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دراسة تمويل التعليم المحلي في كوريا واتجاهات الإصلاح المستقبلي في ظل تغييرات البيئة التعليمية

A Study of Korea's Local Education Finance and Future Reform Direction under the Education Envirement Changes

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الملخص:

إن تمويل التعليم المحلي في كوريا اخذ في ارتفاع بسبب ارتباطه بالضرائب الداخلية،على الرغم من تراجع أعداد الطلاب في مراحل الحضانة، والابتدائية، والثانوية مع انخفاض عدد السكان، مما أدى إلى دعوات لإصلاح الدعم. ومع ذلك، على الرغم من انخفاض أعداد الطلاب، فإن القضايا المتعلقة بالتعليمية لا تزال مطروحة، ومتطلبات اصلاح التعليم المستقبلي، وزيادة تمويل التعليم المحلي من أجل تنمية المواهب. في هذه الورقة البحثية، نقوم بتحليل تمويل التعليم المحلي في كوريا وبيئة التعليم المستقبلي لتقديم اقتراحات لتحسين النظام.

أولاً، على الرغم من ارتفاع تمويل التعليم المحلي وانخفاض أعداد الطلاب، فإن الطلب على تمويل التعليم لا ينخفض مباشرة لأن وحدة الإنفاق الأساسية هي عدد الفصول والمدارس. بالإضافة إلى ضرورة توسيع الموارد لتحسين البيئات التعليمية (حل مشكلة اكتظاظ الفصول، نظام الاعتمادات في المدارس الثانوية، مشاريع المدارس الخضراء الذكية ، إلخ) وتنمية المواهب المستقبلية .

لذلك، لابد من تنويع "نظام دعم التعليم المحلي" الحالي لمعالجة القضايا المحددة دون التأثير على نظام الدعم الكلي. ولضمان كفاءة دعم التعليم المحلي لابد من تقليل المبالغ الغير المستخدمة والمرحلة من خلال صندوق الاستقرار المالي الموحد، وصندوق تحسين البيئة التعليمية، ونظام النفقات المستمرة، وتحفيز التنفيذ المالي الفعال .

علاوة على ذلك، يجب تعزيز استقلالية تمويل التعليم المحلي من خلال تقليل الاعتماد على عناصر القياس في معيار الطلب المالي للدعم العام.

الكلمات المفتاحية: تمويل التعليم المحلي، نظام المنح، الطلب المالي للتعليم، بيئة التعليم المستقبلي، التعليم الكوري.

Abstract:

Although preschool, elementary, and secondary student numbers are declining with the population in Korea, the local education finance is rising due to its linkage with internal taxes, prompting calls for subsidy reform. However, despite decreasing student numbers, ongoing educational issues, and a demand for future education, maintaining and increasing local education finance are required to nurture talents. In this paper, we analyze Korea's local education finance and future education environment to suggest improvements for the system. First, despite rising local education finance and declining student numbers, the demand for education finance does not decrease directly due to the basic expenditure unit being the number of classes and schools. Additionally, it is necessary to expand the resources to improve the educational environments (resolving overcrowded classes, High School Credit system, Green Smart School projects, etc.) and foster future talents.

For this, the current combined 'Local Education Subsidy System' should be diversified to solve specific issues without affecting the whole subsidy system.

For efficiency, local education subsidies should minimize unused amounts and carryovers through the Consolidated Financial Stability Fund, Educational Environment Improvement Fund, and Continuing Expense System and incentivize efficient financial execution.

Moreover, the autonomy of local education finance should be enhanced by reducing measurement items in the standard financial demand for the General Subsidies.

Keywords: Local education finance, Grant system, Education financial demand, Future education environment , Korean education

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INTRODUCTION

As the school-age population decreases, there are strong external calls for institutional reform in local education finance for pre-, elementary, and secondary schools. The main point is reorganizing the current local education subsidy system that is secured at a specific internal tax rate despite the continuous decline in the school-age population. Furthermore, given the insufficient funding for higher education compared to preschool, elementary, and secondary education, there is an argument for reorganizing the local education subsidy system to support higher education. However, despite declining student numbers, ongoing educational issues and a continuous demand for future education persist. Local education finance revenue must be maintained or increased to cultivate talents adaptable to future changes, such as the fourth industrial revolution. Hence, predicting and analyzing the future education environment is essential for aligning improvement directions in the local education finance system. Moreover, measures should be reviewed to enhance synergy through cooperation with education offices, local governments, and universities in supporting higher education due to perceived funding disparities, aiming to revitalize local education and prevent local extinction. In this study, we shift our focus from the declining school-age population to discussing the need to expand the local education finance system in preparation for future improvement of educational environments and demands and suggest improvement directions for the system's efficiency and for operation and financial resource securing method of the Joint Project Cost System which is one of the measures for higher education financial support.

STATUS OF LOCAL EDUCATION FINANCE

Analysis of Local Education Financial Revenue

Table 1 displays revenue settlement status, with the total revenue settlement amount increasing 1.7 times from KRW 51.703 trillion in 2011 to KRW 88.76 trillion in 2021, growing 7.2% annually over 11 years. The largest share of annual revenue came from central government transfers, rising approximately 1.8 times from KRW 36.3112 trillion in 2011 to KRW 65.5688 trillion in 2021. The transferred revenue from local governments' General Accounts, the second largest share, increased approximately 1.8 times from KRW 8.5203 trillion to KRW 15.5414 trillion in 2021. Revenue borne by the Special Account for Educational Expenses increased from KRW 1.4865 trillion in 2011 to KRW 1.5379 trillion in 2021, a 1.03 times increase. This was due to capped tuition fees, expanded compulsory middle school and free high school education, and declined student numbers. The variation coefficient deviation for central government transfers is 22.1%, and for local government transfers, it is 20.1%, higher than the 9.1% for self-revenue, suggesting unstable transferred revenues. Local education bonds consistently rose until 2015, reaching approximately 9.8% of the total revenue at KRW 6.128 trillion. However, they declined afterward, dropping to KRW 320.9 billion, 0.4% of total revenue in 2018. No local education bonds have been issued since 2019. Unlike central and local government transfers, local education bonds and carryovers are not purely tax-based revenues. Over 11 years, the annual average revenue settlement was KRW 69.2581 trillion, with a net revenue of KRW 62.430 trillion. If not excluding the carryovers and the net budget surplus from the previous year, actual revenue is overestimated by an annual average of KRW 6.8282 trillion.

Table 1. *Status of Annual Revenue Settlement of the Special Account for Educational Expenses*

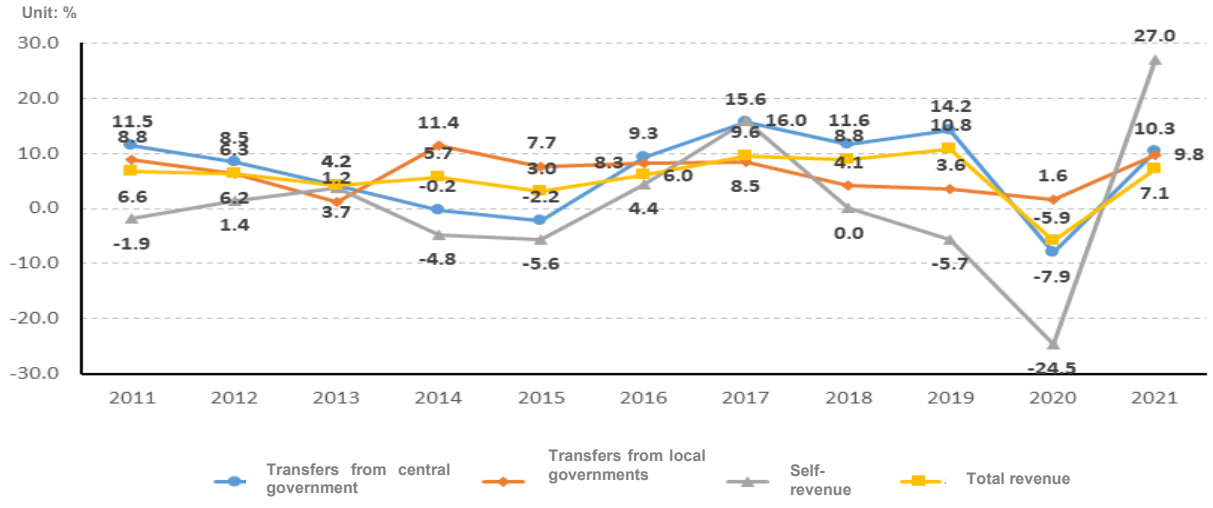
(Unit: KRW billion, %)

Year	Revenue Settlement Amount							Total (B)	Net Revenue (B-A)
	Transferred Revenue			Self-Revenue	Local Education Bonds and Others (A)		Internal Transaction (Transferred Funds)		
	Central Government	Local Government	Other		Local Education Bonds	Others			
2011	36,311.2	8,520.3	117.6	1,486.5	0.0	5,267.4	0.0	51,703.0	46,435.6
	(70.2)	(16.5)	(0.2)	(2.9)	(0)	(10.2)	(0)	(100)	
2012	39,400.9	9,060.9	97.9	1,507.4	33.9	4,833.0	0.0	54,934.1	50,067.2
	(71.7)	(16.5)	(0.2)	(2.7)	(0.1)	(8.8)	(0)	(100)	
2013	41,069.6	9,166.7	80.0	1,563.7	958.3	4,419.4	0.0	57,257.6	51,880.0
	(71.7)	(16)	(0.1)	(2.7)	(1.7)	(7.7)	(0)	(100)	
2014	40,978.0	10,208.2	80.7	1,488.2	3,802.2	3,959.2	0.0	60,516.4	52,755.0
	(67.7)	(16.9)	(0.1)	(2.5)	(6.3)	(6.5)	(0)	(100)	
2015	40,088.8	10,989.5	92.9	1,404.6	6,126.8	3,657.9	0.0	62,360.5	52,575.8
	(64.3)	(17.6)	(0.1)	(2.3)	(9.8)	(5.9)	(0)	(100)	
2016	43,834.5	11,903.5	147.5	1,465.9	3,010.2	5,736.3	0.0	66,097.9	57,351.4

(Unit: KRW billion, %)									
Year	Revenue Settlement Amount							Total (B)	Net Revenue (B-A)
	Transferred Revenue			Self-Revenue	Local Education Bonds and Others (A)		Internal Transaction (Transferred Funds)		
	Central Government	Local Government	Other		Local Education Bonds	Others			
	(66.3)	(18)	(0.2)	(2.2)	(4.6)	(8.7)	(0)	(100)	
2017	50,677.4	12,916.2	109.3	1,700.1	1,143.1	5,897.3	0.0	72,443.5	65,403.0
	(70)	(17.8)	(0.2)	(2.3)	(1.6)	(8.1)	(0)	(100)	
2018	56,563.3	13,443.9	131.9	1,700.4	320.9	6,676.1	0.0	78,836.5	71,839.5
	(71.7)	(17.1)	(0.2)	(2.2)	(0.4)	(8.5)	(0)	(100)	
2019	64,571.6	13,924.7	151.2	1,604.3	0.0	7,135.4	0.0	87,387.3	80,251.9
	(73.9)	(15.9)	(0.2)	(1.8)	(0)	(8.2)	(0)	(100)	
2020	59,442.1	14,152.7	438.1	1,211.0	0.0	6,964.9	17.9	82,226.7	75,243.9
	(72.3)	(17.2)	(0.5)	(1.5)	(0)	(8.5)	(0)	(100)	
2021	65,568.8	15,541.4	278.4	1,537.9	0.0	4,470.9	678.7	88,076.1	82,926.5
	(74.4)	(17.6)	(0.3)	(1.7)	(0)	(5.1)	(0.8)	(100)	
Annual Average Rates of	6.5	6.1	14.1	-0.7	4	2.5	3691.6	7.2	10.3

Note: The 2021 data was calculated at the end of January
Source: Local Education Finance Notifications, Ministry of Education and Korean Educational Development Institute. 2022

Figure 1 illustrates changes in central government transfers, which declined 0.2% in 2014 due to local education subsidy compensation and 2.2% in 2015 due to reduced tax revenue amid an economic recession. Subsequently, it increased by 15.6% in 2017, 15.6% in 2018, and 11.6% in 2019 due to economic recovery and national financial support for NURI curriculum [NURI curriculum has been developed to provide a high-quality curriculum to all preschoolers so that they may have equal educational opportunities regardless of their backgrounds and the types of ECEC services they attend]in daycare centers. However, there was a 7.9% decrease in 2020 due to the economic impact of COVID-19. In the case of local government transfers, there was a significant 11.4% growth in 2014 due to compensation in the local education subsidy system and high growth rates from 2016 to 2017, driven by factors such as local education tax transfers from tobacco consumption taxes. Regarding self-revenue, a significant growth rate in 2017 was due to increased asset income, while the rapid decline since 2019 is attributed to admission and tuition revenue resulting from the Free High School Education Initiatives.



Note: The 2021 data was calculated at the end of January

Figure 1. *Year-on-year Rates of Change of Local Education Financial Revenues*

Stability in revenues is crucial for education finance, given its substantial fixed costs like personnel expenses. To counter the resource fluctuations mentioned earlier, local bonds have been employed. Between 2012 and 2018, KRW 15.3954 trillion in local education bonds were issued to mitigate revenue fluctuations in local education bonds, prompting its stability.

Analysis of Local Education Financial Expenditure Trend

Table 2 shows that the expenditure settlement decreased in 2020 due to COVID-19 revenue impacts but rebounded with an average 6.0% annual increase. Personnel expenses, the largest share, grew at an average of 5.1% annually. In 2015 they accounted for 62.2% of the total expenditure but dropped to 55.2% in 2021. As personnel expenses are fixed, if financial conditions deteriorate, it may increase pressure on local education finance. Transfer payments and capital expenditure grew at higher average annual rates of 19.7% and 7.2%, respectively, surpassing the 6.0% average for total expenditure.

Table 2. *Trend in Expenditure Settlement by Nature of Local Education Finance*

(Unit: KRW billion,

Year	Expenditure Settlement Amount	Personnel Expenses	Goods Expenses	Transfer Payments	Capital Expenditure	Repayment Expenditure	Transfer Expenditure	Reserve Funds and Others	Internal Transactions
2011	46,814.1	28,090.9	1,937.5	623.6	5,088.3	842.7	10,154.0	77.0	0.0
	(100)	(60)	(4.1)	(1.3)	(10.9)	(1.8)	(21.7)	(0.2)	(0.0)
2012	50,433.9	29,915.0	2,136.0	1,169.6	5,241.1	16.0	11,948.4	7.8	0.0
	(100)	(59.3)	(4.2)	(2.3)	(10.4)	(0.0)	(23.7)	(0.0)	(0.0)
2013	53,295.8	31,672.5	2,171.1	1,922.8	5,015.5	30.5	12,471.4	11.9	0.0
	(100)	(59.4)	(4.1)	(3.6)	(9.4)	(0.1)	(23.4)	(0.0)	(0.0)
2014	56,789.4	33,123.8	1,984.4	2,514.8	4,905.5	1,994.1	12,257.3	9.5	0.0
	(100)	(58.3)	(3.5)	(4.4)	(8.6)	(3.5)	(21.6)	(0.0)	(0.0)
2015	56,597.9	35,217.4	1,944.4	3,083.4	4,541.8	115.1	11,679.2	16.6	0.0
	(100)	(62.2)	(3.4)	(5.4)	(8.0)	(0.2)	(20.6)	(0.0)	(0.0)
2016	60,041.9	36,351.1	2,046.0	3,065.7	6,109.2	395.4	11,993.3	81.1	0.0
	(100)	(60.5)	(3.4)	(5.1)	(10.2)	(0.7)	(20.0)	(0.1)	(0.0)
2017	65,611.4	38,048.0	2,169.3	3,241.2	7,094.5	2,356.8	12,668.4	33.1	0.0
	(100)	(58.0)	(3.3)	(4.9)	(10.8)	(3.6)	(19.3)	(0.1)	(0.0)
2018	71,612.7	40,123.5	2,392.8	3,322.1	7,686.8	4,079.8	13,888.2	119.5	0.0
	(100)	(56.0)	(3.3)	(4.6)	(10.7)	(5.7)	(19.4)	(0.2)	(0.0)
2019	80,401.1	42,779.3	2,635.4	3,191.9	11,164.4	5,996.6	14,500.8	132.7	0.0
	(100)	(53.2)	(3.3)	(4.0)	(13.9)	(7.5)	(18.0)	(0.2)	(0.0)
2020	77,705.5	44,335.4	3,036.9	3,225.1	9,887.5	301.1	15,577.5	149.1	1,192.8
	(100)	(57.1)	(3.9)	(4.2)	(12.7)	(0.4)	(20.0)	(0.2)	(1.5)
2021	83,810.2	46,260.8	2,490.9	3,780.6	10,195.6	1,043.5	16,362.3	464.9	3,211.5
	(100)	(55.2)	(3.0)	(4.5)	(12.2)	(1.2)	(19.5)	(0.6)	(3.8)
Annual Average Rates of Change	6	5.1	2.5	19.7	7.2	2.2	4.9	19.7	169.2

Note: The 2021 data is calculated at the end of January
Source: Local Education Finance Notifications, Ministry of Education and Korean Educational Development Institute. 2022.

Table 3 shows that the policy projects that account for the most considerable portion of project expenditure increased by 5.0% in human resource management. General Education Administration Projects (23.3%), Educational Welfare Projects (14.0%), and School Facility and Education Condition Improvement Projects (7.7%) maintained their component ratios with high annual growth rates.

Table 3. *Trend of Expenditure Settlement by Local Education Finance Project*

Year	Expenditure Settlement Amount	Preschool, Elementary, and Secondary Education						Lifelong and Vocational Education		Education-General				Reserve Funds
		Human Resource Management	Support for Teaching-Learning	Educational Welfare Support	Health/Meal/Sports Activities	School financial support	Facilities for Improving Educational	Lifelong Education	Vocational Education	Education administration-general	Institution operation management	Repayment of local bonds and loans fees	Reserve Funds and Other	Reserve Funds and Other
2011	46,814.1	24,565.0	3,973.0	2,084.4	1,367.5	8,018.9	4,088.8	123.7	42.6	382.0	437.1	1,657.1	73.9	0.0
	(100)	(52.5)	(8.5)	(4.5)	(2.9)	(17.1)	(8.7)	(0.3)	(0.1)	(0.8)	(0.9)	(3.5)	(0.2)	(0)
2012	50,433.9	26,085.2	4,442.6	2,939.7	1,211.3	9,456.0	4,182.9	135.6	53.3	464.4	552.8	904.1	6.1	0.0
	(100)	(51.7)	(8.8)	(5.8)	(2.4)	(18.7)	(8.3)	(0.3)	(0.1)	(0.9)	(1.1)	(1.8)	(0)	(0)
2013	53,295.8	27,276.7	3,434.0	5,019.4	1,718.0	9,771.9	4,019.8	129.3	15.2	426.7	527.8	950.4	6.7	0.0
	(100)	(51.2)	(6.4)	(9.4)	(3.2)	(18.3)	(7.5)	(0.2)	(0)	(0.8)	(1)	(1.8)	(0)	(0)
2014	56,789.4	28,296.7	3,057.5	5,608.0	1,635.2	9,899.2	4,228.1	118.5	8.5	528.5	451.5	2,952.1	5.7	0.0
	(100)	(49.8)	(5.4)	(9.9)	(2.9)	(17.4)	(7.4)	(0.2)	(0)	(0.9)	(0.8)	(5.2)	(0)	(0)
2015	56,597.9	29,681.8	2,755.8	6,105.2	1,611.2	10,261.8	4,153.1	106.9	7.8	419.4	409.6	1,077.6	7.7	0.0
	(100)	(52.4)	(4.9)	(10.8)	(2.8)	(18.1)	(7.3)	(0.2)	(0)	(0.7)	(0.7)	(1.9)	(0)	(0)
2016	60,041.9	30,237.4	3,303.5	6,340.3	1,932.6	10,131.1	5,479.3	122.6	19.5	580.0	391.3	1,455.4	48.9	0.0
	(100)	(50.4)	(5.5)	(10.6)	(3.2)	(16.9)	(9.1)	(0.2)	(0)	(1)	(0.7)	(2.4)	(0.1)	(0)
2017	656,114.0	315,328.0	38,678.0	68,988.0	18,065.0	104,877.0	60,940.0	1,367.0	161.0	8,069.0	5,024.0	34,408.0	208.0	0.0
	(100)	(48.1)	(5.9)	(10.5)	(2.8)	(16)	(9.3)	(0.2)	(0)	(1.2)	(0.8)	(5.2)	(0)	(0)
2018	71,612.7	33,128.4	4,431.5	7,183.2	2,194.9	11,068.3	6,652.4	143.8	18.8	919.2	643.0	5,131.3	97.6	0.0
	(100)	(46.3)	(6.2)	(10)	(3.1)	(15.5)	(9.3)	(0.2)	(0)	(1.3)	(0.9)	(7.2)	(0.1)	(0)
2019	80,401.1	34,954.8	4,871.6	7,718.1	2,687.5	11,442.8	8,438.3	156.1	19.0	2,200.8	762.4	7,075.2	74.5	0.0
	(100)	(43.5)	(6.1)	(9.6)	(3.3)	(14.2)	(10.5)	(0.2)	(0)	(2.7)	(0.9)	(8.8)	(0.1)	(0)
2020	77,705.5	36,350.7	5,440.5	8,516.8	2,681.9	12,465.2	8,073.9	157.0	18.3	2,044.9	784.8	1,096.0	75.4	0.0
	(100)	(43.5)	(6.1)	(9.6)	(3.3)	(14.2)	(10.5)	(0.2)	(0)	(2.7)	(0.9)	(8.8)	(0.1)	(0)
2021	83,810.2	39,832.6	6,465.1	7,712.6	2,411.2	12,355.4	8,614.6	173.5	17.6	3,112.7	788.0	1,988.7	0.0	338.2
	(100)	(43.5)	(6.1)	(9.6)	(3.3)	(14.2)	(10.5)	(0.2)	(0)	(2.7)	(0.9)	(8.8)	(0.1)	(0)
Annual Average Rates of Change	6	5	5	14	5.8	4.4	7.7	3.4	-8.5	23.3	6.1	1.8	0.2	

Note: The 2021 data is calculated at the end of January
Source: Local Education Finance Notifications, Ministry of Education and Korean Educational Development Institute. 2022.

Table 4 shows that the facility costs continuously increased from 2016 to 2019 and decreased in 2020 due to the aftermath of COVID-19. New school establishment costs, the largest share of the facility costs, accounted for 53.2% in 2014 and dramatically decreased to 26.3% in 2020. Further, school extension and renovation costs decreased to 7.7% in 2020. However, the costs of improving educational environments have increased since 2014 to 33.4% in 2020. The amount transferred to the school accounts, which are facility project costs transferred to unit schools, accounts for about 10% but is declining overall. The proportion of facility costs to the expenditure settlement amount gradually decreased from 10.6% in 2011 to 7.9% in 2015 and then increased again to 11.3% in 2020.

Table 4. *Changes in Facility Costs by year*

(Unit: KRW billion, %)

	Costs of School Establishment/Expansion/Renovation			Educational Environment Improvement Costs	Educational Administrative Facility Costs	Other General Facility Costs	Transfer to School Accounts	Private School Facilities	Total (A)	Percentage (A/B, %)	
	New School Establishment	School Expansion/Renovation	Subtotal								
2011	1,533.9	925.9	2,459.8	1,082.6	226.1	530.1	686.8	0.0	4,985.4	10.6	468,141
	(30.8)	(18.6)	(49.3)	(21.7)	(4.5)	(10.6)	(13.8)	(0)	(100)		
2012	1,708.3	767.9	2,476.2	1,140.6	319.5	613.1	543.0	0.0	5,092.4	10.1	504,339
	(33.5)	(15.1)	(48.6)	(22.4)	(6.3)	(12)	(10.7)	(0)	(100)		
2013	1,980.6	629.9	2,610.5	949.9	276.4	615.9	432.9	0.0	4,885.6	9.2	532,958
	(40.5)	(12.9)	(53.4)	(19.4)	(5.7)	(12.6)	(8.9)	(0)	(100)		
2014	2,588.8	403.4	2,992.2	744.8	213.6	470.4	447.7	0.0	4,868.7	8.6	567,894
	(53.2)	(8.3)	(61.5)	(15.3)	(4.4)	(9.7)	(9.2)	(0)	(100)		
2015	2,148.1	302.1	2,450.2	914.0	171.9	384.3	577.8	0.0	4,498.2	7.9	565,979
	(47.8)	(6.7)	(54.5)	(20.3)	(3.8)	(8.5)	(12.8)	(0)	(100)		
2016	2,284.8	394.4	2,679.2	1,418.7	147.8	634.7	606.9	335.9	5,823.2	9.7	600,419
	(39.2)	(6.8)	(46)	(24.4)	(2.5)	(10.9)	(10.4)	(5.8)	(100)		
2017	2,126.7	468.2	2,594.9	2,013.4	248.5	676.0	713.5	506.6	6,752.9	10.3	656,114
	(31.5)	(6.9)	(38.4)	(29.8)	(3.7)	(10)	(10.6)	(7.5)	(100)		
2018	2,099.4	576.7	2,676.1	2,386.5	350.7	671.0	625.3	606.0	7,315.6	10.2	716,127
	(28.7)	(7.9)	(36.6)	(32.6)	(4.8)	(9.2)	(8.5)	(8.3)	(100)		
2019	2,616.6	753.2	3,369.8	2,767.8	500.6	1,066.6	719.4	1,127.8	9,552.0	11.9	804,011
	(27.4)	(7.9)	(35.3)	(29)	(5.2)	(11.2)	(7.5)	(11.8)	(100)		
2020	2,300.5	675.8	2,976.2	2,926.8	478.1	701.8	753.1	919.9	8,756.0	11.3	777,055
	(26.3)	(7.7)	(34)	(33.4)	(5.5)	(8)	(8.6)	(10.5)	(100)		
Annual Average	2,138.8	589.8	2,728.5	1,634.5	293.3	636.4	610.6	699.2	6,253.0	10.1	619,304
	(34.2)	(9.4)	(43.6)	(26.1)	(4.7)	(10.2)	(9.8)	(11.2)	(100)		
Annual Average Rates of Change	4.6	-3.4	2.1	11.7	8.7	3.2	1	11.8	6.5		5.8

Note: The 2021 data was calculated at the end of January
Source: Local Education Finance Notifications, Ministry of Education and Korea Educational Development Institute. 2022.

Status of Unused Amounts and Carryovers in Local Education Finance

The issue of excessive unused amounts and carryovers in local education finance has drawn continuous attention. In Table 5, carryovers increased from 2015 to 2018 but have decreased since 2019. Most carryovers (86.1% to 97.1%) are in facility costs, primarily because budget increases are traditionally allocated to long-term projects like school construction, asbestos removal, and seismic reinforcement, subject to various scheduling delays. Carryovers can also result from the issuance timing of Special Subsidies for Education-Issue Projects, the timing of central investment reviews, and the difference in construction costs after bidding (Song 2015). However, some metropolitan and provincial education offices have recently made efforts to reduce the carryovers by trying to manage the project timing, checking the execution of facility projects, expanding the proportion of the main budget planning, actively utilizing the Continuing Expense System, and early ordering. Additionally, making efforts to strengthen the preliminary settlement system and execution management, such as operating a financial execution inspection team, will be necessary.

Table 5. *Status of Carryovers by Nature Between 2010 and 2020*

(Unit: KRW billion, %)													
Fiscal Year	Budget (A)	Carryovers											
		Total (B)		Personnel Expenses		Facility Expenses		Transfer Expenditure		Reserve Funds		Other	
		Amount	Percentage (B/A)	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
2010	48,463.7	2,963.1	6.1	28	0.1	2,666.2	90	271.1	9.1	13.4	0.5	280.7	9.5
2011	51,592.4	2,399.1	4.7	2	0.01	2,163.4	90.2	227.3	9.5	0.0	0	8.2	0.3
2012	54,803.3	2,376.0	4.3	2	0.01	2,198.3	92.5	156.7	6.6	0.0	0	20.8	0.9
2013	57,448.7	2,570.5	4.5	0.4	0.02	2,368.4	92.1	144.9	5.6	0.0	0	56.8	2.2
2014	60,398.8	2,330.0	3.9	0.3	0.01	2,005.6	86.1	23.7	1	0.0	0	300.3	12.9
2015	62,022.0	3,733.0	6	0.2	0.01	35,396.0	94.8	16.7	0.4	0.0	0	176.6	4.7
2016	65,697.2	3,900.1	5.9	0.3	0.01	3,764.1	96.5	20.4	0.5	0.0	0	115.2	3
2017	72,164.5	4,605.6	6.4	0.2	0	4,438.4	96.4	88.7	1.9	0.3	0	78.0	1.7
2018	78,342.7	4,885.8	6.2	0.1	0	4,563.0	93.4	74.2	1.5	0.0	0	248.5	5.1
2019	86,966.9	4,759.9	5.5	1.7	0.04	4,621.9	97.1	17.7	0.4	0.0	0	118.7	2.5
2020	82,092.5	2,724.4	3.3	0.2	0.01	2,597.8	95.4	5.4	0.2	0.0	0	121.0	4.4

Source: Korean Educational Development Institute (each year). Comprehensive Report on Local Education Finance Analysis; 2010-2013 Settlement Sheet 103, Song et al. 2021

In Table 6, unused amounts increased between 2015 and 2017 but have decreased since then. Most unused amounts were in facility costs (21.9%-4.2%) and personnel expenses (15.5%-29.8%). Reserve funds, initially at 29.0% in 2010, steadily declined to 5.6% in 2020. Facility costs, rather than being organized in the main budget, are increased with supplementary budgets and additional project planning; thus, the projects are carried out in the second half of the year, leading to unused amounts due to lack of construction time. Personnel expenses are budgeted with a margin to account for status changes such as regular personnel forecasts, leaves of absence, and honorary retirement, but varying trends make accurate budgeting difficult. Excessively planned reserve funds also contribute to unused amounts. Article 43 of the 'Local Finance Act' requires reserve funds to be within 1% of the total budget, but if they are excessively planned, it is impossible to reduce them.

Table 6. *Status of Unused Amounts by Nature between 2010 and 2020*

(Unit: KRW billion, %)													
Unused Amounts													
Fiscal Year	Budget (A)	Total (B)		Personnel Costs		Facility Costs		Transfer Expenditure		Reserve Funds		Other	
		Amount	Percentage (B/A)	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
2010	48,463.7	2,391.7	4.9	579.2	24.2	523.6	21.9	276.0	11.5	694.1	29.0	318.8	13.3
2011	51,592.4	2,379.2	4.6	410.4	17.2	687.3	28.9	368.1	15.5	658.1	27.7	255.3	10.7
2012	54,803.3	1,993.5	3.6	354.8	17.8	492.2	24.7	335.5	16.8	549.0	27.5	262.0	13.1
2013	57,448.7	1,582.4	2.8	267.6	16.9	403.0	25.5	272.3	17.2	380.8	24.1	258.7	16.3
2014	60,398.8	1,279.5	2.1	198.4	15.5	418.7	32.7	199.0	15.6	279.9	21.9	183.5	14.3
2015	62,022.0	1,691.1	2.7	503.9	29.8	372.6	22.0	192.4	11.4	376.2	22.2	246.0	14.5
2016	65,697.2	1,755.2	2.7	511.0	29.1	494.9	28.2	248.3	14.1	293.1	16.7	207.9	11.8

(Unit: KRW billion, %)													
Unused Amounts													
Fiscal Year	Budget (A)	Total (B)		Personnel Costs		Facility Costs		Transfer Expenditure		Reserve Funds		Other	
		Amount	Percentage (B/A)	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
2017	72,164.5	1,947.4	2.7	379.7	19.5	636.3	32.7	170.6	8.8	304.4	15.6	456.4	23.4
2018	78,342.7	1,844.2	2.4	547.1	29.7	673.5	36.5	192.0	10.4	255.7	13.9	175.9	9.5
2019	86,966.9	1,806.0	2.1	378.4	21.0	694.4	38.4	374.6	20.7	170.4	9.4	188.2	10.4
2020	82,092.5	1,662.6	2.0	367.6	22.1	668.0	40.2	280.9	16.9	93.1	5.6	253.0	15.2
Source: Korean Educational Development Institute. each year. Comprehensive Report on Local Education Finance Analysis; 2010-2013 Settlement Sheet 103, Song et al. 2021													

PROSPECTS FOR THE FUTURE EDUCATION ENVIRONMENT

A Continued Decline in School-age Population

The critical issue concerning the education environment is the declining population due to decreasing infertility rates. In 2018, Korea's fertility rate hit a record low of 0.98, the lowest among OECD nations, down from 1.74 in 1984 (Maeil Economy 2020.0.03). With an estimated fertility rate of 0.78 to 0.9, considering the post-COVID-19 impact, births are projected to decline to 100,0000 over the next decade (Cho 2021)—a drop in births results in a decline in the school-age population. Over the past decade (2011-2020), as shown in Table 7 & Table 8, student numbers decreased due to the declining school-age population. However, there has been an increase in the number of classes and schools. This is due to efforts to reduce overcrowding for better educational environments and the establishment of new schools in newly developed cities.

Table 7. Number of Elementary, Middle, and High School Students and Teachers by Year

(Unit: person, %)							
Year	Students						Teachers
	Elementary School	Middle School	High School	Special School	Other Schools	Total	
2011	3,122,113	1,904,541	1,928,766	23,593	24,548	7,003,561	467,194
2012	2,947,464	1,846,106	1,908,848	23,802	24,296	6,750,516	475,091
2013	2,774,202	1,798,425	1,878,966	24,196	21,809	6,497,598	480,756
2014	2,718,929	1,712,393	1,825,309	24,392	21,710	6,302,733	486,426
2015	2,705,203	1,580,834	1,774,420	24,643	22,239	6,107,339	487,438
2016	2,663,673	1,452,804	1,738,745	24,632	22,790	5,902,644	488,557
2017	2,665,249	1,376,914	1,656,441	24,843	22,499	5,745,946	489,581
2018	2,702,551	1,330,062	1,525,924	25,031	22,043	5,605,611	490,403
2019	2,739,317	1,290,472	1,400,541	25,186	22,413	5,477,929	493,654
2020	2,686,463	1,311,992	1,327,821	25,799	22,756	5,374,831	497,336
Annual Average Rates of Change	-1.7	-4.1	-4.1	1	-0.8	-2.9	0.7
Note: Other schools: Civil education center, Higher civil education center, Higher Technical education center, Air and correspondence high school, Miscellaneous school, etc. *Source:* Local Education Finance Notifications							

Table 8. Changes in Number of Elementary, Middle, and High Schools and Number of Teachers by Year

(Unit: class, school, %)												
Year	Number of Classes						Number of Schools					
	Elementary School	Middle School	High School	Special School	Other Schools	Total	Elementary School	Middle School	High School	Other Schools	Other Schools	Total
2011	122,479	57,645	58,196	3797	745	242,862	5,865	3,144	2,263	150	76	11,498
2012	121,263	56,998	58,665	3911	787	241,624	5,898	3,162	2,289	151	81	11,581
2013	119,509	56,657	58,890	4100	794	239,950	5,896	3,164	2,303	157	86	11,606
2014	119,508	56,119	59,083	4197	835	239,742	5,917	3,177	2,307	161	100	11,662
2015	119,676	54,673	59,160	4301	919	238,729	5,961	3,195	2,325	162	104	11,747
2016	119,160	53,006	59,272	4436	959	236,833	5,984	3,200	2,334	165	113	11,796
2017	119,827	52,126	57,050	4491	911	234,405	6,025	3,204	2,281	168	120	11,798

(Unit: class, school, %)

Year	Number of Classes						Number of Schools					
	Elementary School	Middle School	High School	Special School	Other Schools	Total	Elementary School	Middle School	High School	Other Schools	Other Schools	Total
2018	121,469	51,655	58,141	4623	1150	237,038	6,063	3,205	2,341	170	126	11,905
2019	123,354	51,378	57,218	4726	1188	237,864	6,072	3,205	2,339	172	136	11,924
2020	123,193	52,033	56,743	4886	1227	238,082	6,108	3,215	2,351	179	143	11,996
Annual Average Rates of Change	0.1	-1.1	-0.3	2.8	5.7	-0.2	0.5	0.2	0.4	2	7.3	0.5

Note: Other schools: Civil education center, Higher civil education center, Higher Technical education center, Air and correspondence high school, Miscellaneous school, etc.
Source: Local Education Finance Notifications

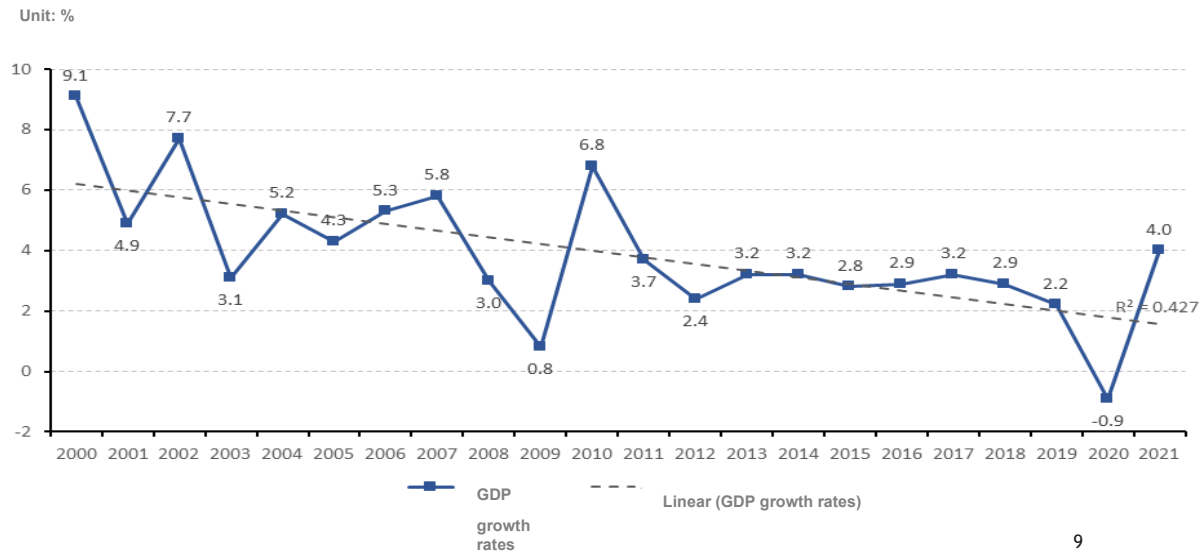
While the general student population is declining, the student numbers from multicultural families have steadily increased over the past decade (212-2021), rising from 46,954 in 2012 to 160,056 in 2021, a 14.6% annual growth rate. In special education, student and teacher numbers have consistently grown, with annual increases of 1.9% and 4.0%, respectively, over the past 11 years (2010-2021).

Local Extinction and Widening Regional Disparities

Local extinction, a phenomenon when people disappear from an area (Ha 2017) resulting from population aging, declining fertility rates, and urbanization, is a growing concern (Ha 2017; Choi 2021). National statistics (as of May 30, 2022) reveal that the aging index of cities and provinces is projected to exceed 100% in 2022, with Sejong City being the exception. However, even Sejong City, which experienced a declining trend until 2020, is now seeing an increase. This is due to a shrinking youth population and a growing elderly population driven by fertility rate declines. As of August 2021, 47.2% of the total 229 local governments (108) are at risk of extinction, leading to increased centralization in metropolitan areas and widening regional disparities. Objective indicators such as income, employment, and population disparities in Korea are continuously deteriorating (Kim et al. 2016).

A Slowdown in Economic Growth

Although some opinions are optimistic about Korea's future economic situation, the general opinion is that achieving a high level of economic growth as in the past is practically impossible.



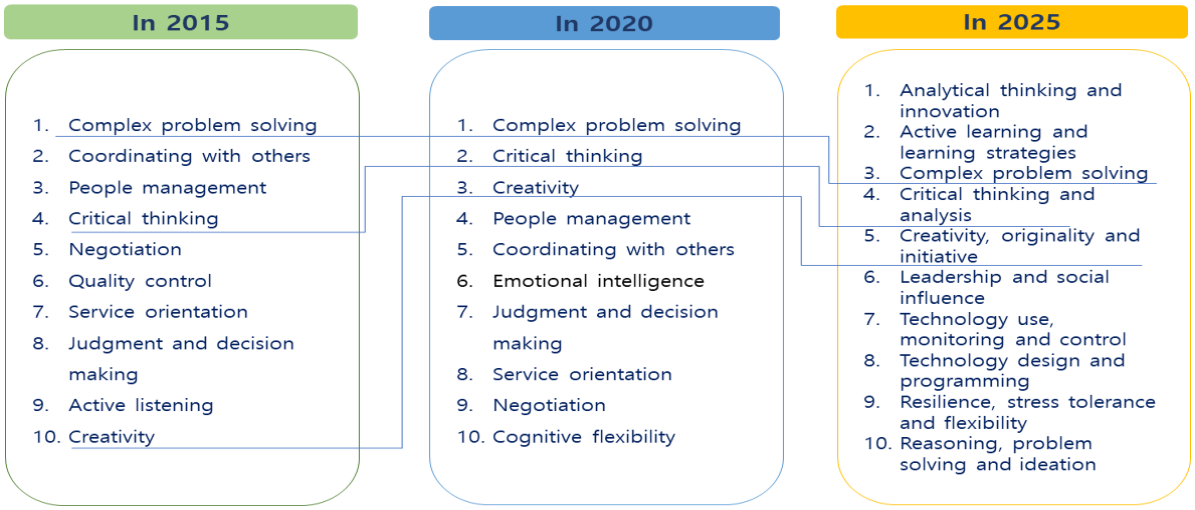
Source: https://www.index.go.kr/enara
Figure 2. Korea's GD Growth Rates by Year

Korea's annual GDP growth rate experiences fluctuations, but the overall trend is declining. Notably, in 2020, it displayed negative growth, marking the third instance of a negative annual growth rate in the country's history after 1980 (-1.6%) and 1998 (-5.1%) %) (The Hankyoreh 2021.01.23). The OECD's 'Economic Prospect Report' noted a recovery in the Korean economy attributed to vaccination progress, export and investment trends, and policy effects, initially forecasting a 4.0% GDP growth rate in 2021 (The Hankyoreh 2021.01.23), which later slightly decreased to 3.1% in the first quarter of 2022.

Acceleration of the Fourth Industrial Revolution

The industrial structure has swiftly evolved since the World Economic Forum endorsed the Fourth Industrial Revolution (Schwab 2017). This revolution promises four significant changes:

- A profound transformation in jobs, industry, and the economy
- A rise of 'super intelligence' driven by artificial intelligence, big data, and ICT technologies
- A shift towards a hyper-connected society
- A transition to a 'sharing economy' built on access and sharing (Ministry of Education, 2021.04.19).



Source: World Economic Forum (2020). p.36.

Figure 3. Top 10 Core Competencies of the 4th Industrial Revolution

Figure 3 displays the evolving core competencies needed for the fourth industrial revolution from 2015 to 2025. Competencies required are changing rapidly, with complex problem-solving being the most vital in 2015 but dropping to third place by 2025. Analytical thinking and innovation now take precedence.

ISSUES OF LOCAL EDUCATION FINANCE(1)

[This section was composed based on the content of Song, Ki-chang et al. 2021. "지방교육재정 수요 전망과 재원 확충 및 효율적 운용 방안 연구." [A Study on the Prospect of Local Education Financial Demand, Expansion of Financial Resources, and Efficient Management Plan]. National Council of Governors of Education's Policy Study.]

Despite prior criticisms and reform demands for the local education subsidy system linked to internal taxes, there is now a pressing need for comprehensive reform, spurred by the Ministry of Strategy and Finances' subsidy reform plan in the 2021 national budget planning process, supported by media, organizations, and scholars.

Does the Decrease in the School-age Population Lead to a Decrease in Demand for Education Finance?

Kim (2021) states that enhancing the current approach to raising local education subsidies tied to internal taxes by reflecting the trend of the school-age population and expanding education investment within the range of income increase and inflation. The rationale includes: (1) the current calculation method was devised during a population expansion phase and lacks suitability for rational resource allocation in a declining population society, (2) there is a need for an increased financial resource allocation efficiency, including education finance, across the national budget, and (3) without accounting for the declining population trend, the per capita subsidy amount in 2060 is projected to surpass the range of income and inflation, increasing 5.5 times compared to 2020. Despite significant student declines until now, we expect this trend to persist. However, education finance will not decrease linearly, as the basic expenditure units are classes and schools. Although student numbers also determine the number of schools and classes, there are other essential factors like curriculum policies, educational condition improvement policies, non-education factors (national policy factors, such as social relocation of the population due to development projects, balanced regional development, and prevention of local extinction, etc.) that also influence such numbers. When school integration and abolitions have reached their limits, the class and school numbers are determined after considering the newly built ones, and teacher numbers are determined, the education financial demand is finally set. In Table 7, student figures (elementary and secondary) declined to 7.83 million in 2001, 6.99 million in 2011, and 5.32 million in 2021. However, the number of schools, the basic expenditure unit of education finance, has steadily increased since 2011.

Comparing standard education expenses in 2021 for small, medium-sized, and large schools, large schools had similar proportions based on students and schools. In contrast, small schools allocated a larger proportion

based on the number of schools rather than students. This is because even with a few students, the costs of maintaining school facilities and necessary teaching aids persist (Lee 2022). Therefore, declining student numbers do not directly reduce the demand for education finance; even reductions in classes and teachers will not immediately decrease this demand.

Table 9. *Example of Calculating Standard Education Expenses (Elementary Schools)*

(Unit: Class, person, KRW thousand, %)

Category	Number of Classes	Number of Students	Calculation of Standard Education Expenses				C/A	C/B
	(A)	(B)	Total (C)	Per school	Per Class	Per student		
Small	6	51	543,716	455,966	50,112	37,638	90,619	10,661
			(100)	(83.9)	(9.2)	(6.9)		
Medium-sized	30	696	1,529,997	765,789	250,560	513,648	51,000	2,198
			(100)	(50.1)	(16.4)	(33.6)		
Large	48	1268	2,280,767	944,087	400,896	935,784	47,516	1,799
			(100)	(41.4)	(17.6)	(41)		

Note: The total number of students was calculated using 2021 educational statistics by applying the average number of students per class (8.5 in 6-class-schools, 23.2 in 30-class-schools, and 26.4 in 48- class-schools) by school and assuming the virtual school status of 6 classes, 30 classes, and 48 classes.
Source: Lee. 2022

Is the Generation of Demand for Education Finance a Result of the Increase in Education Finance Revenue?

Local education finance does not have a means for securing financial income and relies primarily on transferred resources. It operates by planning expenditures within available revenue. This approach creates a standby financial demand since revenue is not always guaranteed. Investing in standby demand is expected when revenue increases, meaning increased financial revenue generates a certain amount of financial demand.

Table 10. *OECD Number of Students per Class*

(Unit: person)

Category	2019		2013	
	Elementary school	Middle school	Elementary school	Middle school
Korea	23	26.1	24	32.8
OECD Average	21.1	23.3	20.8	23.3

Note: High schools were not surveyed

Source: OECD. 2021. Education at a Glance. P.254.

So far, increased financial revenue has primarily been directed towards enhancing educational conditions like Compulsory Middle School Education, Free High School Education, and NURI curriculum. However, investments by local governments in expanding free welfare programs, like free meals, were reported as inadequate (Song 2020b). The decrease in student numbers and the rise in subsidies are not creating unnecessary demand, and these funds are invested in long-awaited national projects rather than being generated as new demand by the metropolitan and provincial education offices. Despite declining student numbers in Korea, the students per class exceed the OECD and EU22 averages (Table 10), necessitating ongoing projects to enhance educational conditions. Congressperson Kang Min-Jeong of the Open Democratic Party of Korea suggested that reducing the student-to-class ratio to under 20 by 2025 would cost KRW 13.7293 trillion from 2024 to 2028. According to the National Assembly Budget Office's 'Financial Demand Estimation for Eliminating Overcrowded Classes,' to reduce the student-to-class ratio to below 20, 32,867 additional classes are needed, including 7,275 in elementary schools, 7,881 in middle schools, and 7,711 in high schools. The estimated cost is KRW 13.7293 trillion, comprising KRW 5.9091 trillion for classroom expansion and KRW 7.8292 trillion for personnel expenses, including hiring new homeroom teachers (The Hankyoreh 2020.10.20). Furthermore, financial resources for Early Childhood Education Projects in line with national policy goals, like supporting early childhood tuition and childcare fees (NURI curriculum), must be secured, and corresponding measures should be developed.

Moon et al. (2021) estimated future finances by applying tuition support and after-school course cost unit prices to the number of children in each institution. Financial requirements were projected at KRW 0.5 trillion in 2023, KRW 0.8 trillion in 2024, KRW 1.3 trillion in 2026, and KRW 1.5 trillion in 2027. Consequently, most revenue increases are allocated to fund national policies and School Environment Improvement Projects rather than generating new demands in proportion to the revenue increases.

1.1 Are the Educational Expenses for Preschool, Elementary, and Secondary Students Excessive?

The National Assembly Budget Office (2021) argues that local education subsidies increased by 7.4% annually from 2015 to 2021 despite a decrease of 2.4% in subsidy-calculation-standard students, resulting in a 10.0% annual increase in subsidies per student. They recommend actively reviewing subsidy sizes to align with changing educational environments and expenditure allocation in the education sector (Song 2022a). The calculation of average annual growth rates can vary based on the choice of base year, which is usually five or ten years. The National Budget Office specifically examined a six-year growth rate from 2015, which revealed a 7.4% annual subsidy increase and a 10% growth per student (See Table 11). As shown in Table 11, the level of subsidies (final amount) in 2015 is similar to that of 2012, which is lower than that of 2013 and 2014, and they calculated the average annual growth rate based on this. In contrast, when considering 2011 as the base year, the annual average growth rate was 5.3% for subsidies and 8.3% per student.

Table 11. Local Education Subsidies, Number of Students, and Number of Teachers

(Unit: KRW million, person, KRW thousand)							
Year	Main Budget	Revised supplementary budget	Final amount (Including adjusted amount) (A)	Number of Students (B)	Number of Teachers (C)	Subsidy per student (A/B)	Subsidy per teacher (A/C)
2011	352,831,200	352,831,200	361,354,360	71,146,050	3,948,630	5,079	91,514
2012	384,472,720	384,472,720	392,491,670	68,618,910	3,945,680	5,720	99,474
2013	410,619,190	410,619,190	410,619,190	65,713,080	3,946,750	6,249	104,040
2014	408,680,770	408,680,770	408,680,770	63,823,440	3,957,770	6,403	103,260
2015	394,055,660	394,055,660	394,055,660	62,021,710	3,949,060	6,354	99,785
2016	412,283,530	431,615,020	431,615,020	60,264,990	3,962,210	7,162	108,933
2017	429,317,360	447,184,970	465,909,910	58,342,870	3,939,260	7,986	118,273
2018	495,406,930	495,406,930	524,527,860	56,987,320	4,007,990	9,204	130,871
2019	552,488,230	552,488,230	605,305,100	55,619,340	4,039,880	10,883	149,832
2020	553,722,410	535,111,720	535,430,690	54,371,090	4,076,470	9,848	131,347
2021	532,300,010	595,957,960	603,370,540	53,503,990	4,111,160	11,277	146,764
2011-21 growth rates	4.2	5.38	5.26	-2.81	0.4	8.3	4.84
2012-21 growth rates	3.68	4.99	4.89	-2.73	0.46	7.83	4.42
2015-21 growth rates	5.14	7.14	7.36	-2.43	0.67	10.03	6.64
Budget office-claimed growth rates (2015-21)	7.2	7.1	7.4	-2.4	-	10	-

Note: The number of students and teachers is based on the number subject to the calculation of local education subsidies
Source: Song et al. 2021

Did the Internal Tax Linkage of Local Education Subsidies Strengthen the Stability of Education Finance?

Over 90% of local education finance relies on internal tax-linked subsidies and revenues transferred from local governments without taxation authority. Moreover, more than 75% of the expenditure budget in the Special Account for Educational Expenses is allocated to fixed expenses like personnel expenses and school operating costs, limiting autonomous budget flexibility. Addressing future education demands [Green Smart Future Schools, full implementation of the High School Credit System, etc] set by the government, investing in education recovery post-COVID-19, tackling overcrowded classrooms, enhancing educational facilities, and accommodating rising personnel expenses for teachers and education officials, as well as increased school operating costs due to price hikes, are significant financial challenges.

The internal tax linkage method denies additional funds when needed due to increased schools, classes, or teachers (Song 2022b). When a tax deficit occurred post-1999, local education bonds were used instead of additional funds, later repaid with subsidies. Between 2005 and 2007, the School Expansion Projects turned into private investment due to difficulties meeting demand for new schools. Major national policy projects (compulsory middle school education and free education for ages 3-5, free high school education, etc.) were partially supported by increased subsidies while

existing subsidies supported some. Even multi-year national projects were funded by temporary or government subsidies (reserve funds for purposes) to evade budget constraints.

Generally, the internal tax linkage method can be understood as a means to secure financial resources stably; however, it becomes an obstacle to expanding education finance during the expansion of the education scale.

1.2 Did the Local Education finance Increase Excessively Compared to Higher Education Finance?

From 2010 to 2021, the education sector budget has grown at an annual average of 5.8%, with preschool, elementary, and secondary education budgets increasing by 5.5% annually and higher education budgets growing at 7.6% annually. Until 2015, the proportion of the budget for preschool, elementary, and secondary education decreased while the share of higher education increased. However, since then, the proportion of preschool, elementary, and secondary education's share has been rising, while higher education's share has declined. Economic fluctuations significantly impact local education finance, making it challenging to be optimistic about future conditions. Given the substantial financial demand for future education and school environment improvements, it is difficult to claim there is more than enough funding in local education finance.

Table 12. Budget Size of Education Sector

(Unit: KRW billion, %)

Year	Entire Budget Sum	Preschool, elementary, secondary education		Higher education		Lifelong and vocational education		Education-general	
		Budget sum	Percentage	Budget sum	Percentage	Budget sum	Percentage	Budget sum	Percentage
2010	38,255.7	32,546.7	85.1	5,044.0	13.2	537.8	1.4	127.2	0.3
2011	41,236.0	35,484.7	86.1	4,976.9	12.1	649.0	1.6	125.4	0.3
2012	45,491.1	38,554.9	84.8	6,220.8	13.7	594.8	1.3	120.6	0.3
2013	49,771.2	41,236.3	82.9	7,680.7	15.4	733.3	1.5	120.9	0.2
2014	50,699.6	41,145.2	81.2	8,870.5	17.5	571.6	1.1	112.3	0.2
2015	52,918.7	41,456.8	78.3	10,744.9	20.3	615.0	1.2	102.0	0.2
2016	53,185.9	43,058.8	81	9,359.3	17.6	547.7	1	110.1	0.2
2017	57,412.3	47,149.4	82.1	9,458.4	16.5	693.5	1.2	111.0	0.2
2018	64,189.8	53,715.3	83.7	9,674.2	15.1	673.8	1	126.5	0.2
2019	70,649.0	59,383.2	84.1	10,257.6	14.5	877.1	1.2	131.2	0.2
2020	72,634.4	60,412.6	83.2	11,013.9	15.2	1,071.5	1.5	136.5	0.2
2021	71,207.6	58,637.5	82.3	11,327.0	15.9	1,171.5	1.6	138.0	0.2
Annual Average Rates of Change	5.8	5.5	-	7.6	-	7.3	-	0.7	-

Source: Ministry of Strategy and Finance. each year. Summary of Budget

According to the OECD (2021), Korea's public spending on elementary and secondary education, as a percentage of GDP, is 3.12%, slightly below the OECD average of 3.15%, ranking 15th out of 37 countries. In contrast, public spending on higher education in Korea accounts for 0.62% of GDP, lower than the OECD average of 0.99%, placing Korea 33rd among the 37 countries.

In a National Assembly debate, the head of the financial system department at the Ministry of Strategy and Finance pointed out an overinvestment in elementary and secondary education compared to underinvestment in higher education. In the 2022 budget, 84% (KRW 69.8 trillion) was allocated to preschool, elementary, and secondary education, while higher education received only 14% (KRW 12.0 trillion).

This discrepancy raises concerns about the weakening financial foundation for higher education, primarily due to frozen tuition fees (Jeong 2021). Although the importance of investing in higher education is growing for future industries and talent development, securing adequate funding remains a challenge. The issue lies not with local education finance but in the absence of a stable higher education finance plan and government policies to control tuition fees. It is reasonable that the subsidies, as stipulated by law, are used as a resource for preschool, elementary, and secondary education to promote the balanced development of education. If some of the local education finance is invested in higher education, it will reduce the overall education finance during an economic recession; thus, it is necessary to develop a separate plan to solve the problems of higher education finance fundamentally.

IMPROVEMENT DIRECTIONS FOR LOCAL EDUCATION FINANCE [This section was composed based on the content of Song, Ki-chang et al. 2021.

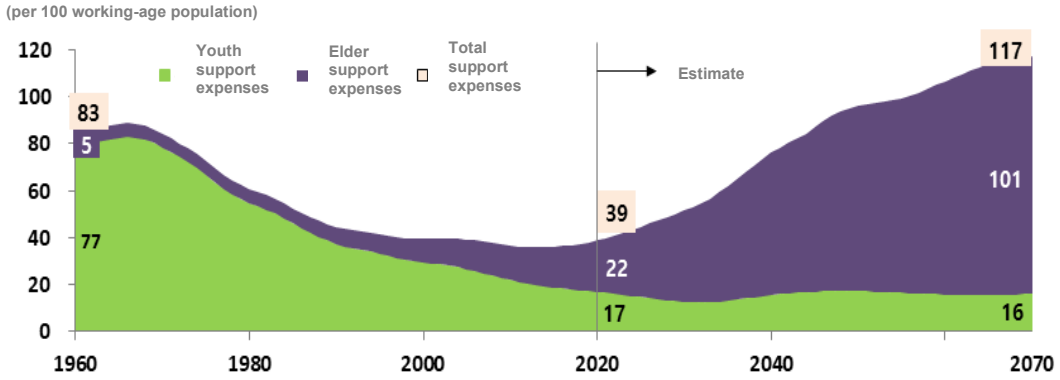
"지방교육재정 수요 전망과 재원 확충 및 효율적 운용]

The premises for improving the local education subsidy system are:

1. Relying on empirical data to establish the number of classes, not students, as the basic expenditure unit for education finance.
2. Recognizing that the KRW 11.8 trillion increase in the 2022 subsidy budget compared to the 2021 main budget is a temporary outcome resulting from a tax revenue estimate error in the 2021 main budget.
3. Emphasizing that meaningful change in education requires increased financial resources directed toward classes.
4. Cautiously evaluating the impact of additional budget issuance to school accounts following revised supplementary budgets, considering potential challenges in financial execution burden and teachers' negative perceptions of excessive finance.
5. Shifting the budget organization and execution focus towards enhancing education quality beyond addressing underdeveloped educational conditions after the initial improvement phase (Song 2022a).

1.3 A Stable Education Finance Securing and A Diversified Subsidy System Are Necessary

Expanding or at least maintaining education finance is crucial for improving Korea's educational conditions beyond international standards. Future projects, such as Green Smart Future Schools, to address overcrowded classes and enhance educational environments and improvements following the full implementation of the High School Credit System, require funding. Furthermore, there is a need for education financial resources to invest in school-level curricula, enhancing productivity in anticipation of a shrinking working-age population due to low fertility rates and aging demographics. Figure 4 shows that in 2070, 116.8 (100.6 elders) people will need support from 100 working-age population, increasing three times compared to 2020 (National Statistics Office 2021.12.09).



Source: National Statistics Office. 2021.12.09

Figure 4. Future Population Estimate in Korea

Teacher personnel expenses constitute the largest portion of local education finance. The law ensures teachers' employment until retirement age, making immediate reduction challenging with a decreasing school-age population. Additionally, while student numbers decrease, the number of schools, classes, and teachers grows due to new schools, alleviating overcrowding and improving educational conditions. Addressing these issues without impacting overall subsidies is crucial. This can be achieved through diversifying subsidies, including Salary Subsidies, Education Tax Subsidies, Increased Subsidies, Weighted-student-based Subsidies, and Education Environment Improvement Subsidies, which were previously unified.

1.4 Minimizing the Unused Amounts and Carryovers

As public opinions are continuously raised about reducing the size of local education finance, pointing out the inefficient financial execution due to the unused amounts and carryovers, various policies at the Ministry and provincial and metropolitan offices of Education are crucial to minimize the unused amounts and carryovers. This may involve using the ratio of unused amounts and carryovers as a key indicator in 'local education finance analysis' or adjusting General Subsidies based on this ratio within the standard financial demand calculation, as outlined in the Enforcement Decree of the Local Education Subsidy Act and the amended Enforcement Rules (2020.10.20) in the same Act.

1.4.1 Utilizing the Fund System

Budget inefficiencies and disorganized execution lead to waste in net surplus budgets. Accumulating net surplus as part of the Consolidated Financial Stability Fund [It is suggested that the imbalance in fiscal income between fiscal years be adjusted and financial resources efficiently utilized within the same fiscal year by integrally managing surplus funds or deposits generated from the management of local education finance.], can serve as a financial control mechanism to stabilize resources and reduce unused amounts and carryovers. The amount of net budget surplus accumulated by the Consolidated Financial Stability Fund should be considered as follows: (1) the entire net budget surplus that exceeds a certain percentage of the total revenue settlement amount for the current year, (2) a

certain percentage or more of the excess revenue compared to the previous year's revenue settlement amount or its three-year average, (3) a certain percentage or more of the net budget surplus that exceeded the net budget surplus of the previous year or its three-year average, (4) a certain percentage or more of the net budget surplus or the unused amounts (Song et al. 2021). Additionally, unused amounts within facility project budgets can be managed using the 'Educational Environment Improvement Fund' established under the 'Act for Education Facility Safety and Maintenance' to reduce the unused amounts and carryovers and ensure stable facility funding. However, suppose excessive accumulation is added to the fund at the end of the year. In that case, concerns may arise that it is merely used as a means to reduce the unused amounts and net budget surplus. Therefore, it is necessary to consider the requirements for accumulation and use, and in operating the fund, an expenditure plan suitable for fundraising is necessary.

1.4.2 Utilizing and Improving the Continuing Expense System

To reduce the unused amounts and carryovers, it is necessary to frequently check the progress of projects during the year and actively reduce or adjust projects that are expected to have any unused amounts or carryovers due to project plan change or poor execution. Facility project expenditures, accounting for the largest share of these, ranging from 59.7% to 81.0%, can be managed effectively through the Continuing Expense System [Based on Article 42 of the 「Local Finance Act」, for construction, manufacturing, and other projects that require several years to complete, the total amount of necessary expenses and the amount for each year shall be paid as continuing expenses over several years with a resolution of the local council. For facility projects that take more than two fiscal years to execute, the total project cost is divided by year, and only the amount that can be executed in the relevant year is allocated.], as some metropolitan and provincial education offices have done. Guidelines are established in their Basic Guidelines of Budgeting for Special Account for Educational Expenses to reduce the carryovers in the facility project expenses. Additionally, for projects extending into the second fiscal year, expenses can be carried over with approval from the local council if they meet the criteria for continuing expenses.

However, expanded use of the Continuing Expense System for facility project expenses can lead to administrative burdens and potentially increase unused amounts and carryovers. Thus, it is crucial to accurately estimate and plan the annual amount in consultation with the facility department. During project execution, continuous monitoring of the execution rate and expected amounts for the current year, along with an allocation of suitable administrative personnel, and judging the appropriate project size in preparation for an increase in continuing expenses (Lee 2022).

1.4.3 Providing Incentives for Efficient Financial Execution

To increase the efficiency of financial execution, under the 'Enforcement Decree of the Local Education Subsidy Act' and the revision of the Enforcement Rules of the same Act (20.10.2020), matters related to support for efficient financial execution should be included in the self-effort demand measurement items for calculating the standard amount of financial demand for General Subsidies. The support for efficient financial execution includes:

- the carryover and unused amount rates of the special account for educational expenses and school accounts,
- budget execution rate in the first half of the year, and
- budgeting rate of the net budget surplus.

The Minister of Education determines the target value of the carryover and the unused amount rates. If the previous year's rates are below the target, offices of education receive incentives based on their current budget. Exceeding the target reduces the standard amount of financial revenue. This encourages education offices to aim for lower carryover and unused amount rates to secure future incentives.

Furthermore, efforts to enhance efficiency in local education financial management require strengthening the special subsidy incentives based on local financial analysis results and ensuring their integration into budget processes. Article 5 (2)-1 of the 'Local Education Finance Act' highlights the need for financial support for local governments with excellent education administration and financial management. Meanwhile, Article 2 of the 'Enforcement Decree of Local Education Finance Act' mandates 'Special Subsidies for Excellent Local Government Support' for metropolises and provinces that achieved outstanding financial analysis results. Currently, the financial incentives vary yearly in terms of size and whether they are granted due to low predictability, hindering active utilization by metropolitan and provincial education offices. Therefore, stably providing and expanding the size of the incentives are crucial for ensuring local education financial management efficiency (Eom 2015).

1.5 Improving the Measurement Items of the General Subsidies' Standard Amount of Financial Demand

1.5.1 Simplifying the Measurement Items

The General Subsidies have no special regulations concerning its utilization. After calculating the standard amount of financial demand, the difference with the standard amount of financial revenue is appropriated as a total amount. As the standard amount of financial demand is a cost of a comprehensive and standard administrative demand for providing a certain level of education services, the measurement items are a type of standard expense for a rational calculation of financial

demand rather than an actual project demand.

When calculating the standard amount of financial demand, it is said that the more subdivided the measurement items are, the more accurately it is calculated. Nevertheless, there have been conflicts due to excessive subdivision of and budgeting requests for standard financial demand items (Song et al. 2019).

Subdivision of measurement items reflects the central government's intention to have metropolitan and provincial education offices promote specific projects alongside the purpose of accurate demand calculation. Consequently, the central government appropriates it as a total amount; however, in fact, it imposes the implementation as if it were for national policy project expenses and reduces the size of available resources for metropolitan and provincial education offices, weakening their autonomy and undermining local educational autonomy (Song et al. 2019; Jang 2015; Choi 2013). Although the subsidies are appropriated as a total amount, the project departments of the ministry and metropolitan/provincial offices of education and interest groups related to the items can recognize the amount of each item as the minimum amount and request a budget securing; thus, infringing the metropolitan and provincial education offices' budgeting rights (Ryu 2013). Calculating with the excessively subdivided measurement items centered on project demand will not be significantly different from the line-item appropriation, which restricts the metropolitan and provincial education offices' autonomy in financial management.

Therefore, it is necessary to reduce the measurement items to meet the nature of the General Subsidies, simplify the demand calculations by abolishing the measurement items with national policy projects' nature, and abolish the functions that limit the calculated standard amount of financial demand.

1.5.2 Abolishing Calculation Regulations Other than Facility and Election Expenses

There is an argument that the calculation regulations for executing some measurement items of the General Subsidies restrict the autonomy of metropolitan and provincial education offices (Song et al. 2019). As of 2021, it is stipulated to calculate teachers' honorary retirement expenses, local election expenses, school educational environment improvement expenses, support for the shortfall in private school relocation construction expenses, and childcare fees among the support for early childhood education fees, etc. The necessity of the calculation regulations for subsidies is acknowledged in that it can improve the efficiency of budget management by accurately reflecting actual demand and execution suitable for the initial purpose. However, it goes against granting the total amount of the General Subsidies, as stipulated in the 'Local Education Subsidy Act,' and may violate the budgeting rights of the metropolitan and provincial education offices. Therefore, it is necessary to minimize the calculation regulations, such as abolishing the ones for items other than facility projects and election expenses, which substantially need the calculation.

Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Entire	11	14	18	19	14	14	12	13	15	14	13	12
General demand	7 (27)	7 (33)	7 (36)	8 (41)	8 (37)	8 (40)	8 (34)	8 (35)	8 (38)	8 (34)	8 (33)	8 (26)
Self-effort demand	4	7	11	11	6	6	4	5	7	6	5	4

Note: Number in ( ) refers to number of items
Source: Measurement items, measurement units, calculation formulas, and unit costs (related to Article 4 (1)), [Attachment 3] Measurement items, calculation formulas, and unit costs (related to Article 7 (2)), Song et al. 2021

Table 13. Number of Measurement Items for Fiscal Demand by Year

1.5.3 Establishing Self-governing Support Project Costs

Local government affairs can be categorized into autonomous and delegated affairs (Min et al. 2021). In delegated affairs, the central government either fully covers or shares the costs with local governments. However, in autonomous affairs, local governments are required to bear all costs according Article 20 [[Local Finance Act] Article 20 (Expenses related to local government affairs) Expenses necessary for local government affairs within the jurisdiction of a local government shall be fully borne by the local government.] of the 'Local Finance Act.' For local education finance, where a significant portion comes from the central government and fixed expenses like personnel costs are high, there are constraints on planning autonomous projects aligned with regional characteristics. While autonomous affairs are self-funded, the central government may offer incentive subsidies (Min et al. 2021). ; considering this, to invigorate the self-governing projects that cannot be grasped by the calculation of the standard amount of financial demand, it is essential to establish a certain size of self-governing project costs that accounts for a certain proportion of the standard amount of financial demand to subsidize them separately or review a method of separating the corresponding amount from the standard amount of financial demand calculation (Song 2021).

1.6 Supporting Higher Education and Life-long Education by Introducing a Joint Project Cost System

Joint Project Cost System refers to a system in which the education offices and local governments can jointly organize and execute financial resources for the projects on which they can collaborate. It can induce

connection and cooperation to efficiently utilize financial resources and benefit the local citizens (Kim & Jang 2015; Kim 2020; MOE 2020).

To implement the joint project cost system: first, before carrying out the projects, there should be an agreement between the governance agents, promoting a pilot project and making plans, drawing up a budget necessary for the project promotion, then exploring a model for the joint project centering on the central government, and ensuring that budget size and project promotion guidelines are developed and shared. Second, in exploring the joint project cost target projects, the list of project target priorities must be derived by applying specific standards (i.e., validity, efficiency, urgency). Third, to secure financial resources and to induce participation, there is a need to prepare a foundation for fund establishment or a Special Account for the joint project costs through the 'Local Finance Act.' For fund establishment, there should be a joint project promotion team through establishing an upper legal basis. Consequently, financial resource management, execution, and the return of performance evaluation by the parliamentary deliberations will be convenient; budget account system establishment and mutual human resource dispatch will be easy. It is essential to Legislate local government Joint Project Cost System ordinances and guidelines and prepare promotion basis related to financial management or the Special Account. Moreover, there should be processes like deliberation and resolution related to the budget settlement through the council. Last, it is necessary to establish a management system to strengthen a sustainable management capacity for the Joint Project Cost System(Kim 2021).

2 CONCLUSION

There are many unfriendly external views and public opinions on local education finance in Korea. For instance, on December 29, 2021, the Korean Development Institute (KDI) raised concerns that the school-age population had declined, but the local education finance had increased. As of 2022, local education subsidies increased to KRW 65 trillion from a revised supplementary budget. This calls for urgent local education finance reform. However, the apparent KRW 11.708 trillion increase in 2022 is misleading. The budget rose by KRW 100 billion in 2020 and decreased by KRW 2.1 trillion in 2021 (Asian Economy 2021.12.02).

Personnel expenses account for 60% of local education finance, with annual increases of KRW 2 trillion at metropolitan and provincial education offices. If the tuition revenue, a significant source of income, disappears due to the free high school education and the subsidies are stagnant, the operating and facility costs will shrink, and educational activities may suffer.

Given the declining student population, subsidies should not be solely based on student numbers. New schools or expansions are necessary to maintain an international standard of fewer than 20 students per class. Further, considering the financial demand for future education, such as the expansion of early childhood education support, stabilization of free high school education, full implementation of the High School Credit System, and Green Smart Future Schools, it is necessary to secure stable local education finance.

Efforts are required to minimize the unused amounts and carryovers through efficient fund utilization and Continuing Expense System. The Ministry of Education has planned to create a Special Account (draft) for higher and lifelong education support with KRW 3.6 trillion in education tax from the Local Education Subsidies (Edupress 2022). However, this requires legislative changes, such as enacting the 'Special Account Establishment Act' and amending the 'Local Education Subsidy Act' and the 'National Finance Act.' Moreover, without a fundamental solution, trying to subordinate the higher education budget to the local education finance will create problems in the future economic situation and the entire education finance. Therefore, first, it is necessary to utilize a Joint Project Cost System that can carry out projects jointly with local governments and universities and carefully review policies and measures to secure higher education finance independently from the local education finance.

Declarations

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