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Advancing 21st Century Competencies in Taiwan

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INTRODUCTION

The nine-year curriculum and twelve-year curriculum are two of the major education innovations in the past 20 years in Taiwan. In response to local needs and in preparation for future challenges in the new century, the MOE revamped the *Curriculum Standards* for compulsory education and then designed the *Nine-year Curriculum Guidelines* at the turn of the new century. Around the same time, the Ministry of Education (MOE) started planning the Twelve-year Compulsory Education reform, which extends compulsory education from nine years to twelve years for addressing issues of equality and justice. After more than a decade of planning and preparation, the Twelve-year Basic Education program was officially implemented in September 2014, and the General Curriculum Guidelines for the Twelve-year Basic Education were promulgated in December 2014 and will be put into practice from grades 1 through 12 in 2018.

The driving forces, including demands from Taiwanese civic society for localization and deregulation and increasing pressures of globalization and international competition, shaped the two curricula. For localization, knowing the self and developing potential are the first goals of the nine-year curriculum, and they thus suggest the importance of local knowledge of Taiwan. For deregulation, the nine-year curriculum is structured by guidelines and indicators as guiding principles, rather than as absolute standards, for school curriculum development and classroom teaching. Such guidelines allowed flexibility and autonomy for schools to develop school-based curriculum according to their local needs. In addition, the nine-year curriculum joined the global wave of competency-based curriculum development and identified "fundamental competencies" as core knowledge and skills that every Taiwanese student should develop for modern life in the new century. Based on the "fundamental competencies" in the nine-year curriculum and "core competencies" in the General Curriculum Guidelines for Senior High School and still in line with international competency development, the twelve-year curriculum offered a competency framework with nine "core competencies" integrating indicators of all grade levels and learning areas.

The nine-year curriculum reform changed various aspects of education, such as the role of schools, teachers, and the community, and modes of teaching and learning. There were issues and challenges with its implementation; nevertheless, it served as a basis for the planning and implementation of the twelve-year curriculum reform that followed. The twelve-year curriculum retains the spirit of the nine-year curriculum and maintains the form of guidelines and competency orientation. Because the twelve-year curriculum guidelines were just announced in 2014 and will be implemented in 2018, discussions about practices and issues in this report mainly center on the nine-year curriculum.

The nine-year curriculum signaled a paradigm shift in Taiwan's curriculum reform. It moved from knowledge to competency orientation, integrated subject matters and prominent issues into learning areas, changed from standards to guidelines, added new courses that responded to localization and internationalization impulses, and modified the senior high school entrance examination. These changes aimed to allow schools and teachers professional autonomy in school-based curriculum development in order to build students' fundamental competencies in various categories for modern society in the 21st century. Despite these curricular changes and innovations, the synthesis of issues and challenges in the following section shows that standardized tests, namely the senior high school entrance examination, still played a predominant role in shaping curricular and instructional practices into knowledge-based test preparation.

THE COMPETENCY FRAMEWORKS

In the late 1990s while the revised curriculum standards as part of the reform initiatives for the new century were just being implemented, the MOE was also planning to revamp the curriculum standards in order to better meet local needs (localization) and global challenges in the new century. The newly reformed curriculum, namely the nine-year curriculum, was then enacted in 1998, underwent trial implementation in 2000, and officially was implemented during 2001–2002. In the 21st century, with drastic changes in technology, the economy, and society as a whole, the MOE launched the most recent curriculum reform in 2011, the Twelve-year Compulsory Education reform (MOE, 2011a). The modification integrated elementary and secondary education into the twelve-year curriculum.

Based on the philosophy of holistic education, both curricula center on the student as the learner who starts to learn and explore the self, and then make connections to his or her surroundings, including the social and natural worlds. The nine-year curriculum stressed five values: humanistic attitudes, integrative capacities, democratic literacy, local and global awareness, and capacities for lifelong learning. Ten years later, the twelve-year curriculum focused on three values: spontaneity, interaction, and common good. The values are listed in Table 1.

Table 1: The Values in the Nine-year and Twelve-year Curriculum

The Nine-year Curriculum (MOE, 2000)	The Twelve-year Curriculum (MOE, 2014b)
1. **Humanistic attitudes** for self-understanding and respecting others and different cultures; 2. **Integrative capacities** for harmonizing sense with sensibility, connecting theory and practice, and integrating humanism into technology; 3. **Democratic literacy** for self-expression, independent thinking, social communication, tolerance for different opinions, teamwork, social service, and respect for the law; 4. **Local and global awareness** for love for one's homeland, patriotism, and a global perspective (both culturally and ecologically); 5. **Capacities for lifelong learning** through active inquiry, problem-solving, and the utilization of information and languages.	**1. Spontaneity** **2. Interaction** **3. Common good** Students are regarded as self-directed learners and therefore the school should (1) ignite their motivation and passion; (2) guide them to develop interactions with self, others, society, and nature; (3) help them apply learning in practice, experience the meaning of life, develop commitment to a sustained development of society, nature, and culture; and (4) obtain common good.

In spite of different historical contexts, both curricula envision the 21st century as a lifelong learning era in which students should be competent to deal with dramatic changes and challenges from all aspects of the modern world. To prepare students to be lifelong learners in the 21st century, both curricula suggest lifelong learning as one of the curricular visions. Influenced primarily by holistic education, the nine-year curriculum developed three visions: holistic education, friendly campus, and lifelong learning. More focused on talent cultivation and international competitiveness, the twelve-year curriculum envisioned the following: success for every child, adaptive talent development, and lifelong learning. Based on these visions, both curricula developed goals as shown in Table 2.

Table 2: Curriculum Goals

The Nine-year Curriculum (MOE, 2000)	The Twelve-year Curriculum (MOE, 2014d)
1. To enhance self-understanding and explore individual potential; 2. To develop creativity and the ability to appreciate beauty and present one's own talents; 3. To promote abilities related to career planning and lifelong learning; 4. To cultivate knowledge and skills related to expression, communication, and sharing; 5. To learn to respect others, care for the community, and facilitate teamwork; 6. To further cultural learning and international understanding; 7. To strengthen knowledge and skills related to planning, organizing, and implementing; 8. To acquire the ability to utilize technology and information; 9. To encourage the attitude of active learning and studying; and 10. To develop abilities related to independent thinking and problem-solving.	1. To inspire potential; 2. To foster life knowledge and skills; 3. To advance career development; and 4. To cultivate civic responsibility.

To reach these visions and goals, both curricula identify "core competencies" classified into three categories, which are shown in Tables 3 and 4. The nine-year curriculum framework starts from the student who is expected to become a modern citizen with national consciousness and international vision by building ten "fundamental competencies" in relation to three categories: the **self, society,** and **nature** (MOE, 2000). The twelve-year curriculum framework centers on the student as a lifelong learner who develops nine "core competencies" dispersed in the three categories: **spontaneity, communicative interaction,** and **social participation** (MOE, 2014d). The core competencies serve as the main "axis" integrating grade levels and learning subjects/areas and guide the development of curriculum indicators (expectations).

Table 3: The Competency Framework of the Nine-year Curriculum (MOE, 2000)

Categories	Ten Fundamental Competencies
1. Relation to the self: individual development of body and mind	1. Self-understanding and development of potentials 2. Appreciation, performance, and creativity 3. Career planning and lifelong learning
2. Relation to the society: integration of society and culture	4. Expression, communication, and sharing 5. Respect, care, and teamwork 6. Cultural learning and international understanding 7. Planning, organizing, and putting plans into practice
3. Relation to the natural environment: nature and environment	8. Utilization of technology and information 9. Active exploration and inquiry 10. Independent thinking and problem-solving

Table 4: The Competency Framework of the Twelve-year Curriculum (MOE, 2014d)

Categories	Competencies
1. Self-directed action	1-1 a sound body and mind and self-improvement 1-2 systematic thinking and problem-solving 1-3 planning, implementing, and creative flexibility
2. Communicative interaction	2-1 use of symbols and communicative expression 2-2 technology, information, and media literacy 2-3 arts and aesthetic competency
3. Social participation	3-1 interpersonal relations and teamwork 3-2 multicultural and international understanding 3-3 moral practice and civic consciousness

The ten "fundamental competencies" in the nine-year curriculum aim to replace the "content knowledge" stipulated in previous curriculum standards, so they are defined as "portable competencies." They refer to "fundamental," "core," and "essential" knowledge, skills, and attitudes as the "basics" that every student should develop from compulsory education. The nine-year curriculum employs the term *néng lì* (能力) in Chinese to refer to "competency," which is criticized as too limiting. *Néng lì* in Chinese means ability, capacity, capability, and competency, and tends to be interpreted as skills or techniques. In Benjamin Bloom's theory of three areas of learning (Anderson & Krathwohl, 2001), *néng lì* addresses more the cognitive and psychomotor domains and less the affective domain. However, Table 3 suggests that the "fundamental competencies" involve various meanings, including capacities, potential, knowledge and skills, attitudes, achievement, and spirit (Chung, 1999). In other words, the ten fundamental competencies not only encompass the cognitive, affective, and psychomotor domains of learning; they also include building the inner quality (sù zhí 素質). Therefore, the term *néng lì,* easily interpreted as skills or techniques, cannot fully address various dimensions of learning.

Extending from the ten fundamental competencies, the nine "core competencies" in the twelve-year curriculum also refer to knowledge, skills, and attitudes within Bloom's three domains of learning. Based on key competency frameworks developed by international organizations (e.g., OECD, European Union, and UNESCO) and preliminary research on core competencies (Houng, 2008), the nine core competencies are more carefully selected and clearly defined than the ten fundamental competencies (MOE, 2014d) and are even regarded as the DNA of the twelve-year curriculum reform that connects and governs every part of the curriculum (Tsai, 2011). Figure 1 illustrates the core competency framework centering on a lifelong learner who develops core competencies in the three categories—spontaneity, communicative interaction, and social participation (MOE, 2014d). The lifelong learner takes the initiative to learn through communication and interaction, which manifest the meaning and value of learning, that is, social participation (Hong & Fang, 2015).

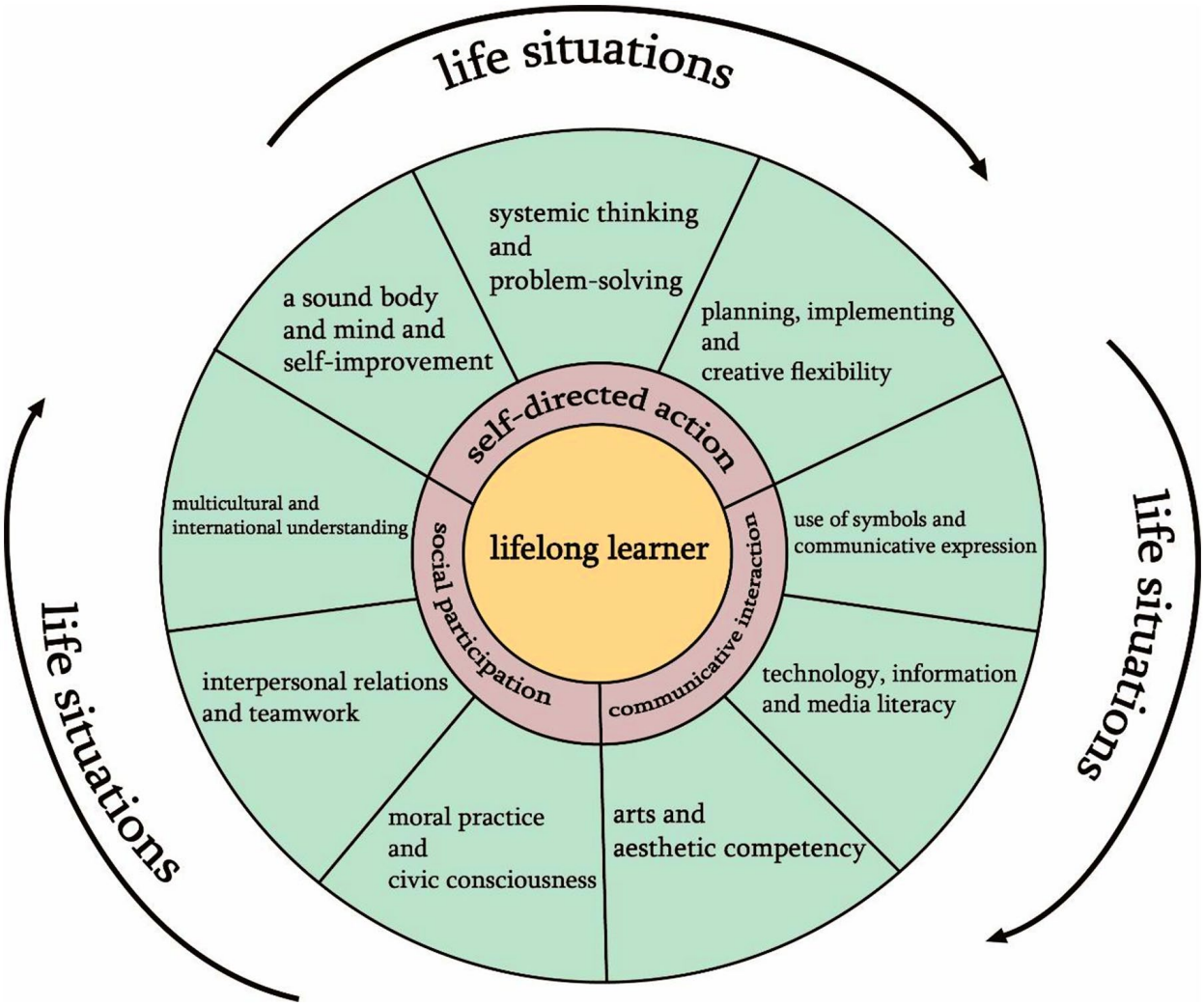

Figure 1: The Core Competency Framework in the Twelve-year Curriculum (MOE, 2014d)

To capture the multifaceted meaning and function of core competencies, the twelve-year curriculum draws on the Chinese term *sù yǎng* (素養), differing from the terminology *néng lì* (能力) for the "fundamental competencies" of the nine-year curriculum. *Sù yǎng* refers to particular knowledge, skills, and attitudes that one needs for responding to complex life situations in the "new economy era" and "information society" (MOE, 2014b). Though *néng lì* was considered unable to include the seemingly all-inclusive fundamental competencies, including knowledge, skills, and attitudes, the definition of *sù yǎng* is not limited to knowledge, skills, and attitudes, and also connotes human characteristics or qualities. In other words, *sù yǎng* involves the cultivation of character, dispositions, and morality. The debates on the Chinese terms, *néng lì* and *sù yǎng*, corresponding to "competency" suggest the importance of cultivating "quality" and "humane character" in the *moral* domain in traditional Taiwanese education.

SCHOOLING IN TAIWAN

The education system in Taiwan used to be highly centralized and controlled by the central government that regulated and financed education. In the 1980s, political, economic, and technological changes as well as demands for plurality and localization pushed for a series of waves of education reform toward deregulation and diversification. Experiencing reforms, the central government gradually shared its responsibilities with local governments, schools, and other stakeholders.

The current education system in Taiwan supports up to 22 years of study, including two years of kindergarten, six years of primary education, six years of secondary education (junior and senior high schools), four to seven years of college or university, and one to seven years of graduate school. Compulsory education comprises elementary and junior high school education as "national basic education." The most recent twelve-year education reform included senior high school education in the national basic education as a way to open more access to senior high school education. Senior high school education is not compulsory education, because it is not mandatory and free for every student; in spite of this, it is regarded as a critical component in the national basic education system and is invested with a lot of government efforts and resources for integrating with the nine-year compulsory education. With the extension of national basic education, the nine-year competency-based curriculum thus expanded to senior high school education.

TEST-DRIVEN PEDAGOGICAL PRACTICES

The stated goal of compulsory education in traditional curriculum standards had been a balanced development of students in moral, intellectual, physical, social, and aesthetic domains. However, in practice, intellectual development had always been the main concern of schools and parents because education and academic achievement were always held in high esteem in Taiwanese society. Particularly when senior high school and college entrance examinations determined students' possibilities for academic and career success in the future, most parents expected schools to prepare their children for the entrance examinations in order to get into a prestigious high school or college. In addition, the entrance examinations were paper-and-pencil tests on factual knowledge, which therefore shaped junior high school and senior high school pedagogical practices into knowledge acquisition and memorization. The teacher transmitted knowledge from textbooks to the students, who learned by rote learning and drills, and sometimes had to teach students to the test. Since the entrance examinations were very competitive, many junior and senior high school students attended after school programs at their schools or cram schools for test preparation and test taking strategies. Such test-driven pedagogical practices not only had created a lot of stress for students, but also resulted in an ossified education system and a gap between school education and society development.

IN PURSUIT OF COMPETENCY DEVELOPMENT

In light of the problems in the education system, the grassroots groups as the major impetus to Taiwan's education reform made appeals for improving education quality and ensuring students' right to education. These appeals along with global education reform movements shaped reform proposals and policies toward deregulation, diversification, humanization, and students' competency development. The curriculum reforms started with the revision of curriculum standards for elementary and junior high school education in the early 1990s, followed by the reconstruction of curriculum into guidelines and indicators with an emphasis on fundamental competencies, which was the nine-year integrated curriculum. The curriculum reform made

several changes, including moving from knowledge to competency orientation, integrating subject matters and prominent issues into learning areas, changing from standards to guidelines, adding new courses in response to localization and internationalization, and modifying the senior high school entrance examination.

First of all, the move from knowledge to competency turned attention from academic knowledge and intense intellectual development to the student and his or her *well-rounded* learning in real life situations. This move challenged the traditional way of teaching and learning where the teacher transmits knowledge from textbooks to the passive student, and stressed the development of competencies that would help the student meet challenges in the new century. In this way, the integration of isolated subjects and prominent issues thus became critical in the development of competencies, because the integrated curriculum allowed the student to easily integrate his or her learning in a learning area and help connect learning to real life situations.

Second, curriculum guidelines instead of detailed rules in standards created more room for schools and teachers to take initiative to develop school-based curricula with local resources for building students' fundamental competencies as suggested in the curriculum guidelines. In other words, school culture changed from a top-down control to a more democratic climate in which schools started to share accountability of education with local governments and were allowed more flexibility and autonomy for making a change. Teachers were expected to take the initiative to design curricula and instruction. Every stakeholder in the school community was welcome to participate in the school-based development of curriculum and instruction.

Moreover, new courses, such as the English language and native languages, and the local knowledge of Taiwan were added in order to address demands for localization and internationalization. As the competency framework suggests, the student was expected to connect with the self and then the social and natural world. In the development of fundamental competencies, these courses would help the student build self-identity from learning about his or her own culture and history and then further develop international awareness and connect with the international world.

Finally, the nine-year curriculum reform also changed the senior high school entrance examination. In the past, access to senior high school education was mainly determined by the Regional Joint Senior High School Entrance Exam, which tested students' knowledge acquisition from their junior high school education. When the junior high school curriculum changed from knowledge acquisition to competency development, the senior high school entrance examination also had to change. The new examination, implemented as the Basic Competency Test, was aligned with junior high school curriculum guidelines and indicators, and connected with student life experience. Still, the senior high school entrance examination was again changed in the twelve-year curriculum reform. It is the current Comprehensive Assessment Program for Junior High School Students that still follows the nine-year curriculum guidelines and indicators since the twelve-year curriculum guidelines are still under formulation. This time, the examination was modified from norm-referenced to criterion-referenced mainly for alleviating students' pressure from standardized testing. Also, as the government claimed, the test results became important information that the government could use for monitoring student academic attainment and that senior high schools could use for adaptive curriculum design and teaching (Comprehensive Assessment Program for Junior High School Students, n.d.).

IDEAL ROLES OF SCHOOLS AND TEACHERS IN COMPETENCY-BASED CURRICULUM REFORM

The changes as mentioned above imply that schools play a critical role in putting these curricular changes into practice and realizing the goals of the new curriculum. With more autonomy, schools were expected to take

the lead in school-based curriculum development, in which all stakeholders in the school community, including teachers, parents, teacher-educators, and resource persons, were encouraged to participate. In this model of school-based development, "schools are the center of educational reform, teachers are curriculum designers, classrooms are curriculum laboratories, and the curriculum is a community" (Ou, 2000; Tsai, 2005). In other words, the nine-year curriculum reform that promoted school-based curriculum development changed the roles of schools, teachers, classroom teaching and learning, and community involvement.

In school-based curriculum development, schools were expected to establish a curriculum development committee where all stakeholders, including school administrators, teacher representatives from every learning area and grade level, parents, representatives from the community, and scholars or experts when needed, were mobilized to deliberate and implement the curriculum (MOE, 2006). Most importantly, schools were to utilize resources at schools and specific social and cultural resources from the community for addressing students' characteristics and learning needs. Accordingly, the role of schools changed from a curriculum implementer to a leader and planner.

With school-based curriculum development, teachers were expected to participate in planning and designing the curriculum, and then putting curriculum into practice in the classroom. Teachers were thus expected to be reflective regarding curriculum design and instruction. In this way, the role of teachers changed from a subject area expert (knowledge provider) and knowledge transmitter to a curriculum designer and action researcher on curriculum and teaching. In addition, as subject matter was all integrated into all learning areas, teachers were expected to collaborate with each other in cross-disciplinary team teaching and in designing multiple assessments for ensuring students' development of competencies.

The new curriculum was grounded in constructivism, the idea of curriculum integration, and Dewey's theory of experience (Chen, 1999; Cheng, 2003; Huang & Hsu, 2006), and focused on students' competencies. Teachers were expected to change their traditional teaching to facilitate the student's experiential learning in life situations. In addition, the student as the center of the curriculum would also learn in a different way. The curriculum framework assumes the importance of the student's relation and connection to the self, society, and nature, in which the student was expected to build ten fundamental competencies as essential knowledge, skills, and attitudes through connection to life and interaction with the world. In other words, the student's experience was stressed in the learning process (Huang & Hsu, 2006). From experiential learning, the student was expected to acquire knowledge, skills, and attitudes, and even the ability to construct new knowledge.

Take the Integrated Activities as the seventh learning area as an example. According to the curriculum guidelines, Integrated Activities aimed to develop the student's competency for life practice in four categories: self-development, life management, social participation, and protection of self and environment (MOE, 2008a). Experience, reflection, and practice were stressed in student learning. The student was expected to learn from experience and practice in relation to self and the social and natural worlds in which he or she reflected on learning and constructed the meaning of learning. In addition, the curriculum intentionally kept alternative learning periods for blank curriculum that schools could freely use for school-based learning activities, such as electives, remedial instruction, guidance and counseling, or student independent learning (MOE, 2006).

Finally, students' learning was also shaped by new courses. As the nine-year curriculum goals suggested, the student first learned about the self for building self-identity, including the historical, geographical, social, and cultural development of Taiwan, so that he or she would be able to connect with the outer world, namely the international society. As a result, localization and internationalization pushed by internal and external forces caused new courses to be created that shaped the development of fundamental competencies in connecting with self and the world.

Localization was initially addressed in the revised curriculum standards in the late 1980s, which created the subject *Meeting Taiwan* (認識台灣) in the seventh grade curriculum in which the history, geography, and society of Taiwan were taught as stand-alone subjects for the first time. Such local knowledge of Taiwan has remained within Social Studies in the nine-year curriculum. In addition, Taiwanese native languages (i.e., Hoklo, Hakka, and indigenous languages as students' mother tongues) were added to the Language Arts learning area in the elementary curriculum in addition to Mandarin Chinese. The above curriculum for localization allowed the students to learn about their communities and homeland from social and historical knowledge of Taiwan and Taiwanese languages. The first category of competencies, knowing self and inspiring potential, responded to the localization goal and could be regarded as the starting point of developing fundamental competencies for modern life in the new century.

For internationalization and strengthening international competitiveness, the English language was regarded as the key tool to participate in international society and thus was first added to the elementary curriculum. The starting year of English language education was initially the fifth grade in 2003, and then was moved up to the third grade in 2005. In addition, prominent issues such as protection of the environment, information technology, human rights, and marine education, among others, were integrated into learning areas in order to build students' competencies for meeting the challenges of globalization.

These efforts mentioned above aimed to allow flexibility and autonomy for school-based curriculum and instruction in order to build students' competencies for the new century. Nevertheless, the senior high school entrance examination still had a crucial role to play in the competency-oriented curriculum and created tensions in classroom practices for building students' competencies. The entrance examination was actually a paper-and-pencil test with multiple-choice questions that posed problems to competency-based assessment. It still tested students' knowledge and had difficulty in evaluating students' competencies, and therefore classroom teaching still focused on knowledge acquisition and memorization. Generally speaking, elementary schools had more flexibility to experiment and play with innovative reform ideas, but junior high schools, under the pressure of the senior high school entrance examination, had to contend with parent expectations and the social value placed on academic performance, and therefore tend to teach to the test.

POLICY AND PRACTICE

The curriculum reforms in the last 20 years in Taiwan have involved a wide range of stakeholders in the process of policymaking, planning, and implementation, such as administrators from central and local governments, scholars and experts from universities, teachers, interest groups, and parents. Under pressure from civic society and international education reform movements for the 21st century, the central government, the Executive Yuan and Ministry of Education, organized education and curriculum reform committees composed of a variety of stakeholders for making reform plans and policies and providing direction and guidelines. As the central government delegated some authority and power to local governments, they supported local governments and schools with guidance and resources. Local governments and schools, on the other hand, were allowed autonomy to find ways that were most suitable for the individual school community to work together in implementing the new curriculum. In other words, from decision making, to planning and implementation, both central and local governments along with other participants got involved and shared responsibility and accountability. Such policy and practice interplay was neither a top-down nor bottom-up model of policy implementation, but was a dynamic model, in which the decision-making and implementation were a process of coordination and compromise among different representatives as stakeholders (Chen, 2010).

IMPLEMENTATION PROCESS

The construction of curriculum guidelines for the nine-year compulsory education by way of this dynamic process involved several stages. The Ministry of Education established panels or committees composed of members from different areas for conducting curriculum formulation, review, revision, fine-tuning, and research at different stages (see Table 5). For example, the Special Panel on the Development of Elementary and Junior High Schools' Curriculum was established in 1997 for formulating general guidelines. The panel was composed of scholars from the areas of curriculum, educational psychology, and educational philosophy. It also included teachers and administrators of elementary and junior high schools, as well as legislators, and representatives from parent groups, the business community, and women's groups (MOE, n.d.a).

Table 5: The Construction of the Nine-year Curriculum Guidelines (MOE, 2008a)

Timelines	**Major Tasks**
April 1997–September 1998	Stage 1 • Establishing a *Special Panel on the Development of Elementary and Junior High Schools' Curriculum* • Formulating the general guidelines
October 1998–November 1999	Stage 2 • Establishing the *Panel on Researching and Formulating the Guidelines for Every Learning Area* • Formulating guidelines for every learning area • Setting up instructional goals and competency indicators for every learning area • Formulating principles for implementing the curriculum of every learning area
December 1999–August 2002	Stage 3 • Establishing the *Review Committee on Revision and Formulation of Elementary and Junior High School Curriculum* • Reviewing curriculum guidelines for each learning area • Planning and designing supporting projects for implementing the new curriculum
January 2004–present	Stage 4 • Establishing the *Review Committee on Elementary and Junior High School Curriculum Guidelines* • Establishing *Research and Development Committee on Elementary and Junior High School Curriculum Guidelines* • Constant evaluating, researching, and modifying curriculum guidelines
October 2006–April 2008	Stage 5 • Establishing *Research and Revision Committees on Elementary and Junior High School Curriculum General Guidelines, Learning Area Guidelines, Life Curriculum, and Prominent Issues under Review Committee on Elementary and Junior High School Curriculum Guidelines and the Research and Development Committee on Elementary and Junior High School Curriculum Guidelines* • Setting up principles for fine-tuning curriculum guidelines • Fine-tuning curriculum guidelines and helping implement supporting measures
October 2007–April 2008	Stage 6 • Establishing *Review Committees on Elementary and Junior High School Curriculum General Guidelines, Learning Area Guidelines, Life Curriculum, and Prominent Issues* • Reviewing recommendations for fine-tuning curriculum guidelines and announcing the fine-tuned versions

The Ministry of Education not only established rules of implementation at schools, but also designed several supporting projects for implementation that mobilized local government, schools, teachers, universities, and non-governmental organizations (NGOs). The timelines and projects of implementation are shown in Table 6. The rules of implementation at schools encompassed these dimensions: organization (forming a school-based curriculum development committee), curriculum plans, elective courses, editing, screening, and selection of materials and textbooks, curriculum and teaching evaluation, and outlining central and local governments' administrative responsibilities (MOE, n.d.a). The MOE and local governments supervised the implementation and provided financial and guidance support.

Table 6: Nine-year Curriculum Implementation Timelines and Projects (MOE, n.d.b)

Timelines	Projects
September 1998	Announcement of General Curriculum Guidelines
October 1998–September 1999	Drafting guidelines, instructional goals, and competency indicators for all learning areas
1999–2001 school years	1. Review and completion of guidelines, instructional goals, and competency indicators for all learning areas 2. Dissemination of curriculum goals, values, and general guidelines 3. Workshops for educational administrators at all levels and for teachers 4. Pilot implementation of all seven learning areas in first grade and selected learning areas in seventh grade 5. Expansion of school facilities and buildings 6. Creation of websites for curriculum and instruction 7. Editing and screening of textbooks 8. Developing approaches to evaluating teaching 9. Revision of laws and regulations in education 10. In-service and preservice teacher training 11. Improvement of senior high school admission system as Basic Competency Test to be implemented in 2001
2001–2002 school year	• Official implementation in the first grade • English education implemented in fifth and sixth grade
2002–2003 school year	Implementation in the seventh grade
2004–2005 school year	Implementation in all grade levels
October 2006–present	Fine-tuning curriculum guidelines • Adding the seventh prominent issue, Marine Education, in 2008
2011 school year	Implementation of fine-tuned curriculum

ENSURING STUDENT COMPETENCY DEVELOPMENT

In addition to supporting school-based curriculum and instructional development, agencies of the central government, such as MOE and MOST, also supported various types of projects for student development of competencies. For example, to ensure Taiwanese students' development of important competencies for the 21st century, they supported participation in international educational assessments of student achievement as mentioned in the first report, such as TIMSS, PISA, PIRLS, and ICCS. For character and moral education,

the MOE also started the Facilitating Character and/or Moral Education Program in 2004 and required all local governments and schools to formulate school-based plans of character and moral education with core values and behavior principles and integrate them into all learning areas and blank curriculum (MOE, 2014b). In 2009, this program started to involve academic institutions, civic groups, parent groups, and media resources for a more effective implementation. In 2014, local governments and schools were required to expand character and moral education within schools through enhanced school-based curriculum and instruction for cultivating students' civic competencies in the modern society. To ensure the basic academic competencies of low performers from disadvantaged families, the MOE launched the Hand-in-Hand After School Program in 2006 and required local governments and schools to provide alternative programs of adaptive and remedial instruction in elementary and junior high schools to address these students' learning needs. With the twelve-year education reform, this program was modified and included in the Elementary and Junior High School Remedial Instruction Implementation Plan in 2011, which has been developing a monitoring and evaluating system that involves local governments, schools, teacher preparation institutions, and universities in tracking low achievers' basic academic performance in Mandarin Chinese, English, and mathematics (MOE, 2014d). Moreover, the MOE also considered senior high school low performers' basic academic competencies and thus provided funding for senior high schools to offer remedial programs for these students.

It is important to note that non-government organizations have been particularly committed to elementary and junior high school low performers' learning needs, especially those from remote schools. For example, Boyo Social Welfare Foundation, Junyi Academy, and Younglin Education Foundation have all provided after school programs. They collaborate with local governments, teachers' groups, and universities in developing curriculum and materials for remedial instruction, and have created an e-learning system as a resource base and networking forum for collaboration.

ISSUES AND CHALLENGES

The nine-year curriculum reform has brought about a paradigm shift in Taiwan's compulsory education reform in the last 20 years. It challenged traditional ways of teaching and learning in Taiwan. Its competency orientation turned attention from knowledge acquisition to student learning. The integrated curriculum blurred subject boundaries and stressed interdisciplinary teaching and learning. Curriculum guidelines instead of standards created autonomy and flexibility for schools to take the initiative to develop school-based curriculum. It added new courses for localization and internationalization. Finally, the senior high school entrance examination was modified according to these curricular changes. The large-scale nine-year curriculum reform supposedly would change the entire compulsory education system. However, a variety of issues emerged from different levels of implementation that have posed challenges to the reform.

CONFUSIONS ABOUT COMPETENCIES

First of all, the ten fundamental competencies and competency indicators caused confusion. The ten fundamental competencies were viewed as higher-level concepts and capacities, such as independent thinking, and planning and organizing capacities. These would require time and integrated curricular design and teaching to cultivate, and could not be possibly developed in elementary and junior high school students (Lee, 2009). Some of them overlapped (Fang, 2010), and most of them were more like skills for the labor

market rather than "essential" competencies every student should develop (Su, 2003) and were less involved with attitudes in the affective domain (Tsai, 2011). In particular, for students from rural schools, the ten fundamental competencies involving higher-order thinking skills were too difficult to develop in them because of their poor "basic competency" of reading and writing (Chen & Li, 2009). Still, competency and knowledge were not viewed as conflicting. Knowledge was the basis for developing competency, and therefore knowledge and competency were both important (Huang, 2007). On the other hand, competency indicators were also criticized as too abstract and difficult for textbook editors, reviewers, and teachers to understand and to build consensus around. They were also difficult to connect across grade levels (Huang, 2007). Because they were also too numerous and not well organized and connected by logic, it was difficult for teachers to put them into teaching practice (Fang, 2010). These confusions hindered the design of competency-based curriculum and instruction.

DIFFICULTY IN INTEGRATED TEACHING

Moreover, the integrated curriculum in which subject matter boundaries were blurred also caused confusion. Some competency indicators around subjects within a learning area or across learning areas overlapped. For example, the learning content of the Life Curriculum, Health and Physical Education, and Integrated Activities overlapped. Too, the functions of Integrated Activities and blank curriculum were similar, and Information Technology and Science and Technology overlapped (Wu & Huang, 2010). Also, the integration of prominent issues into learning areas was to prepare students' fundamental competencies in relation to the changing world. However, prominent issues could be easily watered down due to different school conditions. For example, teaching hours for each learning hour were already limited and thus limited teaching hours for prominent issues. Also, the paperwork for evaluation on the teaching of prominent issues increased teachers' workload, which decreased teachers' motivation to teach prominent issues (Wu & Huang, 2010).

In other ways as well, the curriculum integration ideal was not realized. For example, history, geography, and citizenship were still taught separately; due to lack of qualified teachers or due to limited teaching hours in a learning area, the untested subjects in the senior high school entrance examination were very often ignored, such as music, physical education, and arts in the Arts and Humanities area, or life technology as opposed to biology, physics and chemistry, and earth science in the Science and Technology area. Specifically in rural schools where traditional teaching was maintained, teachers lacked knowledge and skills needed to integrate the curriculum. The teacher shortage problem persisted, and teachers very often were required to teach multiple subjects they might not be qualified to teach, or the Arts and Humanities learning area was not actually provided (Chen & Li, 2009). For these reasons, schools, especially rural schools, had difficulty in realizing reform goals and preparing students' fundamental competencies for the new century.

CHALLENGES TO SCHOOL-BASED CURRICULUM DEVELOPMENT

Generally speaking, curriculum guidelines and competency indicators would allow professional autonomy for schools and teachers to develop curriculum based on schools' local conditions and student needs. In the implementation of school-based curriculum development, some issues occurred. The concept of school-based curriculum explicated by curriculum guidelines was not clear and thus some schools worked on school features or a variety of "activities" for fostering students' diverse competencies rather than addressing students' needs, especially low performers' basic literacy and numeracy skills (Chen & Li, 2009; Wu & Huang, 2010). Teachers were not willing to actively participate in curriculum development or change from paper-and-pencil tests to

multiple assessments. There was difficulty in the operation of the curriculum development organization and in reaching consensus among participants. The evaluation and feedback mechanism in support of a school-based curriculum was not found in practice. Finally, the senior high school entrance examination limited school-based curriculum development (Jian & Chen, 2001; Wu & Huang, 2010; Wang, 2010).

DIFFICULTIES IN BUILDING COMPETENCIES FOR LOCALIZATION AND INTERNATIONALIZATION

In order to both preserve native languages and local culture as well as enhance international competitiveness, English language and native languages were included in the elementary curriculum. In the integrated curriculum, both languages shared the teaching hours with Mandarin Chinese in the language arts area, and thus they indeed competed with each other for teaching hours (MOE, 2011c). Also, when the starting year for teaching and learning English moved to the third grade in 2005, some schools with more resources in urban areas or counties even moved the starting year to the first grade, which created the gap between students' English achievement among schools, and further widened the achievement gap that already existed between rural and urban schools. In addition, there was a shortage of teachers in teaching both languages, and even a shortage of materials in teaching native languages. A final issue was that teaching native languages was regarded as less important than teaching English (Wu & Feng, 2007; MOE, 2011c). For these reasons above, preparing students with competencies for localization and internationalization was not equally realized in every school.

THE CRITICAL ROLE OF HIGH-STAKES TESTS

Finally, in the curriculum reform, the senior high school entrance examination as the Basic Competency Test was modified based on a competency orientation. The design of test items changed from knowledge memorization and accumulation to application and problem-solving in life situations, and thus was a real challenge to rural school students whose basic literacy and numeracy skills for entering senior high schools were already lower than those of average urban students (Chen & Li, 2009). In addition, the Taiwanese society generally values academic achievement, and most parents expect their children to enter a good senior high school, and therefore the senior high school entrance exam always plays an influential role in compulsory education. For example, to prepare students for the senior high school entrance examination, blank curriculum was very often used for enhancing tested subjects rather than for other school-based activities (Wu & Huang, 2010). The Basic Competency Test could be regarded as a significant issue, which not only was a challenge to rural students, but also stood in the way of the implementation of the competency-based curriculum. Finally, there has not been an evaluation system in place in monitoring students' development of competency. The Basic Competency Test was still a knowledge-based assessment and there was no way for teachers, parents, schools, and even the government to know whether Taiwanese students were equipped with *fundamental competencies* for meeting challenges in the new century.

CONCLUSION

The education reforms in Taiwan were pushed urgently by both Taiwanese civic society and globalization pressure for deregulation, diversification, and international competitiveness in the late 1980s and 1990s. When the curriculum standards for compulsory education (grades 1–9) were revised and enacted for just a few years in the early 1990s, a new set of curriculum guidelines for compulsory education, namely the competency-based nine-year integrated curriculum, was already under formulation and planned to promulgate in the 21st century. Exploring issues and challenges in the nine-year curriculum reform, scholars found that it went too hastily in implementation, and stakeholders at all levels (schools, teachers, and community) were not well prepared for change (Cheng, 2003; Chan & Tseng, 2004; Wang, 2010). In spite of the issues, the nine-year curriculum reform served as the foundation for the twelve-year curriculum reform. The twelve-year curriculum guidelines maintained the competency orientation and modified the technical term *néng lì* (能力) to *sù yǎng* (素養) in order to address the quality of humanity. It also retained the form of guidelines with clearer indicators for learning content and performance so that textbook editors and teachers could easily follow in their development of curriculum and teaching materials (MOE, 2014b).

Given the critical issues in the Basic Competency Test, the twelve-year education reform also changed the examination to Comprehensive Assessment Program for Junior High School Students in 2014 with other supporting projects for senior high school admission. The new senior high school entrance examination has been administered since 2014 and still has engendered different issues. Its test questions were criticized as maintaining knowledge orientation rather than testing students' fundamental competencies. Students' criterion-referenced scores were still regarded as a critical criterion for senior high school admissions. Therefore, parents still hold very high expectations for children's performance in this examination, and many junior high schools still maintain intensive pedagogical practices for test preparation. These issues were not quite different from those in the nine-year curriculum reform. Even though with the newly developed core competency framework in the twelve-year curriculum, the competency-based reform still faced fundamental challenges: deep-rooted social value placed on intellectual development and academic achievement and difficulties in assessing core competencies.

APPENDIX

Table 1: Curriculum Goals

The Nine-year Curriculum (MOE, 2000)	The Twelve-year Curriculum (MOE, 2014d)
1. **To enhance self-understanding and explore individual potential;** 2. **To develop creativity and the ability to appreciate beauty and present one's own talents;** 3. **To promote abilities related to career planning and lifelong learning;** 4. **To cultivate knowledge and skills related to expression, communication, and sharing;** 5. **To learn to respect others, care for the community, and facilitate teamwork;** 6. **To further cultural learning and international understanding;** 7. **To strengthen knowledge and skills related to planning, organizing, and implementing;** 8. **To acquire the ability to utilize technology and information;** 9. **To encourage the attitude of active learning and studying; and** 10. **To develop abilities related to independent thinking and problem-solving.**	1. **To inspire potential:** inspire motivation for learning, cultivate curiosity and capacity for inquiry, thinking, judging, and action, and be willing to explore and learn with a positive attitude and continued strength. This is to experience the joy of learning, develop a sense of self-worth, and further inspire the potential to become a sound and balanced person. 2. **To foster life knowledge and skills:** foster basic knowledge and skills, master and integrate learning from all areas to solve problems, and be capable of appropriate communication and expression; be attentive to interpersonal inclusion, teamwork, and social interaction for adaptation to social life; have the courage to create and perform competencies of technological application and life aesthetics. 3. **To advance career development:** guide career development and exertion of talents, learn to learn, foster willingness and competency of lifelong learning, and stir up energy for continued learning so as to lay the foundations of academic study and professional skills; develop the concept of the dignity of labor; foster courage, knowledge, and skills for career challenges and international competition in order to adapt to social changes and world trends, and even be willing to lead the changes and trends. 4. **To cultivate civic responsibility:** strengthen democratic competency, ideas of rule of law and human rights, moral courage, community/local awareness, national identity and international understanding, and learn self-responsibility; further respect diverse cultures and ethnic differences; pursue social justice; enhance global citizens' care and action for loving nature and life, and cherishing resources; and actively be committed to common ideals, such as ecological sustainability and cultural development.

Table 2: The Competency Framework of the Nine-year Curriculum (MOE, 2000)

Categories	Ten Fundamental Competencies
1. **Relation to the self: individual development of body and mind**	1. **Self-understanding and development of potentials,** which involves thorough understanding of one's physical conditions, capacities, emotions, needs, and personalities, loving and caring for oneself, self-reflection on a regular basis, self-discipline, and optimistic attitude, and morality, showing one's individuality, exploring one's potentials, and establishing suitable values. 2. **Appreciation, performance, and creativity,** which involves the capacity of perceiving and appreciating the beauty of things as well as exerting imagination and creativity, developing an active and innovative attitude, and expressing oneself in order to promote the quality of living. 3. **Career planning and lifelong learning,** which involves the utilization of social resources and individual abilities in order to bring one's talents into full play, plot one's course for the future, and develop the capacity of lifelong learning in accordance with the transition of the social environment.
2. **Relation to the society: integration of society and culture**	4. **Expression, communication, and sharing,** which involves making effective use of all kinds of symbols (such as languages in both spoken and written forms, sounds, motions, pictures, and arts) and tools (such as media and technology) in order to make clear one's thinking, concepts, and emotions as well as listening attentively to and communicating effectively with others, and sharing various perspectives and information with others. 5. **Respect, care, and teamwork,** which involves being democratically literate, tolerant of different opinions, and equitable to individuals and groups of different identities, having respect for life and caring for the community, the environment, and nature, obeying the rules of the law and the norms of the community, and holding an attitude that is beneficial to teamwork and cooperation. 6. **Cultural learning and international understanding,** which involves appreciating and respecting different groups and cultures, understanding the history and culture of one's own country as well as others', recognizing the trend of the globalization in which countries all over the world are integrated into a global village, and developing a global perspective with mutual interdependence, trust, and cooperation. 7. **Planning, organizing, and putting plans into practice,** which involves being able to make plans and put ideas into practice in daily life, adopting approaches by which thoughts and practice are incorporated and by which each member can contribute to the community as well as serve the public and one's community with enthusiasm.

Categories	Ten Fundamental Competencies
3. Relation to the natural environment: nature and environment	**8. Utilization of technology and information,** which involves the utilization of technology in a correct, safe, and effective way so as to collect data, making judgments after thorough analysis of the data, integrating and sorting out useful information, and making use of such information for the purpose of enhancing learning efficiency and living quality. **9. Active exploration and inquiry,** which involves encouraging curiosity and observation, actively exploring and discovering questions, and applying one's learned knowledge and skills in daily life. **10. Independent thinking and problem-solving,** which involves cultivating the ability and habit of thinking independently and reflectively, making thoughtful analyses and judgments about questions, and effectively solving problems and resolving conflicts.

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