 1980s, the domain of technology and that of the

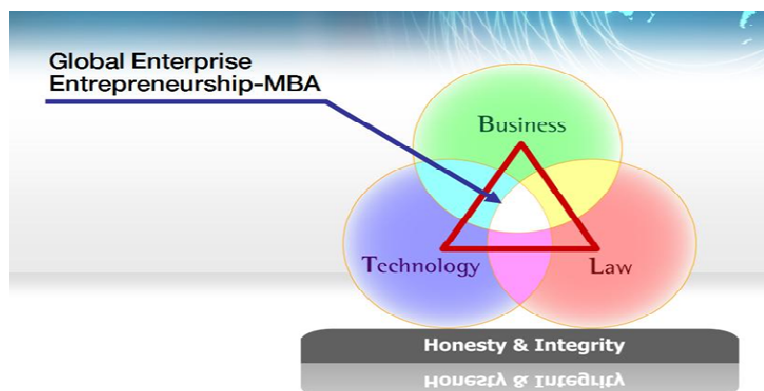


Figure 3. Program that Integrates Knowledge and Character

resulting businesses grew although the intersection between technology and law still remained very limited or intermittent at best, as shown in the Figure 2. In the information and knowledge-driven globalized world of the twenty-first century, however, the domains of technology, business, and law have greatly expanded to the extent that the three elements actually overlap and intersect in most cases, as seen in the Figure 2. Eventually, the three intersecting circles will merge to form a tight crystalline structure, resulting in a ruggedly interlocked and comprehensive knowledge structure that is vital for true global leadership in the new century.

Figure 3 above illustrates an example of the program initiated at Handong Global University (HGU) in Korea called the Global Enterprise Entrepreneurship (GEE)-MBA that offers a combined discipline of the three essential elements that form a tight crystalline built on the foundation of honesty and integrity.

The program integrates information technology, global business, and international law based on character education. Multi-disciplinary knowledge is essential for competent leadership, but true leadership must be based upon honesty and integrity as well. The GEE-MBA program is primarily designed to provide high-level education required for advancement of business in the technology-driven globalized world for senior executives poised to take on significant corporate leadership positions. This program is different from the traditional MBA or executive MBA programs in the sense that such programs concentrate almost exclusively on economic aspects while the integrative program presented in this paper addresses all aspects of business. For those who want to acquire further comprehensive knowledge in cutting-edge technologies as well as international law, this program can be considered a post-MBA program.

A program such as the GEE-MBA targets two different audiences: leaders in advanced countries as well as

future leaders in developing countries. For advanced countries where the overlap of the domains among information technology, global business, and international law is growing, the program should address the multi-disciplinary issues by educating leaders to be adept in all three areas. However, for leaders in developing countries where they are far behind the world stage, the program should also provide the ability to diagnose how they can become competitive in the global market place. The program should address both administration and management of business, and also promote the advancement of global business with a global perspective.

The Shift of the Educational Paradigm from a Newtonian to a Quantum Mechanical World View: From Predictability to Probability

The transition from the macroscopic Newtonian worldview of the twentieth century to the subatomic Einsteinian Relativistic/Quantum Physical worldview of the twenty-first century to the Integrative/ Holistic worldview of the future is shown in Figure 4.

During the age of Newtonian Physics, space, time, and matter of the universe were treated as separate, independent, and absolute entities (Newton, 1687). Space and time used to be considered absolute, universal and independent of the motion of bodies in space. Newtonian physics was considered deterministic and based only on cause-and-effect reasoning.

Although, we are heading into the twenty-first century, our education system still reflects the philosophy of nineteenth-century Newtonian physics. Newton's laws of motions gave us a full description of the behavior of moving objects at low speeds in the macroscopic world, but they are not applicable to the subatomic quantum

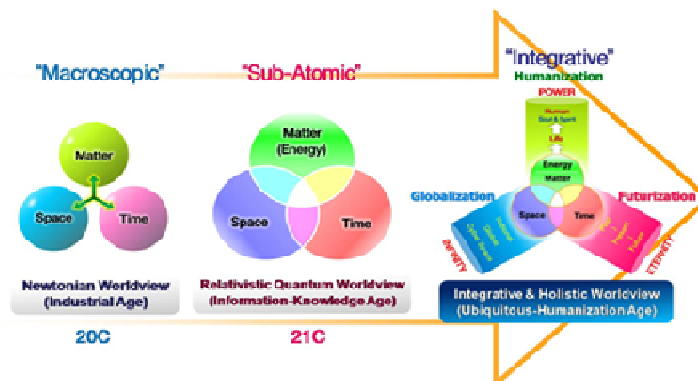


Figure 4. Scientific Development and Educational Paradigm over Time

world. Interestingly, during the industrial age human beings were also defined deterministically as economic units whereby a producer and consumer played only a small specific part in a massive, impersonal, and deterministic system of production.

During the next phase, Einstein's Special Theory of Relativity described the motion of subatomic particles moving at close to the speed of light (Einstein, 1905). In Einstein's sub-atomic relativistic/quantum physical world of the twenty-first century, space, time, and matter/energy of the universe were interconnected, interactive, complementary, and commutable. Until the time of Einstein in 1905, mass and energy were considered to be two separate entities. In the Special Theory of Relativity, Einstein predicted the equivalence between matter and energy. In other words, time and space were merged into one entity "Spacetime," in which space and time were considered together as one unit.

In quantum mechanics, Heisenberg's Uncertainty Principle states that certain pairs of physical properties, like position and momentum, cannot both be known with unlimited precision (Heisenberg, 1927). In quantum physics, one cannot predict physical properties with certainty, and chaos is part and parcel of reality. Uncertainty is part of the nature of the system. That is, the more precisely one property is known, the less precisely the other property can be known.

Every quantum entity has both a wave-like and a particle-like aspect. A microscopic object, such as a photon, an atom or an electron, can appear to behave like a water wave in one instance and a discrete particle in another. Both features complement each other for a complete description of the object. Light behaves as a continuous wave spreading out in space without a

medium. Light also behaves as a particle traveling through space without mass.

Heisenberg's Uncertainty Principle was corroborated by Niels Bohr's Principle of Complementarity (Bohr, 1928). In Bohr's words, the wave and particle pictures are "complementary" to each other; they are mutually exclusive, yet jointly essential for a complete description of quantum events. The Principle of Complementarity is an interpretation of the electron's wave-particle duality. Depending on the experimental arrangement, the behavior of such phenomena as light and electrons are sometimes wavelike and sometimes particle-like; i.e., such things have a wave-particle duality. It is impossible to observe both the wave and particle aspects simultaneously. Together, however, complementarity presents a fuller description than either of the two taken alone.

John Wheeler had stated that "Bohr's Principle of Complementarity is the most revolutionary scientific concept of this century and the heart of his fifty-year search for the full significance of the quantum idea (Wheeler, 1963)."

The duality of the "wave-particle" behavior of light cannot be understood by the exclusive binary logic of 'either-or thinking' based on the two binary digits of 0 and 1. We can think of an electron either as a wave or as a particle, but not both at the same time. We need to think of the wave-particle behavior of light by inclusive "both-and logic" think dualistically. "Binary logic is at the heart of all digital forms of communication. Without binary logic, we would have neither computers nor many of the gifts of modern science. But binary logic can also mislead us when it is adopted as the dominant philosophical orientation for our thinking and acting, especially as a basis of education. It is an example of an either-or



Figure 5. Integrative & Holistic Comprehensive Worldview

thinking that has given us not only the benefits of a computerized world but also a fragmented sense of reality that destroys the wholeness and wonder of life (Schreiner, 2005)."

Niels Bohr stated in 1928 that, "the opposite of a true statement is a false statement, but the opposite of a profound truth can be another profound truth." in the context of the Principle of Complementarity. This quote captures what is essential to thinking of the world together— the concept of paradox. If we want to know what is essential, we must stop thinking of the world as pieces and start thinking of it together as an interrelated whole again.

In other words, this quote defines the concept that is essential to thinking of the world holistically. Holism is viewed as an effort toward synthesis and integration (Miller, 2007). This holistic worldview is concerned with making connections and building relationships, with finding meaning through larger contexts. It forces us to change the way we think and the way we attempt to solve real world problems. Current educational systems seem to focus mostly on the individual only and the goal of financial success. A new construct for systematic change in terms of the taxonomy of intellectual components connected holistically in baccalaureate education in the United States was suggested by Bordogna (1995). Also, an article on "Holistic Engineering" was reported in the *Chronicles Review* (March 16, 2007) in which engineers must at least attempt to understand the human condition with all its complexity to better serve humanity (Grasso and Martinelli, 2007). Holistic education is concerned with a global view that includes the whole self, spiritual as well as physical. We need new ways of seeing the world, a

revolutionary new paradigm for higher education in the twenty-first century.

Three Ingredients for Twenty-first century Education: Globalization, Humanization, and Futurization

Figure 5 depicts three dimensions of the universe – time, space, and matter/energy – and their relationship with integrative/holistic higher education's dimensions – globalization, humanization, futurization. The overlap of space, time, and matter/energy represents the beginning of the universe. Many have attempted to explain what had happened at the very beginning of the universe although it still remains as an unknown. The origin of the universe was attempted to be explained by the "Big Bang Theory" (Hoyle, 1948), which states the universe was created between 13 and 20 billion years ago from the random, cosmic explosion (or expansion) of a very high density primordial atom that hurled space, time, and matter/energy in all directions. Under this view, everything – the whole universe – originated from an initial speck of infinite density which is also known as a "singularity" (Hawking, 1968).

The importance of the integration of education can also be compared to that of Einsteinian sub-atomic relativistic/quantum physical world where space, time, and matter/energy of the universe are interconnected, interactive, complementary, and commutable. In the divergent cosmopolitan worldview, space expands infinitely, time becomes eternal, and the visible physical matter/energy world reaches into an invisible spiritual/metaphysical realm.

Analogously, for this interconnected universe, three essential attributes of the integrative/holistic education needed in the twenty-first century are “globalization,” “humanization,” and “futurization,” which are further explained below.

Globalization: From Finite-Border to Infinite-Borderlessness

The twenty-first century is a time of globalization and the accelerated development of science and technology. Globalization is accelerating and intensifying world integration (Berg, 2007). The twenty-first century is also undergoing “Time-Space Compression” (Havey, 1990), which refers to technologies that seem to accelerate or elide spatial and temporal distances, including technologies of communication, travel, and economic arrangement. The rapidity of time annihilates the barrier of space. Rapid scientific and technological developments have made it possible to make the world a smaller place, and have connected disparate markets together in the creation of a world market with global producers and global consumers.

The world is interconnected by the Internet, and we are now living in a global village of a shrinking world. Globalization is defined as the reality shaped by an increasingly integrated world economy, new information and communication technology (“ICT”), the emergence of an international knowledge network, the role of the English language, and other forces beyond the control of academic institutions (Altbach et al., 2009). Economic globalization entails the closer economic integration of the countries of the world through the increased flow of goods and services, capital, and even labor (Stiglitz, 2007).

The advancement of cutting-edge science and technology has brought about an accelerated globalization. Thomas Friedman (2007) famously announced that, “the world is flat.” The meaning of “flat” is “connected”; the lowering of trade and political barriers and the exponential technical advances of the digital revolution have made it possible for us to do business, or almost anything else, instantaneously with billions of other people across the planet.

Globalization has broadened the concept of space, which was once limited by physical boundaries. The concept of space prior to the twenty-first century was limited by geographical boundaries which imposed boundaries on what one could explore. Although the concept of space evolved from regional to national and from national to global, such expansion was still bound by visual reality.

One of the most significant breakthroughs, which infinitely expanded the realm of space during the twenty-

first century, was the creation of the non-physical space known as “cyberspace” (Gibson, 2004). Cyberspace is not bounded by visual reality, but opened the door to virtual reality. The birth of cyberspace expanded infinitely the concept of space, which was once limited by physical boundaries to become borderless truly.

As scientific and technological developments have broadened infinitely the horizon of the space in which people operate and reside, education too must expand its focus so that students are equipped to operate in both the visual and virtual reality. The key to prosperity in the 21st century hinges on the capability to think in open space with open minds. Through education, minds can be opened to explore and utilize the space which technology has opened.

“Governments are becoming increasingly aware of the important contribution that higher performance, world-class universities make to global competitiveness and economic growth. Tertiary education helps countries build globally competitive economies by developing a skilled, productive, and flexible labor force and by creating, applying, and spreading new ideas and technologies. As countries embark on the task of establishing world-class research institutions, excellent alternative institutions to meet the wide range of education and training needs that the tertiary education system is expected to satisfy (Salmi, 2009).”

Education in the past focused on accumulating knowledge through data and information already discovered in the real world. While such focus may have been sufficient in the past, globalization requires much more. Education should prepare students to face the unknown and equip themselves with the ability to solve problems or challenges. Since virtual reality has no limit and covers territory no one has yet fully explored, education in the twenty-first century should foster the ability to be inquisitive about the unknown and to adapt to the ever changing needs of the global economy. This means that education should not stop at providing the opportunity to accumulate knowledge. It must impart the wisdom to navigate freely between the virtual and visual reality that the globalization phenomenon has integrated.

Humanization: Beyond Materialism into a Full Human Being

Human beings consist of body, soul, and spirit. “We are creatures of both reasoning and emotion, mind and body, matter and spirit (Riley-Taylor, 2004).” Living is an interaction between the physical body and the earthly environment through the five senses to the soul and spirit. Integrative holistic education must encompass all the dimensions of the human being, soul (intelligence, emotion, and will), spirit (wisdom, intuition, and

conscience), and body (interconnected space-time-matter in the interconnected universe). Science is concerned with the physical world alone. The analytical-empirical method of scientific thinking cannot adequately explain the essential qualities of living beings or the purpose and the meaning of life. Thus, science has a limitation: science cannot prove the existence of the soul and spirit. For example, science cannot prove the existence of love, nevertheless love actually exists. In the industrial age, the assets and primary drivers of economic prosperity were machinery and capital, i.e., material resources or things. People were also considered as things that were necessary but replaceable. But in reality, human beings are four-dimensional beings, consisting of a physical body, mental intelligence, a soul and emotional heart and a spirit (Covey, 2004).

The industrial economy required the training of workers who would efficiently perform their assigned tasks; in the information knowledge-based economy, individuals cannot be considered in such a robotic image, but must be treated as whole human beings capable of creativity, imagination, and a lifelong quest for meaning. An education designed to train people only for narrow roles are vastly different from an education whose purpose was to enable individuals to become all they are capable of being.

Thus, true education for human beings is not only conveying and transmitting knowledge but also cultivating the intellectual, moral, and spiritual realm beyond one's physical body. Especially in this high-speed information society of the twenty-first century, whole-person education combining academics with moral and spiritual development is a paramount.

Collaboration between students and faculty is essential to cultivate students' full potential. Baxter (2009) emphasized the importance of the integrated, holistic theoretical foundation for promoting student development in the activity of meaning making.

Education means much more than transmitting knowledge content to students. It also means shaping one's character and life (Dockery, 2007). One of the most significant questions one can ask is the meaning of life. Yet, colleges and universities today fail to address the issue (Bok, 2007). Today, the university tends to focus solely on better knowledge and higher skills. The former Dean of Harvard College, Professor Harry Lewis, said, "We have forgotten that we teach the humanities to help students understand what it means to be human (Lewis, 2007)." Former Dean Anthony T. Kronman at the Yale Law School also said that, "The question of the meaning of life has been largely abandoned by college and university teachers (Kronman, 2008)." Kronman urged a revival of the humanities' lost tradition of studying the meaning of life through the careful but critical reading of great works of literature and philosophical imagination.

Futurization: From Present to Future-Eternal

Education in this new century should be designed to cultivate and prepare students with academics, morality, and spirituality to meet the needs of the present and the future.

"Educators must be future-oriented if they are to prepare students for the world of tomorrow which will surely be vastly different from today. The past, present, and future are always related. The background of historical understanding and the appreciation of issues and conflicts of the past provide the best foundation we can have for predicting trends and preparing for a viable future (Pulliam, 1995)."

"Futurization implies actualizing the future, hence, bringing it into reality. Expressed metaphorically, it means to paint a design on the invisible canvas of the future, and then to actualize the design (Massuda, 1980)."

Continuing on with the education method of the past will not be enough to prepare students for the unpredictable, complex, abstract, and interdisciplinary, global reality. It is an extremely difficult task to accurately predict the outcome of the future and the specific path of educational method that needs to be implemented to prepare for the best outcomes. However, there is no doubt that what we teach and learn and how it is taught and learned must drastically change. Without a doubt, the blueprint that meets the demands of the new age will be far different from the existing ones.

One of the key components of education in this century is futurization. Futurization will empower students, not only to focus on what is necessary for the present, but also to look into the future and think about the cause-and-effect of current steps being taken. Futurization will train students to steer away from making hasty decisions for immediate results that may have a detrimental impact in the future. Future will coexist with present. Any decision or steps that will be taken must benefit both present and future since present and future are inseparable.

"The future is not a result of choices among alternative paths offered by the present, but a place that is created, created first in the mind and will, created next in activity. The future is not some place we are going to, but one we are creating. The paths are not found, but made, and the activity of making them changes both the maker and the destination (John Schaar)."

New Educational Paradigm and its Implementation at HGU

When HGU was planned to open a new university in 1995, there was a total of 159 universities in Korea. I asked myself "Why do we need one more university?" The reason is because when the first graduates of HGU

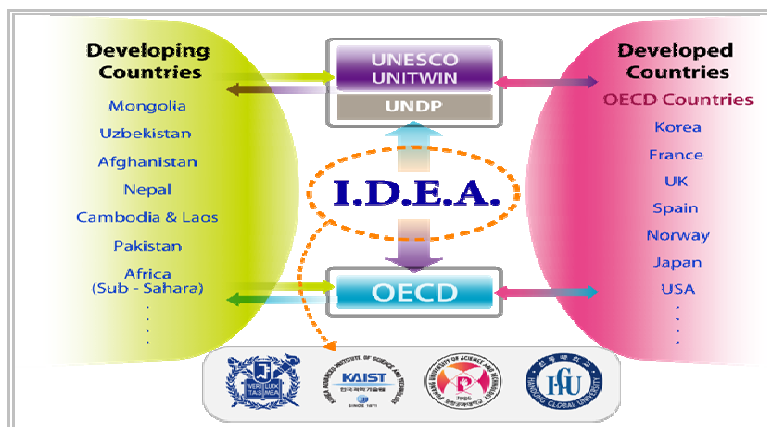


Figure 6. International collaboration between developing and developed countries

go into the world in the twenty-first century, they will face a totally different world, a technology driven global world. So, HGU must educate their students employing a new educational curricula needed in the twenty-first century of global community. Educational paradigm should be shifted from those of industrial economy of the twenty century to knowledge economy of the twenty-first century. Times of threshold change such as the transformation from the industrial era to the knowledge economy of today produce pressure to redesign the institutions we live with to respond to or shape this change

HGU's education has been striving to be student-education focused and market-driven and has been shifting to keep pace with globalization and digitalization of the world. Students are admitted as freshman without declaration of a major field of study, and are allowed to choose their major freely after finding their best talents and potentials later. HGU also requires students to be familiar with any computer platforms. The multidisciplinary knowledge is essential for competent leadership. Everyone is required to take double major in allied field for cultivating problem-solving ability.

Global Educational Initiatives at HGU

Global education has been the main emphasis for HGU since its opening in 1995, and 600+ students from around 60 countries have studied or are studying at HGU. Many of these students are from developing countries and are given full scholarships in spite of HGU's relatively short history. HGU has established extensive networks with universities from developing as well as developed countries. HGU has accumulated valuable experience and built infrastructure that will be indispensable for

reducing the knowledge gap between developing and developed countries through education of students from developing countries as future leaders.

On April 5, 2007, HGU was designated the host university of the UNESCO UNITWIN (University Twinning & Network), which has a good of capacity building for sustainable development in developing countries. The UNITWIN serves as a prime means of building the capacities of higher education and research institutions through the exchange of knowledge and sharing, in a spirit of international solidarity. A UNESCO UNITWIN Network consists of a number of universities in different countries that join forces and collectively sign a joint agreement with UNESCO. Focusing on educating and training global leadership in global business, information technology, and international law, HGU carries out its mission through the higher educational program of the Global Enterprise Entrepreneurship (GEE) MBA Programs, which was detailed previously in Figure 3.

Global Partnership and Network for International Development at HGU

In order to alleviate the knowledge gap between developed and developing countries, HGU is developing international partnerships. The effort includes expansion of the existing UNESCO UNITWIN (University Twinning & Network) network to reach deeper and further into the developing parts of the world in collaboration with international organizations such as UNESCO, UNDP, and OECD as in Figure 6.

As a result of this effort, the UNITWIN network, which started with only three universities from three countries three years ago, has grown to 25 universities from 11

countries spanning three continents in 2009. In addition, regional centers are being created around the world to collaborate within the regions more efficiently.

HGU is strengthening the partnership among developing and developed countries through a consortium of renowned universities in Korea, named the International Development Educational Alliance (I.D.E.A.). This consortium of universities from developed countries is cooperating with developing countries, not only on how to apply technologies and nurture gainful business that will increase capacity for sustainable development in developing countries, but also on how to apply "Green" technologies to meet individual developing country's needs.

Global Green Research Institute (GGRI) at HGU

The global community is threatened by ecological destruction including water and food contamination, climate change due to global warming, and energy crisis. To overcome these challenges, developed countries have—focused their resources on developing green industries and technologies, and made them a new engine of growth. Green development is the way to maximize the synergistic outcome between environment (Green) and Economy (Growth) which have been in conflict with each other. Addressing the challenge of green development should be a global project for the whole world. All nations in the world should work together to protect and maintain the global environment. Therefore, for the development of Green Convergence Technology, the construction of global networks of research institutions is imperative. At HGU, Global Green Research Institute (GGRI) was established and opened on May 7, 2009 with the participation of world renowned technological universities with research institutes for collaborative green clean - technology development. They include Rensselaer Polytechnic Institute (RPI) of the US, Karlsruhe Institute of Technology (KIT) of Germany, and Technion-Israel Institute of Technology (IIT) of Israel for collaborative research and development on low-carbon green-clean energy.

Humanizational Character Education at HGU

From its beginning in 1995, HGU has implemented a system of unsupervised examinations. This system teaches students to be honest with God and themselves, virtues that are essential for those who aspire to become future leaders. Education based on integrity is the very pride of HGU and we are looking for those who are able to share that pride with us. The "Handong Honor Code" is the commitment to live a life representative of HGU

students. It is a culture that HGU students and faculty strive for - to set ourselves apart from this world and to develop Christ-like character. The Handong Honor Code teaches honesty, responsibility, respect, sacrifice and service in our daily lives.

The Purity Pledge Ceremony is a student-initiated movement in which the students pledge to observe the sanctity of marriage. Every semester, many HGU students promise in a ceremony before God and the HGU community to keep themselves pure in spirit, mind, and body.

HGU has a team system that is unique among Korean universities. Each team is a small community of one professor and students. Team members form strong bonds by meeting, learning, serving, and playing together for one year. Because students are assigned to different teams at the start of each year, students will participate on several teams during their time at HGU. These experiences teach them how to share their dreams and visions, foster a team-spirit, develop leadership skills, and learn the value of working together to meet community needs. The team system also provides special opportunities to grow relationships with professors outside the classroom. Team professors are available to advise students as they chart their future dreams and provide support as students face the growing challenges of young adulthood.

Dormitory life is an important part of the whole-person education at HGU. While learning to live as roommates, students develop a greater understanding, respect and appreciation of people from a variety of backgrounds. In addition, dormitory life helps students to become independent, responsible, and mature individuals that also consider others as they live together as part of a community. Currently, there are ten dormitories on the campus that accommodate roughly 80% of the student population. The International House (I-House) is a dormitory option for students who desire to live in a more international environment while at HGU. Every dormitory has internet access, lounges, laundry facilities and prayer rooms. Some dorms also provide study rooms and a gym.

Futurizational Spiritual Education at HGU

Education is designed to prepare students for life. The HGU prepares students not only for this life but also for life hereafter. As a Christian university, HGU educates students for eternity and for their life here as well. Spiritual training is essential to fulfill HGU's vision for producing world-changing global leaders. HGU hopes to transform the world by teaching the Biblical comprehensive worldview and strengthening faith through various spiritual training opportunities. Scripture is the foundation of life and learning at HGU. Campus life

is built upon Biblical values and the spiritual atmosphere of the university is vibrant. For spiritual training, reinforcement, and nourishment, many spiritual programs and Bible-based courses such as Biblical worldview, character building, and creation versus evolution science are offered. With this training, HGU students actively engage in discussions about their faith and knowledge both inside and outside the campus. In addition, various Bible-study groups led by faculty and students, and outreach programs are available for students' spiritual growth. Handong International Church (HIC) on campus serves a multi-ethnic congregation comprised of HGU students, faculty, and staff as well as local residents. HIC has Sunday worship services in English and various ministry opportunities throughout the year.

Conclusion

Today the university tends to focus solely on deeper knowledge and higher skills. Universities have forgotten to teach the humanities to help students understand what it means to be human (Lewis, 2007). Former Dean of Yale Law School said, "The question of the meaning of life has been largely abandoned by college and university teachers (Kronman, 2008)." He urged a revival of the humanities' lost tradition of studying the meaning of life through the careful but critical reading of great works of literature and philosophical imagination.

The late Pope John Paul II urged universities to "stress the priority of the ethical over technical" and "the primacy of persons over things. Science and technology cannot solve all our problems. Clearly a technical society needs the broad understanding and wisdom of the liberal arts. The liberal arts education also facilitates understanding and effective communication across generations and cultures while providing a common body of knowledge that remains open-ended. This body of knowledge broadens horizons and deepens our understanding. The liberal arts are excellent preparation for professional studies or careers because they educate the person, providing transferable skills and knowledge of disciplines on which professions and businesses are built.

"At no time in history has it been more important to invest in higher education as a major force in building an inclusive and diverse knowledge society and to advance research, innovation and creativity." This final communiqué was adopted at the end of the UNESCO 2009 World Conference on Higher Education which gathered over one thousand participants from around 150 countries at UNESCO Headquarters in Paris, July 5-8, 2009 (UNESCO 2009 WCHE).

We now live in an interconnected, complex, dynamic, and global world. Twenty-first century universities stand in dire need of a paradigm shift, calling for a fresh

revolutionary approach to education commensurate with the world's new paradigm. In order to deal with the various global issues of today, universities and students are demanding paradigmatic, radical changes as opposed to gradual changes. Universities must implement changes geared toward meeting the needs of its students and society.

Educators have both the role and mandate to equip and prepare future leaders of the world, and in order for them to fulfill that role, they must not only be on the cutting edge of the most up-to-date knowledge but also be willing to experiment and gain new knowledge by practicing new methodologies. This is true for educators more so than for any other profession. Educators must continually examine the past, assess the present, and embrace the future. If we, as educators, are indeed to fulfill our mandate, we must not only raise and influence future leaders, but also ensure the quality of life for future generations.

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