# Education 2030 and Curriculum Transformation: From the View of Taiwanese Competency Based Curriculum Guidelines

# 教育2030与课纲转化：台湾素养导向课程纲要的观点

Wang Chih-Hung *
王智弘

**Abstract:** This article explores how Taiwanese put competency-based curriculum principle into practice through the lens of Education 2030. The Organization for Economic Cooperation and Development (OECD) has been postulated that the core elements of Education 2030 will be the incubation of knowledge, skill, attitude, and values for those learners becoming competitive global citizens. Finally, these global citizens can enhance individual's well-being. OECD's Education 2030 viewpoints are congruent with taking the initiative, engaging the public, and seeking the common good from Taiwan's Curriculum Guidelines of 12-Year Basic Education. Through, three dimensions, nine core items, competency incubation, students' actual life situation, can be filled with spontaneity, communication and interaction, and social participation, and, in turn, become lifelong learners with cross domain learning abilities. This competency makes new generations capable of facing problems and solving them. For the Taiwanese new curriculum framework, other than government decided courses, schools possess their own power to determine their school-based curriculum and elective courses. It is expected to cultivate global citizens who fit, both, a principle of a 12-year basic education and a respected school-based curriculum.

**Keywords:** curriculum guideline transformation, competency, school-based curriculum

**摘　要：**本文探究了台湾如何依教育2030的规准下，将素养导向课程落实于教学现场。国际经济合作组织（OECD）已经认同教育2030关键元素在于培育具备知识、技能、态度与价值观的学习者，使他们成为具有竞争力的全球公民。最终，这些全球公民能促进个人或是整体人类幸福感。国际经济合作组织教育2030的观点也恰契合台湾十二年国民基本教育课程纲要总纲宣示的自发、互动与共好的概念。根据台湾十二年国民基本教育课程纲要总纲，将核心素养分成三大面向，九大项目：期待学习者在生活情境中能具备自主学习、沟通互动与社会参与三大面向的核心素养，成为具跨域学习力的终身

* Wang Chih-Hung, Associate Professor, National Changhua University of Education, Taiwan. email: chiwang@cc.ncue.edu.tw

学习者。这样的素养有助于新世代世界公民可以面对问题与解决问题。另外，根据台湾新课纲的课程架构，各程内容科分为政府决定的部定课程、学校决定的校定课程，如学校本位课程及选修课程。期待藉由这样课程的实施，能达成具备各项核心素养的现代全球公民。

**关键词：**课纲转化，素养，学校本位课程



## 1. Introduction

The manner in which the schools deliver the development of knowledge, skills, attitudes and values to their students are based on several viewpoints. However, with the changes taking place in our society and the advancement of technology, the provision of curriculum and instructions to students must be seriously considered to meet future talents in life. There are several factors which will impact the above-mentioned achievement of goals. Therefore, the articles will delineate the foundation of curriculum at first, and then, explore some factors, like, the reasons for curriculum and its delivery to students are very important and how Taiwanese government will plan and transform their new 12-year education curriculum to cultivate their 21st century young generation.

The word “Curriculum” was used as early as in the 1820s by Englishmen. One century later, in 1918, American education researcher, F. Bobbit, authored the book, “The Curriculum”, that is when the term, “curriculum” first appeared in American academics. Many researchers, such as Parkay and Stanford (2004), tried to delineate what “curriculum” means, either conceptually or practically. However, no consensus had been reached at that time. According to old views, curriculum was regarded as the process learners were trained in, the outcomes of learning results served as curriculum effectiveness as well as all experiences in schools, course contents taught in schools and the prospective learning performances. Thus, curriculum can be viewed from a broad perspective, which eventually narrows down.

As early as 1978, Peter Oliver encouraged teachers and school administrators to use the operational view of curriculum. That includes all experiences children have in schools and all course work provided by schools. Saylor, Alexander and Lewis (1981) expanded Oliver’s practical curriculum view. They proposed that concepts of curriculum should be composed of course subjects, objectives, experiences and learning plans. Wiles and Bondi (2011) used an ecological view in terms of seeing curriculum as learning processes to achieve certain learning goals, school planned learning outcomes and so forth, through training or education. The curriculum has subjects and each subject has its own learning materials. The curriculum content was recognized by curriculum professionals. Curriculum has experiential viewpoints and some researchers, such as Oliver and Gordon II (2013) proposed that curriculum indicates learners’ facing school teaching projects under the instruction of school administrators. These experiences can also be

seen as combination of knowledge and experiences for future use. However, the above two curriculum view-points are far from harmonic because their teaching objects can never be congruent.

Curriculum's learning goal was influenced by western countries. They posed the important curriculum objectives, and these objectives should be based on meeting the adults' learning needs. With the existence of school accountability, academic performances are very essential. On the contrary, curriculum as an objective per se was a competency-based education and also influenced the development of teacher education and vocational education. For these two goals, they are meeting the goals of a new 12- year education guideline in Taiwan.

Lastly, curriculum can be seen as well-structured learning opportunities. A curriculum should include teaching materials, learning experiences, goals, objectives and performance outcomes to grasp the whole picture of learning (Tyler, 1949). In order to complete these global perspectives, curriculum must provide learners with abundant opportunities to learn, including subject course content, competency-based curriculum, and even value clarified experiential curriculum which is based on teachers' experiences of delivering their instruction or classroom management in accordance with the versatile teaching dynamics and diverse learner population characteristics. This makes the curriculum transactional.

For the previously mentioned curriculum paradigm, or we call it, the "classic paradigm", it starts with top down process with content knowledge base to evolve to more learner need base and social context base. Further, the key persons executing curriculum, that is the teachers, should be sensitive to characteristics of the learners they face, especially those who are living in an information rich society.

In a recent paradigm, curriculum nowadays focuses on empirical perspective, but this does not mean it goes practical. This concept originates from logic model in philosophy and the processes come from natural sciences. It postulates the importance of "facts" and is interested in precision for students' learning outcomes.

There is still a third definition and view of curriculum. It is a concept of rebuilding paradigm. Scholars who propose this paradigm are interested in interactions of social sciences and their influences on curriculum. Social sciences are political sciences, economics, moral and arts. They are used to form educational issues to serve as discussion for formation of curriculum. These views can be seen in the academic works by Ornstein and Hunckins (2013). Giroux and his colleagues regard the curriculum concept re-building as real or hermeneutics tradition and political factors. The hermeneutical tradition emphasizes subjective experience, using subjective experience to objectively explain the world. It is more like the arts of interpretation. On the other hand, political factors are looking into hierarchical conflicts, counter cultural conscience, knowledge and political features embedded in them. Thus, Pinar (1978) supports this political

view and proposes that educators should also put an eye on the emancipation perspective of a curriculum.

To sum up the abovementioned curriculum views, several concepts regarding curriculum can be picked up. The curriculum concepts really have no single consensus, but some cues can be found. For example, curriculum can be outcome driven, that is, they care about the learner performance. This is more a process-oriented point. Curriculum can be entity driven; materials used, personals who deliver it or receive it should be taken into account. Lastly, curriculum can be value driven, it depends on which social science foundation is employed. Therefore, curriculum can be seen as a complex component and can be applied in line with contemporary social context and physical ecology. To make it work smoothly in a particular society, it requires sound curriculum guidelines to direct its implementation. An appropriate curriculum guideline may decide on more than half the proportion towards successful transformation of the endorsed curriculum.

## 2. Elements of successful curriculum transformation

Definition and concept of a curriculum is still far away from its transformation. More elements should be invested. A good curriculum planning is one key element for successful curriculum transformation.

2.1 curriculum planning

Curriculum planning can be seen as a process of selecting elements of curriculum to make up a successful plan. For instance, education stake holders may pick a value that fit the circumstances in which curriculum can be applied in that particular ecology. Also, they can pick a value viewed in line with the content area that a particular curriculum may apply in the learning stage. Thus, the curriculum planning can be a domain for particular social context or domain specific for a learning stage. All this depends on the objectives of the curriculum. The format for curriculum planning is also diverse. It can be in the form of a series of class activities, products of learning portfolio, set work, learning activities and so forth. There is no one fit format for curriculum planning. Furthermore, teachers sometimes need to modify certain curriculum plans to fit their students' needs for a particular group during certain times. This can also be regarded as a piece of whole curriculum planning. Curriculum in this sense can be seen not as rigid as a concrete plan, some flexibilities exist to fit circumstances.

Other than values, many factors should also be also considered. To develop a curriculum plan, requires some "real" elements as well as to constitute a curriculum system or structure. The recipients of education are the first one. Once no recipients, no curriculum planning is necessary. As we know, recipients (students) are from societies where the education is going

to be delivered. They have some functions in that society and the curriculum, as well, has its own objectives. The curriculum planning must use its objectives to fit students' social function goals. Therefore, before the curriculum planning, the students' needs and learning opportunities are essential for "curriculum planner", to know in advance to make this curriculum planning meaningful and useful.

The aim or goal of a curriculum should be considered upon curriculum planning. To make this curriculum complete, goals should be considered for four aspects; individual development, social abilities, continuing education learning capacities, and professionalization (Wang & Wang, 2014). The aim or goal of a curriculum will be to serve as the foundation for curriculum designs and select suitable instructional methods and good enough evaluation models for the curriculum. Moreover, curriculum design is the curriculum structure used for providing appropriate learning opportunities for students. This structure should be based on students' properties, social backgrounds, and even values. As to instructional delivery methods and teaching materials, the flexibility is allowed as mentioned in the previous paragraph. Lastly, curriculum evaluation is also important. Mostly, two decision making actions are based on curriculum evaluations (Wang & Wang, 2014). One is to assess students' progress regarding the curriculum planning; the other is to provide plans for this particular curriculum evaluation. As to public or policy makers concerned, curriculum evaluation result aims to provide information for future modifications of new curriculum plan to further close the final objects of that curriculum (Saylor, Alexander, & Lewis, 1981). Although evaluation tries to modify the original curriculum and make it better, it should not simply modify the curriculum itself. Hence, it should serve as information for stake holders on the decision-making process of students' placement, obtaining evidence, both pros and cons, towards that curriculum and serve as a valuable judgement process for a particular curriculum as well (Anderson & Ball, 1978; Glatthorn, Boschee, Whitehead, & Boschee, 2012).

There are still other elements that may impact curriculum design, instructional methods of delivery and curriculum evaluation for whole curriculum planning, such as external forces (e.g., political atmosphere, epidemic disease covid-19, etc.) and basic knowledge, skills and attitude towards curriculum. All are elements for curriculum planning. Therefore, we can understand that the curriculum structure per se is never easy. It requires not only normal structure of curriculum, but also needs to consider social atmosphere and development.

2.2 The onset thought of Taiwanese new curriculum

For the previously mentioned ideas, the curriculum needs to fit social atmosphere and development. What is most important is to help the students to live better in the future world they are going to encounter in their life. According to Schleicher (2018), there are many challenges our future global citizens may meet. First challenge, comes from the economic side.

Many jobs disappear because of new technology involved in the economic circulation, especially the internet technology; even more, many jobs become non-contract based, no pension plan, and no steady benefits which are forming a gig economic system. The second challenge, is social: with the growth of international travel, people may not always stay in the place where they are originally born. They can reside from one place to another from time to time because of economic purpose. Therefore, they need to work or live in a community with diverse cultural backgrounds and build bonding, social capitals to share experiences, innovations and develop ways to get well with people, with different family and cultural backgrounds. The third challenge, is sustainability. For our new generations, they may grow in a world, facing high population growth, overconsumption, severe climate, and environmental degradation compared to the world we live in right now. The good thing, is many of our current talented minds are starting to take care of these sustainability issues by building 17 sustainable developmental goals, which was developed by United Nations in 2015, that is, aiming to "build sustainable cities, develop green technologies, redesign systems, and rethink individual lifestyles". These goals can be very constructive conceptually for our young generation to think of what life styles they are going to have in the future. At least our generation has been working hard to keep the future earth, better than we are living in, right now. Education is also included in the sustainability developmental goal. According to Schleicher (2018), he believes education is the key issue that can differentiate individuals, nations in terms of their quality of life if education can fortify their knowledge, skill, and attitude towards sustainability. With the advancement of modern technology, all human beings are facing fast changing world and, in turn, we need to equip ourselves with sound knowledge and skills with using technology tools to fit the new learning and the style, life needs. Therefore, both educational researchers and professionals, from other areas are keen to figure out few measures to help individuals to overcome endless oncoming challenges and build a wonderful life in the 21st century. We should come up with ideas to maintain the nice figures of our living world for new generations to come. Therefore, we have the responsibility to develop sustainability with the interaction of new technology and trends of globalization.

To achieve the abovementioned goals, the United Nations (2015) proposed "sustainability development goals" (SDG) as a future human life image. There are 17 SDGs, including "Quality Education" as its fourth goal. The check point to this goal attainment is set in the year 2030.

According to "Quality Education" to sustain developmental goal, the UN proposed "Obtaining a quality education as the foundation to improving people's lives and sustainable development." Ten targets are listed under this goal. Although most targets are expected to be fulfilled by 2030, the 4.B targets focus on helping citizens in developing countries to have opportunities to receive high quality higher education in the field of vocational skills, information communication technology, engineering, science programs with help of substantial scholarship.

This indicates that the first step to provide quality higher education is not only to provide opportunities available to citizens in economic disadvantaged countries but also to make them obtain certain knowledge and skills to survive and, also, to innovate. Such action echoes the call of "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all", which is also the goal for education 2030. It is very close to the goal of our 12-year basic education curriculum guideline: lifelong learning.

For the first three targets (4.1, 4.2, 4.3), the accomplishing time is all set at year 2030. The target 4.1 proposes that every individual in the world should at least receive primary and secondary education and possess basic proficiency in mathematics and reading to serve as a foundation for future effective learning.

SDG also focuses on early childhood education. Its' expectation is not only to provide quality education for the very young generation; it also aims to take care of their status of health and bodily care, a full care for all very young individuals.

As for adults, whether they are men or women, SDG has never left them behind. Equal education opportunity is not simply for higher education. However, professional continuing education focuses on technical, vocational and tertiary aspects, expected to be achieved by year 2030 (United Nations, 2015). What is more important is that, education resources are not only offered, they need to be of high quality and affordable. These requirements maybe very challenging from two perspective viewpoints: firstly, from the hardware side, the material supply for these educational programs must be abundant; secondly, from the software side, instructional professionals and financial support must be substantial.

After receiving decent training, the high-quality human power is equipped with sound knowledge, skill, and attitude to perform and learn at appropriate worksites where their potential can grow. The achievement is also to be made by 2030 (United Nations, 2015); therefore, some challenges are also needed: for instance, before we can provide high quality continuing education, we have to ask ourselves, whether we have enough good quality teachers, trainers, professors, and other related professionals? Secondly, with the fast-changing and progression of current society, whether we have enough personnel and mentors who can catch up with the versatile world change. Sometimes the economic development status of that particular area may not provide enough employment opportunities for these good quality labor forces; therefore, employment services for these individuals should also be in line with the professional and continuing education growth. On the other hand, some fields are very important and in need of lots of talents during the time of training. Often these fields may become outdated soon after these talents have already been well-trained. All these are possible crisis; thus, a possible dynamic mechanism should be planned in advance to ensure the attainment of target by 2030.

With the increase of decent job positions, which is expected in the year 2030 (United Nations, 2015), there will be accommodation for good skilled workers. Equal opportunities for those who may be vulnerable are also protected. These demographical backgrounds include; indigenous people, individuals with disabilities and children who are physically weak. These people with demographical background are more biologically rooted. Further, equal opportunities for education, to sustain life styles based on social backgrounds are also informed, such as human rights, appreciation of cultural diversity, and culture's contribution to sustainability development. These equal opportunity proposals are also applied to the dynamic side, such as learning to achieve, literacy to fit modern lifestyles, needs in the aspects of literacy and numeracy (United Nations, 2015). From the perspective of sustainability, we can see that the guaranteed equal education opportunity focuses more on the functional literacy and economic competency. Firstly, to ensure individuals can maintain certain level of life quality under the SDGs expectation, and then, more decent human value and well-being can be developed.

For all the above-mentioned targets, for the United Nations sustainability development goal number 4, by 2030, they are expecting future good citizens to maintain their life quality with comfortable utilization of emergent technology and modern technology tools by means of equal educational opportunities. However, before our globalized citizens can reach such high level of quality in life, some policy actions should be made in advance. Firstly, the national education policy must be anchored to these goals to make other policy behaviors possible. Secondly, teacher education quality, either preservice teacher education, or in-service teacher training and teacher professional development are very essential for the achievement of this goal. Thirdly, the validity of students' performance is also very important because effective feedback on performance can serve as a teaching quality and attainment of educational objectives and, in turn, become the reference for the next round of education planning. To sum up, it can be revealed that SDG by United Nations in education, possess the following features: cross learning level, we can see the learners SDG concerned range from preschool level, primary school level, secondary education level, higher education level and even more, adult and continuing education level, cross human development level. The SDG in education cares about the learning rights of individuals, at early childhood, childhood, adolescence, adults and even post adult stage, cross nations and ethnic backgrounds. SDG can see sustainability in education as a global cooperation. It encourages developed countries to help economically disadvantaged countries in terms of various educational resources to reach common good, especially for teacher quality, for international society and global citizens. Therefore, the SDG in education searches for quality in education and quality for human beings under modern society advancement, preparing us for technology innovation, and finally, to reach the destination of the well-being of humans.

The SDG in education sketches a picture to nurture future global citizens; the new 12-year basic education guidelines in Taiwan also takes some viewpoints from SDG to incubate their future citizens to get well in the global society and, even more, serve as global leaders to achieve a human well-being goal in 2030.

## 3. The Taiwanese Curriculum Guidelines of 12-Year Basic Education Echoed Global Education Trend

Taiwan matriculates its compulsory civil education from six years to nine years in 1968; that is, young children are attending six-year elementary school and three-year junior high school to complete compulsory civil education. However, the elementary school curriculum may not directly link to junior high school curriculum. Thus, educational authorities try to merge these two curriculum systems to become a nine-year consecutive system. The first step to accomplish this goal is to start with the modification of the nine- year curriculum guideline. After the modification, the six-year elementary school curriculum and the three-year junior high school curriculum can be linked with each other to widen the connection of domain-based curriculum within the same year. After 2014, after the "Senior High School Education Act" was announced, the government declared the onset of 12-year civil basic education (MOE, 2014).

Although the announcement of Senior High School Education Act, 2014, was originally planned to be put into practice in 2018, there are still domain-based curriculum guidelines waiting for deliberate approval by curriculum committee. However, the deliberate processes were not run as smoothly as expected owing to the not so easily reached consensus by committee members. The controversial viewpoints included the deliberate processes of textbooks, how to transform 12-year basic civil education curriculum guidelines into real time classroom practice and textbook content and so forth. The actual onset time of the 12-year basic education delayed until the academic year, 2019, which began on August 1st, 2019. The Taiwanese 12-year basic civil education became the connection of two systems: the first nine year elementary plus junior high school compulsory education system and the three year later secondary education system which was generally called the senior high school period.

One major goal of the Taiwanese 12-Year Basic Civil Education Curriculum Guideline, is to nurture every student, naturally, and equip them with interdisciplinary and lifelong learning abilities, and finally, fit them well into the 21st century global citizen life-style. Thus, the 12-year basic civil education guidelines were not only composed of key competencies proposed by European Union. Furthermore, the curriculum guideline perspective vision shifted from originally ability-based paradigm in the old nine-year compulsory education to the new 12-year competency-

based paradigm basic civil education which expects that students will process abilities to take away, problem-solving capacities, and lifelong learning abilities.

The new Curriculum Guidelines of 12-Year Basic Education also resemble European Reference work by European Union (EU, 2007) and key competencies for lifelong learning which was launched in 2007. The lifelong learning competencies are communicated in the mother tongue and also in foreign languages on mathematical competence, basic competencies in science and technology, digital competence, learning to learn, social and civic competencies, sense of initiative and entrepreneurship as well as cultural awareness and expression. OECD also believes that the above-mentioned competencies are inclusive of knowledge, skill and attitudes needed in their current social contexts and equally important for contemporary global citizens to face life challenges in the 21st century (OECD, 2018). Interestingly, the 12-year basic education curricula guidelines fit all future developmental trends, including SDGs by the United Nations (2015) as well, which makes this curricula guide to totally follow the world trend. The next step, is that the curriculum transformation will be pivotal for the success of these curricula guidelines, however, this still requires at times to be verified.

By examining the elements of competencies, viewpoints by the European Union, together with the 12-year basic education curricula guidelines, the core competencies perspective by Taiwan's new curriculum guidelines are close to European Reference Work. On the other hand, the core competencies of Taiwanese Curriculum Guidelines of 12-Year Basic Education located in the center of concentric circles, is to achieve lifelong learning global citizens as the final goal. By taking the initiative, engaging the public, and seeking the common good are three fundamental principles paired with three basic dimensions of competencies: spontaneity, communication and interaction, as well as social participation.

Spontaneity indicates that each citizen should perform his or her autonomy agency. The autonomous learner can make the most appropriate decision towards ways of learning, methods to problem solve, and in turn, be able to think of ways and pick up actions to improve his or her body and mind to elect individual growth.

Communication and interaction will encourage individuals to make good use of social tools to strengthen their interaction effectively with both, surrounding social contexts and others. These tools include traditional communication protocols, such as language and newly developed technology tools, such as information technology content express devices and, finally, develop competencies in creating art and aesthetics appreciation from daily life events.

Social participation expects individuals to achieve not only social competency but also global citizenship awareness. He or she explores and understands all the varieties originated from both biological and cultural attributes globally, and, in turn, to cooperate with those who have different backgrounds to elicit all quality of life and subjective well-being.

Each of the abovementioned dimensions is inclusive of three items. Firstly, the spontaneity dimension composed of "physical and mental wellness and self-advancement", "logical thinking and problem solving", and "planning, execution, innovation, and adaptation". Secondly, the communication and interaction dimension composed of "semiotics, and expression", "information and technology literacy and media literacy", and "artistic appreciation and aesthetics literacy". Thirdly, the social participation dimension items are "moral praxis and citizenship", "interpersonal relationships and teamwork", and "cultural and global understanding." All these dimensions and items are living under the real-life scenarios.

Therefore, the three dimensions, nine items competency-based Taiwanese 12 year basic education not only incorporates European Union eight core competency elements but also includes "logical thinking and problem solving", "planning, execution, innovation, and adaptation" and "artistic appreciation and aesthetics literacy". This implies that Taiwanese education guidelines combines both current global trend and domestic necessities, and considers more dimensions than European Union's core competency indexes. Moreover, everything mentioned in the guideline may not be achieved by employing content knowledge or skills from a single domain, on the contrary, most of them require interdisciplinary cooperation and learning transfer. Thus, it is imaginable that the complexness of pilot curriculum implementation, teacher education, and school management, classroom instruction are very challenging.

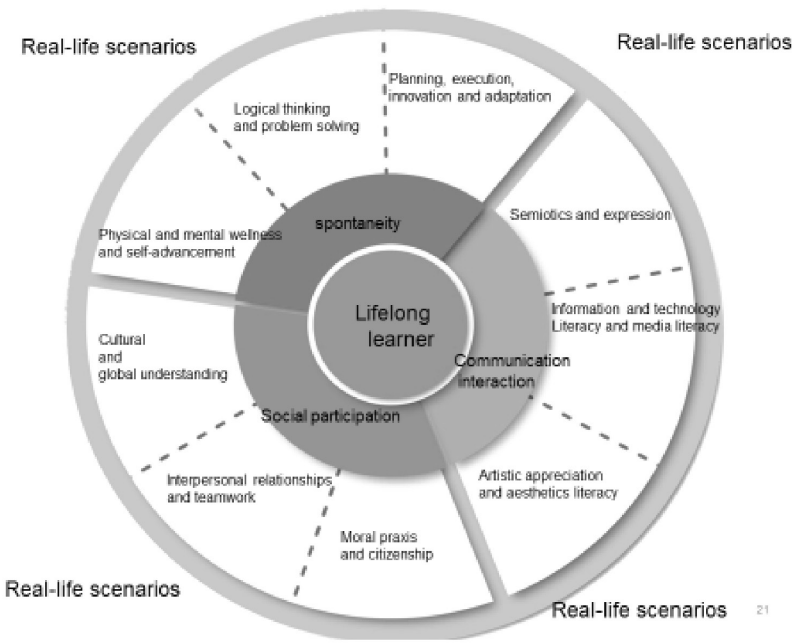


Figure 1 Taiwanese 12-year basic education symbol: Wheel-in-action diagram of core competencies

**4. Core competency and Education 2030**

Talent incubation steps will always be following the global trends. In 2007, the American Council for United Nations University proposed The Millennium Project (TMP), from globalization and the Futures Studies viewpoints, focusing on educational and learning globalization to reveal challenges they may face in the future education. In response to the call, UNESCO hosted the 2015 World Education Forum in Incheon, South Korea, inviting minister of Education from developed countries, conferencing how to deal with future education challenges in the coming years. They came up with an Incheon Declaration and Framework for Action towards inclusive and equitable quality education and lifelong learning for all to delineate future education sketchers in 2030. Furthermore, such goal emphasizes equality of core value of human being regardless of their race or sex; this also proposes that the aim of the education system should focus on knowledge, attitude, and skill building as foundation to cultivate global citizens with lifelong learning ability which is in line with the educational concept postulate by European Union (王智弘&卓冠维, 2019; 孟鸿伟, 2018).

However, OECD also proposed their learning framework for Education 2030 (see figure 2). They regard competence as part of the learning process which is rooted in individual's knowledge, skill, attitude, and value, and, finally, enters the core of concentric circle to achieve well-being for individuals and the whole human society as final goal which is one more step ahead of what current curricula guidelines mentioned "lifelong-learning" individuals. They expect Education 2030 to incubate global citizens who can promote human well-being.

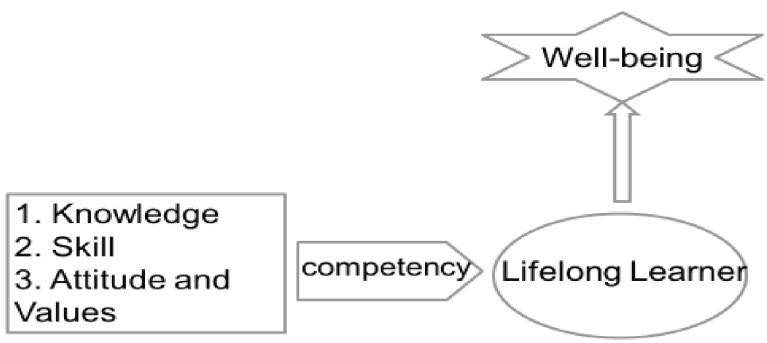


Figure 2 OECD Learning Framework for Education 2030
Adapted from "The future of education and skills Education 2030 (OECD, 2018, page 4)

For the traditional classroom instruction, direct instruction is the major instruction method of delivery. Students' learning strategies are mostly from using the traditional three "R", which are "reading, writing, and arithmetic". Even now, this traditional way of learning is still very popular because it is easier for teachers conducting their classroom management and

performance assessment. Later, an advanced version of learning strategies is developed which is called PQ4R (preview, questioning, read, recite, review, reflection). In this module, rehearsal of learned material is the key way to be acquainted with learning materials; this is one solid learning method. The assessment PQ4R learning mainly relies on pencil and paper methods.

Contemporary learning strategies are certainly even more advanced which emphasizes on 4C (critical thinking & problem solving, collaboration and building, effective communication, creativity & innovation). Learning tends to integrate knowledge; peers can collaborate to achieve their common goal to reach problem solving. The final goal for this is not merely for learning per se; it is also possible to transfer their problem-solving skill to real life and work situations. In such a case, their cognitive domain strategies used, should be at least at Application level from the view of Bloom Taxonomy. Three of the nine competency items are very close to 4C viewpoints (王智弘&卓冠维,2019). Thus, the competency items in the Taiwanese curriculum guidelines is similar to UNESCO's Education 2030 which emphasizes on how to make individual a problem solver as well as a lifelong learner. Although Taiwanese curriculum guidelines provide taking the initiative, engaging the public, and seeking the common good, it still leaves behind OECD's education 2030 final goal; to enhance human's well-being. The Learning Framework of OECD education 2030 is to prepare individuals to meet future competition through competence-based learning of interdisciplinary knowledge, practical skills, global attitudes and values. OECD viewpoints is not too far away from Taiwanese counter parts (张庆勋,2018).

The broader view of educational goal proposed beyond Taiwan's 12-year education guidelines, more specifically, individual and collective well-being, is not included; however, the educators in Taiwan should take a further step to explore the content and metaphor embedded in that idea to ensure the next step of catching-up with the global trend. In the very beginning of human culture, we care about shelter, food and other basic life needs. However, in modern era, these material resources, including income earning, job titles and so forth, may not be satisfying for life today. We care of health, education, social engagement, life and more, which are regarded as connecting quality of life today, and in turn, to certain extent reach various levels of well-being (OECD, 2018). Education, especially, basic education plays a very important role to achieve well-being. Basic education in every country will cultivate their young generations' sound knowledge, skill, attitudes, and even values towards an "inclusive and sustainable future" which can be beneficial for them and develop a new generation to come. Students should be equipped with active, responsible and engaging mind.

Basic catch-up with world skills is necessary and versatile competency in the changing world is another expectation or challenge for new curriculum guidelines. In view of OECD 2030 (OECD, 2018) is called an agency. Students need to apply their education results to influence people, and the social contexts nearby to make the circumstances better. Thus, students need the

ability or competency to scratch, design a framework in mind as a guidance to take action and evaluate the quality of action outcomes. Based on the evaluated outcomes, students will know the gap between the outcome and final goal; and then, take the next step of action to achieve the final goal. Once the learner achieves the goal, he or she needs a wider knowledge and skill from their social contexts and persons surrounding them, such as teachers, family members, peers and so forth. Each and every one, in this "learning circle" needs to work collaborating, to progress to the mutually valued goals. This becomes a learning community that is composed of personal within the learning circumstances. This can be seen as the practice of competency postulated by Curriculum Guidelines of 12-Year Basic Education. According to OECD (2018), there will be two key points that can help learners to achieve "agency". First one, is to support individual's learning to meet his or her learning needs. In such a case, the learner can be motivated and devoted to him or herself to learn emotionally. The 12-year curriculum guidelines will enable individuals to be nurtured by nature. The second, of course is catching-up with the contemporary era, such as literacy and numeracy, which are crucial. The big basic skill, digital application competency is to aid the development of big data literacy as well as physical hygiene, all working together to achieve the well-being are increasing essentials for the transformation of new curriculum guidelines. By the way, according to Rios, Ling, Pugh, Becker, and Bacall (2020), they have documented that critical 21st century skills for workplace are collaboration, problem solving and communication skills. These skills fit both UNESCO's 21st century competencies and Taiwanese 12-year basic education guidelines.

To sum up, Taiwanese 12-year basic education goals are close to UNESCO's and OECD's future education goal; thus, future Taiwanese citizens will be taught according to Taiwanese 12-year basic education goal which can incubate citizens fitting global trends.

## 5. Plausible Actions to transform Curriculum Guidelines of 12-Year Basic Education to classroom practice

Although, Taiwanese 12-year basic education guidelines can be incongruent with world trends proposed by UNESCO and UN, how to put them into effective practice is still a concern. Audiences of new curriculum guides are students; teachers stand on the front line to face the audiences. Teacher education is traditionally by content domain, such as mathematics, and history; however, the new curriculum guidelines focus on interdisciplinary abilities, lifelong learning and problem solving. Therefore, teachers need ample professional development, such as knowledge or practice on their skills for general curriculum guidelines and domain guidelines, curriculum development knowledge and skill, competence-based assessment, professional learning community to make 12-year basic education practice an effective one.

On the other hand, some features of the 12-year basic education is an alternative curriculum and school-decided curriculum. These curricula can be used to help establish school characteristics, including setting up school-based curriculum or district based-curriculum which are different from previously used domain specific curriculum. The Taiwanese new curriculum intends to consolidate school characters to fit students' developing images of each school. In order to achieve the abovementioned goals, teachers require some professional advancement through professional community learning or other professional training programs to enable teachers to be equipped with these competencies and curriculum evaluation abilities.

In order to accomplish the 12-year basic education goals, Taiwanese government invests lots of educational resources to incubate competitive modern global citizens who can get well with the fast-changing world. This article is a beginning of explaining the potential of 12-year basic education as a means to push Taiwanese curriculum reform to fit future trends. Later, more paper will be addressing how 12 basic education concept enhances the development of school-based curriculum and makes it into practice.

**References**

孟鸿伟（2018）OECD学习框架2030，《开放学习研究》，（3），取自http://www.oecd.org/education/2030/

王文科、王智弘（2014）《课程发展与教学设计论》（第8版），台北: 五南图书。

王智弘、卓冠维（2019）《教育2030-本土化实践的思考、趋势与因应策略》，台北：高教出版社。

张庆勋（2018）素养导向的未来师资培力，《学校行政》，113，11-18。doi:10.3966/160683002018010113002

Anderson, S. B., & Ball, S. (1978). *The profession a practice program evaluation*. Jossey-Bass, Inc.

Glatthorn, A. A., Boschee, F., Whitehead, B. M., & Boschee, B. F. (2012). *Curriculum leadership: Strategies for development and implementation* (3rd ed.). Sage Publications.

OECD (2008). *Key competencies and basic skills*. Retrieved from https://ec.europa.eu/education/policies/school/key-competences-and-basic-skills_en

OECD (2018). *The future of education and skills Education 2030*. OECD.

Oliver, P. & Gordon II, W. (2013). *Developing the curriculum*. Pearson.

Ornstein, A. C., & Hunckins, F. P. (2013). *Curriculum: Foundation, principles, and issues* (6th ed). Pearson Education.

Parkay, F. W., & Stanford, B. (2004). *Becoming a teacher* (6th ed.). Allyn and Bacon.

Pinar, W. (1978). Notes on the xurriculum field 1978. *Educational Researcher, 7*, 5-12. Retrieved from https://doi.org/10.3102/0013189X007008005

Rios, J., Ling, G., Pugh, R., Becker, D., & Bacall, A. (2020). Identifying critical 21st-century skills for workplace success: A content-analysis of job advertisement. *Educational Researcher, 49*, 80-89. Retrieved from http:// 10.3102/0013189X19890600

Saylor, T. G., Alexander, W. M., & Lewis, A. J. (1981). *Curriculum planning for better teaching and learning* (4th ed). Holt, Rinehart and Winston.

Schlelcher, A. (2018). Educating learners for their future, not our past. *ECNU Review of Education, 1*, 58-75. Retrieved from http://10.30926/ecnuroe2018010104

Tyler, R. W. (1949). *Basic principles of curriculum and instruction*. University of Chicago Press.

UNESCO. (2015). *Education 2030 Incheon Declaration and Framework for Action*. Retrieved from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/ED/pdf/FFA_Complet_Web-ENG.pdf

United Nations (2015). *Sustainable development goals. Department of Economic and Social Affairs*. United Nations.

Wiles, J., & Bondi, J. (2011). *Curriculum development: A guide to practice* (8th ed.). Pearson.