Development and Application of Three Models for the Curriculum Design

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Abstract

The purpose of this study is to explain the necessity of the curriculum design model which can clearly reveal the compositional characteristics of school curricula. Moreover, this study is to support the basic logics of the design models and to lay the groundwork for improvement of the models by exposing its pros and cons. In this context, this study suggests three models. One is the Key Model, which is based on the core and the surroundings those are the most universal domain in school curricula. Next, the Octagon Model, which consists of subjects and extra-curricular domains. At last, this research proposes the Triangle Model, which is made to show the characteristics of career-based learning. All three models have different usages but when they are combined properly, they would provide help in planning a better school curriculum. All three models do not have to be utilized at all times for curriculum design at all levels. Each has different merits, and if they are improved and integrated that allows them to cover each other’s weaknesses, the contribution to future curriculum design fields in South Korea will not be small.

Keywords: school curricula, design model, Key model, Octagon model, Triangle model.

1. Introduction

Education is a special form of learning. Learning can take various forms (universal, formal, semi-formal, non-formal, and others) but education emphasizes relative formality, systematicity, planfulness, efficiency, efficacy, among other qualities. These educational characteristics, where an instructor intervenes in a student’s learning using whatever method, are usually delivered through schools. Some schools have better systems, materials, methods, and culture than others in terms of fostering strong education. In schooling, curriculum is one of key factors for better education[1]. In this context, a curriculum is necessary to plan schooling that is effective and efficient.

Thus, the duty of the curriculum field is to remove disorder and uncertainty from educational activities and provide “follow-worthy” quality standards for educational activities. Additionally, providing learning opportunities corresponding to these standards is needed to
promote better learning and better lives for individuals and communities, protecting their values and dignity. Curriculum reform is essential to school reform and educational reform generally. That is, where curriculum functions as the “compass” in educational activity, it is rather the “lever” in educational reform.

As when one is drafting a building blueprint, a design model is necessary for good curriculum planning[2]. Such a design model, representing the characteristics or requirements that a curriculum should have, can be revealed through a school curriculum design. If this is not done, synthesis, coherence, balance, foundation, and similar aspects of the curriculum will be lacking. Therefore, this study intends to develop a design model that modifies the primary and secondary school curricula. The particular intention is to present a model incorporating both a compulsory curriculum taught equally to all and an elective curriculum taught differently to diverse groups.

This paper will investigate some key issues concerning curriculum design. First is that people begin by learning general knowledge in various fields of activity through education[3], but in the end they need to specialize, whether that means learning some specific job skills, a foreign language, how to play a sport to manage their health, or how to play a musical instrument to manage their character, self-directed learning, cooperative learning and creative problem solving in cooperation with others, and attitude. The final outcome of such a multifaceted education is that each learner finds their own way to enter a career path, demonstrate creativity, think extraordinary thoughts, and discover and invent in their chosen field. How can good curriculum design help them do this?

Second, the fundamentals of schooling over 12 or 16 years can be considered to be basic cultivation, primary accomplishment, and key competencies. Basic cultivation in this case signifies the basic knowledge, skills, attitude, and lifestyle that qualify one as a human being. Primary accomplishment means the basic knowledge, skills, attitude, and lifestyle required to succeed in a specific field. Additionally, key competencies signify the creative and professional knowledge and skills required in a specific field[4]. These can be considered irreplaceable domains, and it is suitable to teach basic cultivation in elementary school, primary accomplishment in secondary school, and key competencies in higher education. What kind of curriculum best supports these learning goals?

Third, the growth and development of children needs to be taken into account by
curriculum design[5]. Up to around two years of age, children must be guaranteed “absolute happiness” in their parents’ arms and their exposure to the outside world expanded gradually as they grow. The need in early childhood is to protect one’s child with maximum long-term efficacy with the most inexpensive budget. From kindergarten to the lower grades of elementary school is the time to learn undivided and integrated content through “play and activity” and to acquire foundational instrumental subjects (the “3 R’s”). This learning period continues in the upper grades of elementary and in middle school, centering on basic subjects, then the diversified subjects of high school (techniques, foreign languages, physical education, fine arts, and others) are learned as selected by the high school student. High school can be viewed as a vehicle for career-path-oriented (or differentiated) curriculum. Overall, the curriculum is similar for all students in the beginning, with compulsory courses, but differentiates over time to the selective similarity of elective courses; and it is important for school curricula to manage this transition and ensure continuity of learning and the achievement of learning goals.

Thus, fourth is the issue of common as against varied learning paths[6]. Commonality is the norm in elementary and middle school, and difference by career path group in high school and afterwards. If commonality and difference are seen in relation to group application range, compulsory and electivity correlate to imposition method. Of course, children are all different; nevertheless, foundational education based on the common-compulsory curriculum should be uniformly (equally) provided to all without discrimination, to build the foundation of a social community. Basic learning and social skills are learned at an early age because the individual personality develops and becomes more distinct over time. Basic cultivation and education for a strong community are normally done as part of compulsory education, without charge. The most important measure to take at this point is to provide remedial learning opportunities to below average (below basic and basic level) students. This is because not only equality of opportunity but also equality of results is an important goal to pursue for a strong social fabric. Once this crucial period for the formation of social common ground passes, more elective courses can be introduced as students pursue their own individual life paths. As further discussion will be shown below, different learning opportunities given to children at this time according to their strengths and weaknesses lead to different outcomes in their lives.

Fifth, schooling is the foundation of continuous development and lifelong learning[7], both for students entering university and for students entering a vocational stream. In fact, all students should end at a “vocational” point, even if that vocation involves further education; otherwise, their connection with society diminishes, they find antisocial jobs within antisocial
groups, and they come to be a social disturbance. Therefore, basic vocational education for dropouts and those not proceeding further must be compulsory and free of charge. Schools and society should try their best to help all learners reach a place in their own careers where they can maintain a legitimate occupation (whether that is employment, entrepreneurship, taking a place in a family business, or whatever).

The curriculum design model presented in this paper tries to represent a way to find answers regarding the role of curriculum in investigating these five fundamental issues. What knowledge, skills, attitude, social orientations, and so on are taught and learned needs to be considered in terms of content, activities, development of capabilities, and the like.

2. The Three Models for Curriculum Design

2.1 Key Model of the Basic characteristics of Curriculum

Another important answer to the question of what to teach and learn is that study, work, play, and other activities should be conducted according to the natural tendencies, interests, talents, aptitudes, and so on of each individual[7]. Good instruction and curriculum can complement these natural capabilities with acquired practice, training, theoretical and practical knowledge, and the like, which can help advance them in the direction of their natural inclination. This is represented as follows: the student’s core subjects (often, their major) are where all three circles meet; complementary subjects (e.g., a minor) are where two circles meet, and peripheral subjects (liberal arts) are in the circles where nothing overlaps. In the core, the student’s engagement and interest are reflected by high ability, intense interest, broad knowledge, significant time and personal investment, and so on. These capacities will lower for the complementary areas, and still further for the periphery, where relevant adjectives might be low, below, weak, few, or narrow.

As all students have core, complement, and periphery areas, all curricula should prioritize or deprioritize teaching material accordingly[8]. Therefore, study areas can also be divided into core, complementary, and peripheral. If this was described in terms of study level, these areas would be basic, middle, and high level. A “key” shape appears as the circles and bars are connected, which is why this is called the “key model.” If this model is followed, salutary effects for learning can be achieved, namely a plan that targets the “core” that distinguishes the core from the periphery, an effective learning sequence, and balance between complement and periphery, not only the core.
The key model expresses characteristics universal to any curriculum in that it presents characteristics of the core (high and large), the complement (intermediate and medium), and the periphery (low and small). The key opens a door, guiding learners into the new world. However, the key model does not instruct us as to what kind of subject-curricula and extra-curricular activities should be implemented. To investigate these important areas, another model is necessary.

2.2 The Octagon Model of Subject-Curricula and Extra-Curricular Activities

Subject-curricula and extra-curricular activities constitute the matter of school curricula[9]. As mentioned, basic subjects are focused on in elementary and middle school so as to elevate individual and collective human ability. These may include (1) thinking and communication ability in one's native language; (2) ability to think and communicate in a foreign language; (3) ability to systematically investigate human and cultural phenomena; (4) ability to investigate relationships between numbers and quantities; (5) ability to investigate nature and the fundamental principles of the physical world; (6) ability to resolve problems relating to food, clothing, housing, and daily life; (7) emotional and aesthetic well-being, imagination, and creativity; and (8) physical fitness and health of mind and body. Instead of answering the question “what and why,” if we focus on the question “what and how,” the problem of deciding what subjects are important is difficult to resolve. That is, if subjects are divided through lower contents or investigating method, they multiply chaos because too many subjects are shown in school curricula. Therefore, a design model must be developed that structures curriculum well.

Extra-curricular activities, for their part, reflect not only cross-curricular themes (creativity, social cooperation, career path, and others) but outside the official curricula. In Asian education systems, extra-curricular activities are part of the periphery[10]. However, the role of extra-curriculum will be important, when subjects as a core part of curriculum do not function properly. In other words, if subjects are taught well in their classes, the function or importance of extra-curricular activities will decrease. Cross-curricular themes handle special groups (parents’ groups, disabled children, dropouts, and so on) or topics, which may eventually be worked up into elective subjects. Extra-curricular activities that all students participate in according to school and grade are still valid.

A curriculum includes whatever is to be taught and learned within some defined time period, granted degrees of priority by function, status, range, and so on in what to be taught
and learned. This priority emerges especially well in high school curricula like International Baccalaureate Diploma Programme (hereafter IBDP)[11]. IBDP covers the last two years of high school curricula; six subjects consist of two levels; and in order to integrate them, CAS (Creativity, Activity, and Service) are located in the core. The center is the yin-yang, and the surrounding is made up of eight subject areas. That is, subjects under the curriculum can be established variously at basic, middle, or high levels. At the high school level, where all “high”-level subjects cannot be taught, a selection or combination of them should be determined.

The octagon model above organizes eight subject areas in the curriculum into basic, middle, and high levels. For example, if a student were to take liberal-arts course or natural-science course, excluding fine arts and physical education, if three of six subject areas as core subjects should be selected at the high level, a total of 20 cases ($6C3=20$) would be possible. Depending on the student’s chosen career paths, core subjects might be language, social studies, and foreign languages; math, science, and vocational skill, or others. Additionally, among the other three subjects or five subjects including fine arts and physical education, there are 10 ways to combine complementary subjects as middle level. Excluding the core and complementary subjects, basic subjects as basic level can be selected. Fine arts or physical education themselves can also be considered core subjects, and can be further developed into differentiated curriculum. For example, fine arts can be divided into music course, art (design) course, film course, cultural contents course, and others, and physical education into individual fitness course, group fitness course, sports industry course, and others.

The octagon model displays the Orientalism well. That is, the model allows us to set learning plans for many potential career paths. In other words, the octagon model is a convenient curriculum design to reflect career paths. The octagon model can also function at earlier levels of education such as middle school curricula.

However, the octagon model cannot show which combination results in what shape. Various career-path-oriented learning formats can be presented through various combinations, but the results may be murky. That is, the octagon model cannot provide the name and the number of curricula as combination results of various subjects. Thus, a new design model is needed necessary to supplement and overcome these disadvantages.

2.3 The triangle Model for the display of career-oriented curricula

A good curriculum brings out the advantages and strong points of each person. Starting
from high school, education is career oriented, and by the end of high school, students are grouped by innate aptitude, skills, and career path for college education. Career-oriented curricula reflect the diversity of human life, advancement into the world beyond high school (employment, establishment of a business, succession to a family business, etc.), and diversity of college entrance. Thus, the focus moves from supplementation of weak points, as in a compulsory curriculum, to reinforcement of strong points and an elective curriculum.

The axes of this career-oriented curriculum are aptitude (attention and interest) and career path (decision and selection). “Differentiated, but not discriminated,” it is composed differently based on educationally appropriate standards for these qualities. The most important curricular plan at this time is that schools collaborate to guarantee maximum career-oriented learning opportunities. Since each high school has limited resources and cannot manage a full range of career learning, a career-oriented curriculum should be managed and provided through shared duties and cooperation among high schools in the same area. In particular, if the school loses students, the curriculum is likely to become more inadequate, in a vicious circle. One way to counteract this is to bring down boundaries between schools and create “school clusters” in order to safeguard the right to learn through duty sharing and cooperation among high schools in the same area to provide a full career-oriented curriculum.

A career-oriented curriculum is composed of subject-curriculum and extra-curricular activities that can serve as useful foundations to job or college preparation at the next level. Students can select a combination of courses (levels, focuses, etc.) with topics (techniques, evaluation methods, etc.) that will serve their abstract direction and goals, and make their own curriculum.

When “learning scope” is kept as the common ground, the multiplication result of “learning level” (study period) and “learning scope” is “learning amount,” which is consistent across students (i.e., the total number of completed units in three years of high school is equal) even when direction (career path) differs. Baseline (learning scope) and height (learning level) are the same and as well as the area (learning amount) made here, but many triangles can be drawn where direction (learning path) of the apex is different. This is named as Triangle Model[2].

On the lowest portion of these triangles, they all overlap, representing the basic common element (three years in high school). Then, further common elements within each department are formed between neighboring triangles. Ultimately, a distinct area not overlapping with any other triangles is formed around the apex area. In this way, the triangle model displays career-path-oriented aspects of learning well. Once the apex areas are distinguished, they can be derived into diverse differentiated curricula. Thus, these curricula are based on students’
common experience in high school, but ultimately direct them to different career paths. In other words, the triangle model is convenient for the design of a career-oriented high school curriculum. High school curriculum can be viewed at a macro (college and job preparation), medium (majors and professional fields), or micro (individual courses) level.

To further explain the advantages of the triangle model, these characteristics can be grouped as follows: (1) very narrow common scope based only on liberal-arts course, natural-science course, fine arts course, and physical education course; (2) liberal arts and natural sciences in common only, with fine arts and physical education excluded from the range; (3) expansion of the college preparatory range to include fine arts and physical education; and (4) expansion of the college preparatory range to the maximum by making vocational preparation and college preparation common. Realistically, (3) is adequate.

The axis of the triangle model displays the level of learning: baseline (1) can be drawn starting from the third year of middle school for students behind in learning, (2) can begin normally in the first year of high school, and (3) can extend from the second year of high school until the first year of college for superior students such as those in specialized high schools. Furthermore, triangle model can set up extend start and end points of learning up to twelve years, which shows clearly that directions continue to diverge even if this is not clear at an early stage.

Within the triangles, similar, smaller triangles can be made high, middle, low or large, medium, small to incorporate the key model or the octagon model. In a career-oriented curriculum, both depth and breadth of coverage are necessary, leading to learning that brings mutual complementarity and synergy through balance. That is, a balanced curriculum is necessary where liberal arts students cannot ignore the natural sciences and vice versa. This design will prevent excessive division and will foster the wide perspective needed for college admission.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Cross-correlation of key, octagon, and triangle models</th>
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<tbody>
<tr>
<td>Key Model</td>
<td>Octagon Model</td>
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<tr>
<td>A model developed based on a distinction between three-circle overlap, two-circle overlap, and no-overlap areas of studies according to students’ study characteristics (aptitude, attention, ...</td>
<td>A model based on the principle that various types and formats of curricula can be developed through the yin-yang and eight trigrams of Orientalism.</td>
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### Concept

- Study Area can be divided into core, complement, and periphery.
- Study level can be divided into basic, middle, and high levels.
- Study effect can be divided into convergence, sequence, and balance.

### Advantage

- Represents focus of learning.
- All learning can be represented within the core and periphery.

### Disadvantage

- Types of studies (subjects, processes, sequences) cannot be displayed.

### Table: AJMAHS

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<tr>
<th>Concept</th>
<th>Advantage</th>
<th>Disadvantage</th>
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</thead>
<tbody>
<tr>
<td>interest, skill, and others, studies that can be done well (skills, development, disability, and others), and mandatory studies (studies and career path). • Study Area can be divided into core, complement, and periphery. • Study level can be divided into basic, middle, and high levels. • Study effect can be divided into convergence, sequence, and balance.</td>
<td>• Represents focus of learning. • All learning can be represented within the core and periphery.</td>
<td>• Types of studies (subjects, processes, sequences) cannot be displayed.</td>
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<td>express extra-curricular activities and cross-curricular activities, and study areas or subject types are divided into basic, middle, and high through the three layers of the surrounding octagon. • By various combinations of layers, various career-path-oriented curricula can be developed.</td>
<td>• Represents combination of subjects. • Many types of courses can be developed.</td>
<td>• As this model shows the result of combination of subjects, the type of curricula cannot be displayed.</td>
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<tr>
<td>triangles with different directions. • The overlapping portion on the lowest part is the basic level, the overlapping portion above is the middle level, and the high level is indicated by the non-overlapping apex part.</td>
<td>• Represents types of curricula. • Balance can be expressed through distribution of learning amount and through overlap and non-overlap of study area.</td>
<td>• It is difficult to show types of subjects, and extracurricular activities cannot be placed.</td>
</tr>
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### 3. Conclusion

Curriculum is a multifaceted construct including a plan, its execution, and the results, but the plan or blueprint is the key feature of schooling. Curriculum relates to the inclusive or exclusive issues of what to teach and learn, and reflects factors such as function, status, importance, use, and others.

The most universal model of curriculum design is the key model [12] (Hong, 2003), which divides learning area into core, complement, and periphery; learning level into high, middle, and basic; and efficacy of learning characteristics into core, sequence, and balance. However, as this approach was not able to adequately represent subjects and extra-curricular activities, the octagon model was created [13]. This model divides each subject into high, middle, low level, and extra-curricular activities, which deal with cross-curricular themes, are placed as special activities in the core. Through this method, various learning formats can be developed that
reflect career paths and school and local characteristics by means of combinations of subjects. Even the octagon model, however, has the disadvantage of not being able to display the results of various combinations of subjects; thus, the triangle model was developed.

The triangle model[2] employs many triangles that represent equal learning scope (baseline), learning level (height), and learning amount (area), but have apexes (career paths) aiming in different directions from each other. The lowest point is shared by all triangles—this is the common portion that all high school students study. Numerous neighboring triangles in the middle share space in common, representing a middle sequence of common subjects. The apex area, where none of the triangles overlap, represents a small sequence (course). However, the disadvantage of the triangle model is that extra-curricular activities are not placed correctly in it. Each model was constructed with a different purpose, but all are useful in illuminating the characteristics of elementary, middle, and high school curricula.

Summing up, curriculum is actualized as compulsory or elective, and the key model, octagon model, and triangle model can function as design models for this actualization. Especially for the detailed and systematic design of career-oriented curriculum in high school, the division of study areas by the key model, the creation of various types of career-oriented curricula by the octagon model, and the identification of learning amount and suggestion of various directions according to career paths by the triangle model can all be useful. Of course, all three models do not have to be utilized at all times for curriculum design at all levels. Each has different merits, and if they are improved and integrated that allows them to cover each other’s weaknesses, the contribution to future curriculum design fields in South Korea will not be small. Each model also has its disadvantages, and so a new model overcoming these disadvantages and integrating the advantages will be necessary.

References


