

The Study on Graduation Credits, Required Courses and Subjects: Focusing on California and Korean High Schools

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Abstract

The purpose of this study is to compare the curriculum between California, USA and Korea. Research as a basis for curriculum revision needs to clarify its scope and purpose in comparison with a brief introduction of educational trends abroad. Therefore, this study compared high school graduation class hours to compare curriculum in two countries. Materials used for the study are Korean national curriculum documents, California education law documents, and some documents provided by educational districts of the State. In particular, the US curriculum was reconstructed according to the simple graduation requirements proposed by the State of California, USA, to compare the documents of the two countries. The research results are as follows. First, South Korea, due to some differences, required more credits to complete the high school curriculum. Second, although the names of required courses in the US curriculum are similar, the required percentage of courses is slightly different from that in Korea.

Keywords: International Comparison of Curriculum, American Curriculum, Korean Curriculum, High School Curriculum, Class Hours

1. Introduction

In order to actively respond to the rapid changes in society, it is necessary to explore the direction of education change in the future society [1]. In this situation, it is important to compare the curriculum, the core of school education. This is because it informs the global trend and provides an important basis for curriculum modification. In particular, it is important to compare school-centered cases with country-centered cases. Curriculum research requires analyzing these two examples to find objective criteria for the curriculum development. This study derives directions for improvement based on this, and proposes a future-oriented curriculum.

Curriculum development begins with the following questions. How many credits must students complete to graduate? Also, what kind of educational content is composed of subjects? Previous studies have shown that there are studies comparing curriculum content [2], [3] and studies comparing curriculum types [4], [5]. A study comparing school time allocation was also conducted [6]. Similar data were also presented in OECD education indicators. The OECD Education Indicators 2019, issued in September 2019, suggested compulsory education hours for elementary and junior high schools in OECD countries.

The similarity of the above study is that the preceding study analyzes compulsory school hours for elementary and middle schools. In high school, it is more difficult to compare the curriculum because it is not compulsory. In particular, depending on who operates the curriculum, the impact of the curriculum may or may not be absolute. The fidelity of the curriculum is an important factor to consider when comparing curriculum internationally. In other words, comparative studies should properly understand the context of each country and provide a reasonable basis for interpreting the results. Thus, this study compared Korean and American curriculum based on Korean curriculum documents. This is because Korean curriculum presents the systematic curriculum elements of the document.

The California curriculum can be found on the website of the Ministry of Education, and Korea also

publishes curriculum documents on specialized websites. (See fig 1 and fig 2).



Fig. 1 A Screenshot of California Department of Education Homepage [7]

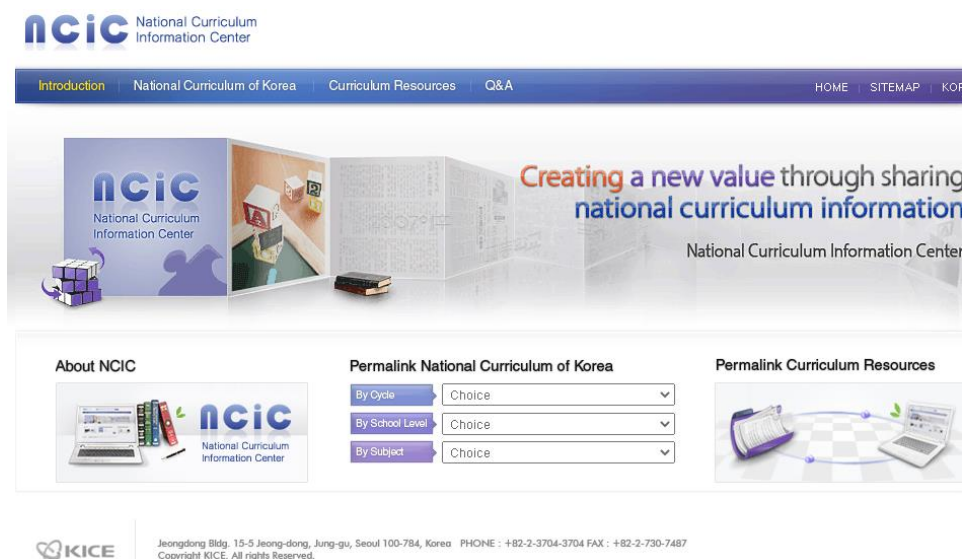


Fig. 2 A Screenshot of a Korean curriculum site operated by the Korea Institute of Curriculum and Evaluation [8]

2. Theoretical Background

Since 2010, the American curriculum has undergone drastic changes. In particular, the federal government recently attempted to set national standards for educational content and student achievement. Creating a curriculum at the national level is an alternative to state-level efforts to strengthen educational responsibility. This responsibility movement is an alternative to the use of low-level achievement standards in each state.

Therefore, the need to develop a common core national standard (hereinafter referred to as CCSS) that could be used in common across states was discussed. Subsequently, the National Governors Association Center (NCA) and the Council of CSO (CCSSO) released '2010 Draft K-12 Common Core State Standards, 2010.03.12'. The introduction of CCSS was a major national education reform.

The goals of the CCSS curriculum are: First, students must be able to experience rigorously and carefully selected educational standards through classes. Second, students should minimize unnecessary repetitive

practice. For this, the curriculum needs to be organized systematically.

Meanwhile, the U.S. school system is divided into elementary, middle school, high school, or elementary and high school. Each training period varies from state to state, and within the state, education durations vary from district to district. Prior to primary education, there were nurseries and kindergartens. The most widely used school systems are 5-3-4 and 6-3-3 (See Table I).

Table I. Types of American school system

5-3-4		6-3-3	
Elementary school	K-5	Elementary school	K-6
Middle school	6-8	Middle school	7-9
High school	9-12	High school	10-12

The duration of compulsory learning in the United States also varies from state to state. For example, the six states are as follows.

Meanwhile, in Korea, compulsory education prescribed by law is limited to middle schools. In Korea, the duration of education at each school level is determined by national law. The education period in Korea is 6 years for elementary school, 3 years for middle school, and 3 years for high school.

The Korean curriculum was revised in 2015, and the most recent version is the 2015 revised curriculum. The Korean high school curriculum focuses on elective courses. Students are free to take courses of their choice within a specific area proposed by the national curriculum documents.

Table II. Mandatory School Ages and Periods in Seven States

States	Age	Duration
California	6-18	13
Florida	6-16	11
Hawaii	6-8	13
Illinois	7-16	10
New York	6-17	12
Texas	6-8	13
Wisconsin	6-8	13

3. Research Method

As discussed in the theoretical background, it is difficult to compare curriculum documents between two countries because the contexts of the two countries are different. Research as a basic resource for the revision of the national curriculum should be relatively clear in scope and purpose. Therefore, this study had to select comparable data from both countries to achieve the research goal. In particular, in the case of the American curriculum, each state has different education laws, and the study required selecting specific states from which to collect data. The California curriculum was chosen because it presents relatively clear credits.

3.1. Us Comparative Data

Minimum required credits can be interpreted as similar to curriculum credits. This study used the minimum graduation credits presented at the state level as comparative data (see Table III). Also, the minimum credits suggested at the district level were also included in the study. The area used was the Los Angeles Department of Education (see Table VI).

Table III. California state graduate credits and UC, CSU admissions credits [9]

Subject Area	State Mandated Requirements* (EC 51225.3) for High School Graduation	UC Requirements for Freshman Admissions	CSU Requirements for Freshman Admissions
English	Three Years	Four years of approved courses	Four years of approved courses
Mathematics	Two years, including Algebra I, beginning in 2003 – 04. (EC 51224.5)	Three years, including algebra, geometry, and intermediate algebra. Four years recommended.	Three years, including algebra, intermediate algebra, and geometry.
Social Studies/Science	Three years of history/social studies, including one year of U.S. history and geography; one year of world history, culture, and geography; one semester of American government and civics, and one semester of economics.	Two years of history/social science, including one year of U.S. history or one- half year of U.S. history and one-half year of civics or American government; and one year of world history, cultures, and geography.	Two years, including one year of U.S. history or U.S. history and government and one year of other approved social science.
Science	Two years, including biological and physical sciences.	Two years with lab required, chosen from biology, chemistry, and physics. Three years recommended.	Two years, including one year of biological and one year of physical science with lab.
Foreign Language	One year of either visual and performing arts, foreign language, or career technical education**.	Two years in same language required. Three years recommended.	Two years in same language required.
Visual and Performing Arts	One year of either visual and performing arts, foreign language, or career technical education**.	One year of visual and performing arts chosen from the following: dance, drama/theater, music, or visual art.	One year of visual and performing arts chosen from the following: dance, drama/theater, music, or visual art.
Physical Education	Two years	Not Applicable	Not Applicable
Electives	Not Applicable	One year	One year
Total	13	15 (7 in the last two years of high school)	15

Meanwhile, the district's graduation requirements are as follows.

Table VI. LA District Graduation Requirements [10]

Subject	Requirements	Comments
A. History/Social Science	1 year World History 1 year U.S. History	No Validation
B. English	4 years	No Validation
C. Math	3 years	Validation*
D. Laboratory Science	2 years	Validation*

E. Language Other Than English	2 years	Validation*
F. Visual & Performing Arts	1 year	No Validation
G. College Preparatory Elective	1 year	No Validation
Additional Requirements		
Principles of American Democracy	1 semester	
Economics	1 semester	
Physical Education	2 years	
Health	1 semester	
Total Numerical Credits	210	
Non-Course Requirements		
Service Learning		
Career Pathway		

3.2. Korea Comparative Data

Korea sets high school graduation standards in national-level curriculum documents. One credit is equivalent to taking 50 minutes of class during 17 lessons. Class time is 50 minutes. The curriculum can be organized by region and school, but must meet the mandatory unit standards proposed by the country. That is, the required units can be interpreted as the minimum graduation standard established by the country. Table V shows general high school curriculum of Korea.

Table V. General High School Curriculum [11]

	Subject Areas	Subjects (Subject Clusters)	Common Courses(Units)	Required Units	Autonomous Implementation Units
Subjects(Subject Clusters)	Foundation	Korean Language	Korean Language(8)	10	Individual schools construct the curriculum in consideration of students' aptitudes and career plans.
		Mathematics	Mathematics(8)	10	
		English	English(8)	10	
		Korean History	Korean History(6)	6	
	Inquiry	Social Studies (including History/Moral Education)	Integrated Social Studies(8)	10	
		Science	Integrated Science(8) Science Laboratory Experiments(2)	12	
	Physical Education • Arts	Physical Education		10	
		Arts		10	
	Life • Liberal Arts	Technology • Home Economics/ Second Foreign Language/ Classical Chinese/ Liberal Arts		16	
	Subtotal			94	
Creative Experiential Activities				24(408hours)	
Total Units				204	

4. Results

To analyze the data of the two countries, the units had to be consolidated. In the table above, Carnegie units (year units) and credit units (50-minute classes, 5 days per week, 1 semester) are combined. When a Carnegie unit is converted to a credit unit, one Carnegie unit becomes 10 credits. In this study, credit units were used as comparison units.

Accordingly, California's minimum graduation requirement is 130 credits over four years, and the minimum required for UC and USC admission is 150 credits. On the other hand, the number of credits offered by the Districts varies; the Districts of California offer 220-260, Louisiana 220 and Texas 230 [12]. The Los Angeles Unified School District offers 210, and the Piedmont Unified School District offers 225 credits. Based on this, the study assumed that the US high school graduation range was between 220 and 260. Therefore, this study was conducted with the assumption of approximately 230 graduation credits.

In this study, the minimum graduation requirements at the national level were compared to the essential units of the Korean curriculum, and the graduation completion requirements at the district level were compared with the Korean autonomous credits. Of course, each school district does not have the same graduation requirements as Korea's autonomous credits because the number of credits required for each subject is different.

Based on the discussion above, a new table was reconstructed by mixing the American curriculum and the Korean high school system.

Table VI. Comparison table of curriculums of both countries

Korea				California, USA				
Subjects (Subject Clusters)	Common Courses(Units)	Required Units	Autonomous Implementation Units	Subjects (Subject Clusters)	Common Courses(Units)	Mandatory credit of state (4 years)	Mandatory credit of state (3 years)	Mandatory credit of [district-state]
Korean Language	Korean Language(8)	10		English		30	22.5	
Mathematics	Mathematics(8)	10		Mathematics	Algebra (10)	20	15	
English	English(8)	10						
Korean History	Korean History(6)	6						
Social Studies (including History/Moral Education)	Integrated Social Studies(8)	10		Social Studies/Science	history and geography (10) world history, culture, and geography (10) American government and civics (5) economics (5)	30	22.5	
Science	Integrated Science(8) Science Laboratory Experiments (2)	12		Science	biological (10) physical sciences (10)	20	15	
Physical Education		10		Physical Education		20	15	
Arts		10		Visual and Performing Arts/ Foreign Language/ Electives		10	7.5	
Technology • Home Economics/Second Foreign Language/Classical Chinese/Liberal Arts		16						
Subject Total		94	84			130	97.5	100 (4years) 75 (3years)

Creative Experiential Activities	24(408hours)	-	-	
Total Credits of Subject Curriculum	204-24=180 (3 years)		210-250 / Approximately 230 (4 years)	Approximate ly 172.5 (3 years)

There is no creative experiential activity in the American curriculum, so only credits are given for subjects. Therefore, it is necessary to compare the Korean curriculum with the American curriculum, excluding creative experiences in Korea. Based on this, the curriculum component of the two countries is explained as follows.

First, when comparing required course credits, the required three-year course credit is 97.5 in the United States and 94 in Korea. U.S. required course credits are rather high.

Second, the school's autonomous credits are 75 credits in the United States and 84 credits in Korea. The U.S. District's graduation credits are similar to those of actual school graduation. US autonomous credit is the amount required by the school district minus state credit. This is similar to Korea's autonomous credit unit. This amount is about 10 credits less for the United States than for Korea.

Third, the total number of credits in both countries is 180 in Korea and 172.5 in the United States. U.S. school curriculum credits may be similar to or slightly lower than Korean credits.

Next, the required credits for each subject are explained. Figure 3 shows Korea's required curriculum credits, and Figure 4 shows California's required curriculum credits. The numbers in the figure indicate the number of credits you must complete in 3 years.

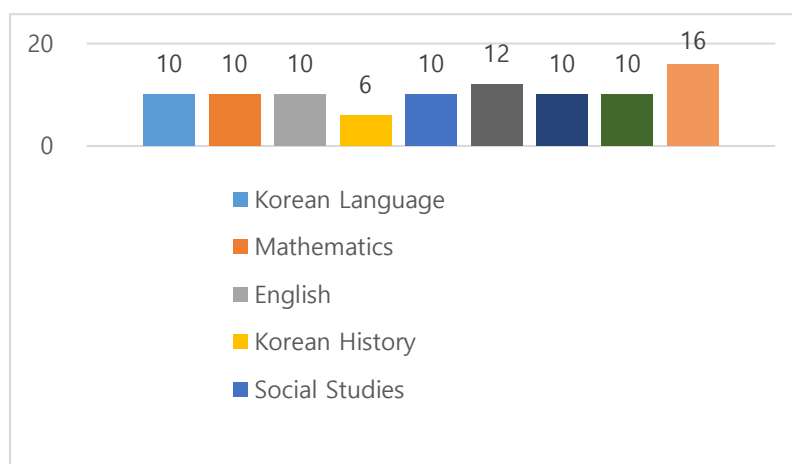


Fig. 3 Korea's required curriculum credits

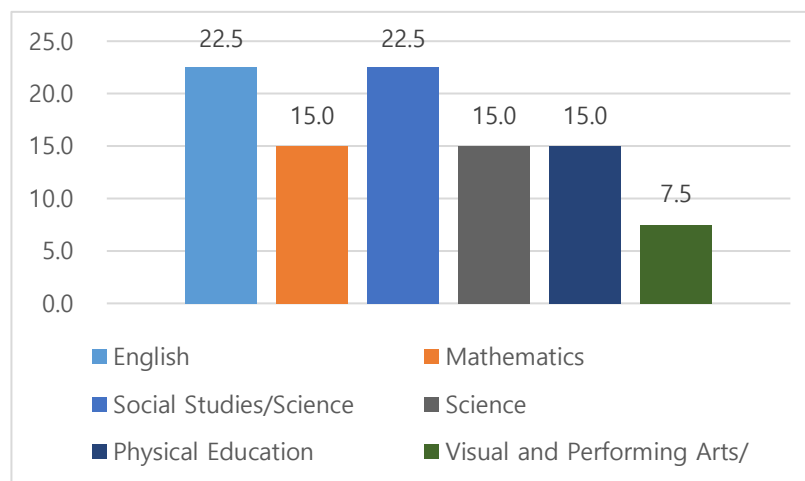


Fig. 4 California's required curriculum credits

There are no significant differences between subjects because the required credits for the Korean curriculum are about 10 per subject. Also, the number of courses required is more diverse than in the United States. On the other hand, the number of subjects required in the United States was 6, which was less than in Korea. In addition, the ratio of English and society among the required subjects was high.

Next, comparing the native language, social science, mathematics, and science corresponding to the basic subjects are as follows. In the case of Korean, the United States requested more than 20%, while Korea requested 10%. In the case of social sciences, the United States also demanded more than 20% and Korea demanded 10%. In the case of science and mathematics, the United States demanded 15% and Korea demanded about 10% to 15%.

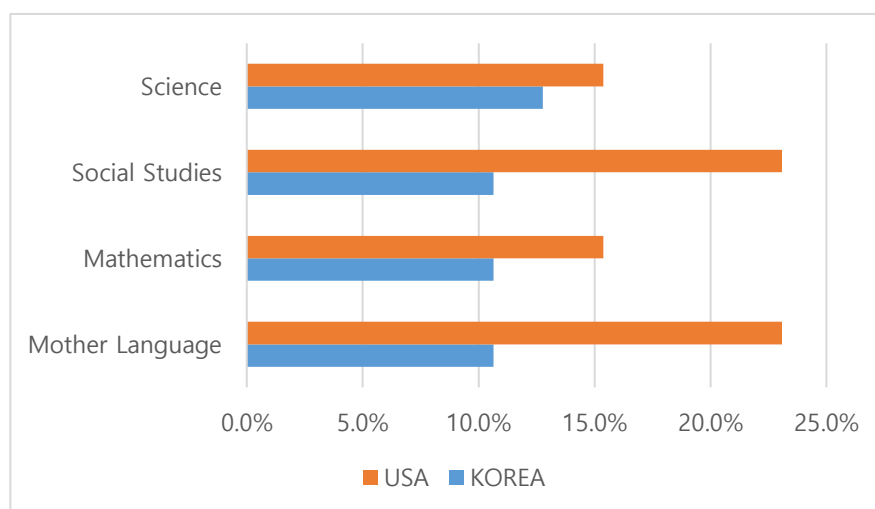


Fig. 5 Comparison of percentages of basic subjects in two countries

One of the interesting things about this study is that the difference in required credits between the two countries is clearly large. In particular, in the native language and society, the United States more than doubled the required credits. In the case of mathematics and science, the United States required 1.5 times more credits than Korea.

However, these results are not consistent with the school curriculum. This is because the subjects actually taken by students may differ depending on the subjects autonomously constructed by the school. In particular, in Korea, there is a high demand for Korean language, mathematics, social studies, and science, and the country limits its ratio.

5. Conclusion

5.1. Discussion

This study analyzed curriculums in the United States and Korea to determine the distribution of credits, required credits, and subjects required for graduation. The data used for analysis were obtained from the California Department of Education and Korean curriculum documents. Since the data from the two countries differed in the units used, this study required uniting the units for comparative analysis. American high school has 4 years and Korea has 3 years. In addition, the United States used Carnegie, and Korea met graduation requirements based on credit. In this study, the unit of analysis was set to 3 years, and the class time was converted to units of credit.

Based on the above analysis, the following conclusions were drawn. The graduation credits required in California were much lower than those in Korea. This showed a difference of over 80 credits. This is because the graduation credits required by the California Department of Education are used as minimum guidelines for schools. Second, the graduation credits required by districts are slightly smaller than the graduation credits in Korea, but there is no significant difference. This is because the actual school curriculum reflects the requirements of districts. In other words, the graduation credits required by American and Korean schools were similar.

However, in Korea, in addition to subjects, student activities are also included in graduation credits. So, the time a student stays in school can be longer in Korea than in the United States. In other words, differences in curriculum documents may not match actual school curriculum times. The length of time a student stays in school is a matter to be discussed separately from the credits. Below is a detailed list of class dates for the Los Angeles Unified School Board.

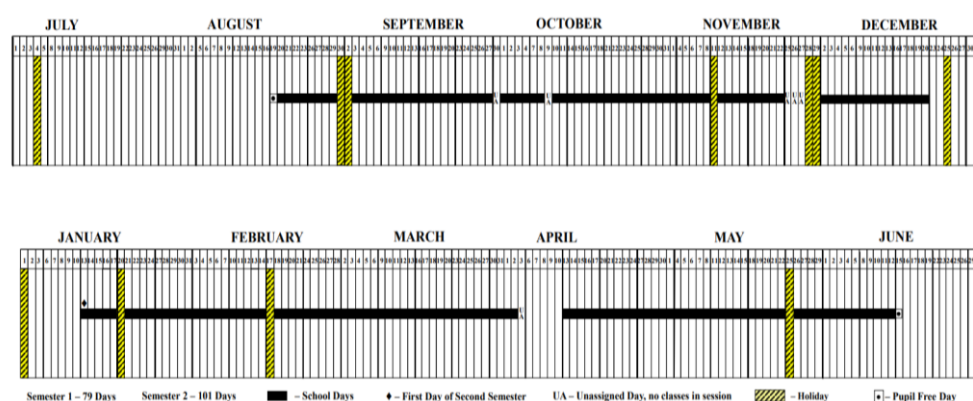


Fig. 6 Number of class days at the LA Department of Education (2019-2020) [13]

California has 180 school days, but it is not clear how many weeks it takes. Assuming 5 days of instruction per week for 180 days, the total number of lessons can be converted to 36 weeks. As for the number of class weeks, it was also not offered in the Los Angeles School District Annual Plan. It can be seen that the number of lessons deduced from the figure above is also about 36 weeks.

Meanwhile, in Korea, class time is given 34 weeks in the curriculum document. However, since the number of class days in Korea is 190 days, the actual number of class days can be assumed to be 38 to 39 weeks. In other words, the amount of credit presented in the curriculum document does not refer to the student's school hours. School hours need to be discussed separately from the curriculum.

5.2. Implications

This study compared the curriculum between Korea and the United States. The study found that the

American curriculum requires fewer credits than Korea. However, the actual credit for school graduation was similar between the two countries. Meanwhile, in the United States, more credits were required in the native language, social studies, mathematics, and science fields than in Korea. Korean schools do not need to prepare a lot of credits in their native language, social studies, mathematics and science, as suggested in the national curriculum document. Nevertheless, Korean schools consist of numerous credits in the Korean language, social studies, mathematics and science fields. Even if the country does not require it, a more in-depth review of why schools are organizing basic subjects on their own is needed. Perhaps the cause is the test anxiety students feel [14]. This requires a deeper understanding and further study.

Meanwhile, future research needs to discuss what the role of the curriculum document is. The curriculum documents in Korea presented essential credits for graduation. In the U.S., curriculum documents mainly presented the content of the subject. The required credits and rules that schools must comply with have been regulated by law. It is necessary to compare the scope of curriculum documents internationally and discuss their direction [15]. It is necessary to discuss internationally whether the curriculum is simply a document that presents content or even a method of operation. In addition, a more detailed discussion of the scope regulated by the curriculum is needed.

Finally, as the results of this study were derived by comparing different countries, the context of the two countries should be sufficiently considered when interpreting meaning.

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