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Teacher-led
Learning Circles
for Formative Assessment

Teacher-Led Learning Circles for Formative Assessment:

FINAL REPORT SOUTH KOREA

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Teacher-Led Learning Circles for Formative Assessment Project

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Part 1: Country Profile

National Context

South Korea is a country located in East Asia with a population of approximately 51,751,065 as of 2024 (https://kosis.kr/visual/populationKorea). The total area of South Korea is 100,210 square kilometers. The country has a total of 14,477 primary, middle, and high schools, with a total student population of 6,526,072. Of these students, 97% are Korean, while the remaining approximately 3% are of foreign nationality.

South Korea is renowned for its high student achievement in international assessments such as the Programme for International Student Assessment (PISA). In the 2022 PISA results, Korean 15-year-olds scored significantly above the OECD average in all tested subjects: 527 points in mathematics (OECD average: 472), 515 in reading (OECD average: 476), and 528 in science (OECD average: 485). These high scores reflect the country's strong emphasis on education and rigorous academic standards.

However, despite these high levels of achievement, there are notable disparities in educational equity. The South Korean education system faces challenges related to socioeconomic differences, which impact student performance. For instance, socio-economically advantaged students outperform their disadvantaged peers by a considerable margin. The PISA 2022 results showed in Korea socio-economically advantaged students (the top 25% in terms of socio-economic status) outperformed disadvantaged students (the bottom 25%) by 97 score points in mathematics. This is similar to the average difference between the two groups (93 score points) across OECD countries (https://gpseducation.oecd.org/CountryProfile?primaryCountry=KOR&treshold=10&topic=PI).

Public opinion in South Korea places a high value on education, seeing it as a crucial pathway to personal and professional success. This societal emphasis results in intense competition and high expectations for students, contributing to the prevalence of private tutoring (hagwons). In 2023, spending on private education in South Korea rose to nearly 27 trillion South Korean won, highlighting the significant investment families make to ensure their children's academic success(https://www.oecd-ilibrary.org/sites/9bc3603b-en/index.html?itemId=/content/component/9bc3603b-en).

Professionally, South Korean teachers are supported by a robust digital education infrastructure. The Ministry of Education and the Korea Education and Research Information Service (KERIS) provide various digital tools and resources for teaching and learning, aiming to integrate advanced technologies such as artificial intelligence into the educational experience. This digital strategy is part of broader efforts to personalize learning and enhance educational outcomes(https://www.oecd-ilibrary.org/sites/9bc3603b-en/index.html?itemId=/content/component/9bc3603b-en).

International researchers often view South Korea's education system as a model of high academic achievement but also highlight the associated challenges. These include significant mental health issues among students and disparities in educational opportunities driven by socioeconomic status. Scholars suggest that while South Korea excels in educational quality, achieving greater equity remains a complex challenge that requires systemic changes, particularly in reducing reliance on high-stakes exams and private tutoring (Fisher, 2019).

National Assessment Policies

Evaluation policies from elementary to high school in Korea are presented in national curriculum documents. These documents are officially published by the Ministry of Education. The evaluation guidelines provided in the curriculum documents include the following (https://ncic.re.kr/mobile.kri.org4.inventoryList.do):

First, the focus of evaluation is to verify the degree to which individual students have achieved educational goals, to supplement any deficiencies in learning, and to improve the quality of teaching and learning.

- Schools provide students with appropriate information on their evaluation results and conduct follow-up guidance to help students continuously reflect on and improve their learning.
- Schools and teachers use student evaluation results to continuously improve the quality of instruction.

Second, schools and teachers ensure that teaching, learning, and evaluation activities are consistently conducted based on achievement standards. Specific details related to this include:

- The evaluation confirms not only the results of learning but also the learning process leading to the results, supporting successful learning and the development of thinking skills.
- Schools ensure that evaluations balance cognitive and affective aspects and provide students with opportunities to self-assess their learning process and results.
- Schools set achievement levels according to subject-specific achievement and evaluation criteria, reflecting these in teaching, learning, and evaluation plans.
- Content and skills that students have not been given the opportunity to learn are not evaluated.

Third, schools utilize appropriate evaluation methods considering the nature of the subject and the characteristics of the learners. Performance assessments are enhanced, and the proportion of descriptive and essay-type assessments is increased.

- In evaluations that emphasize affective, functional aspects, or hands-on activities, valid and reasonable criteria and scales are established considering the nature of the subject.
- Various intelligent information technologies are used to activate personalized assessments for students, considering school conditions and the characteristics of educational activities.
- Evaluation plans can be adjusted considering the developmental levels and characteristics of individual students, and methods can be adjusted as needed for special education students in both special and general classes.
- Creative experiential activities are evaluated with a focus determined by the school, considering their content and characteristics.

Teacher Professional Learning and Practice of Formative Assessment

In Korea, teachers receive various training sessions both online and offline during the school term or vacations. When the Ministry of Education announces a broad framework or policy on education, the 17 provincial education offices conduct training sessions for teachers within their jurisdictions to implement the Ministry's policies. Each provincial education office also has its own policies and conducts various training sessions for teachers to implement these policies.

Although the term "formative assessment" has been used in Korean schools for a long time, when the national curriculum was revised in 2015, the Ministry of Education introduced and began to promote the term "process-focused assessment" as a policy to emphasize not only the results but also the process of evaluation (Park, Jin, Kim, & Lee, 2018, p. 3). Policy research for implementing process-focused assessment was conducted (Ban, Kim, Park, & Lee, 2018), and various training programs were developed by each provincial education office to help teachers implement process-focused assessment in schools. For this reason, while the term "formative assessment" is widely used academically in Korea, the term "process-focused assessment" is more commonly used in schools.

Although the Ministry of Education has promoted process-focused assessment as a policy, it appears that teacher associations have not actively researched this area. Various research and seminar materials conducted by teacher associations are available on their websites, but it is difficult to find research results specifically on process-focused assessment. Given the nature of teacher associations, which prioritize the rights and interests of their members, the effective implementation of formative assessment to enhance the quality of instruction does not seem to be their primary concern.

Formative Assessment Research Review

As mentioned earlier, the term "process-focused assessment" is used more frequently in policy contexts in Korea than "formative assessment." Process-focused assessment involves collecting diverse data on students' characteristics and changes observed during the teaching-learning process, based on the achievement standards of the curriculum, to provide appropriate feedback that supports student growth and development (Ban et al., 2018; Korea Institute for Curriculum and Evaluation, 2019). Especially since 2017, research using the term "process-focused assessment" has started to emerge.

Process-focused assessment emphasizes the perspective of assessment for learning, aiming to ensure that all students achieve their goals through the enrichment of the learning process. Essential to this enrichment is the implementation of formative assessment, which verifies student understanding during the learning process and provides feedback. Often, teachers in schools think of the curriculum and teaching activities when discussing teaching but view assessment as an activity conducted post-facto for grading purposes. However, effective teaching cannot occur without considering what students need to learn, what they have learned, and what evidence demonstrates their learning. Therefore, teachers need knowledge

in planning, developing, implementing, analyzing, and utilizing appropriate assessment tools alongside their knowledge of the subject, teaching strategies, and planning and organizing learning experiences (Ban et al., 2018).

Feedback is closely related to formative assessment. Formative assessment is a crucial tool for providing immediate and continuous feedback to improve student learning. Formative assessment and feedback conducted during instruction are not separate activities; process-focused feedback is integrated into the various activities within the formative assessment framework (Kim & Ban, 2020). Process-focused feedback contrasts with outcome-focused feedback in terms of timing. Outcome-focused feedback typically occurs at the end of a semester or unit, providing grades or scores that reflect students' achievement. In contrast, process-focused feedback is provided during the semester or instruction on a topic, helping students improve their learning and achieve their goals.

With the implementation of the 2015 revised curriculum in 2017, Korea's educational assessment has increasingly emphasized classroom assessments that support all students' learning and growth. In elementary schools, mandatory national standardized tests were abolished in 2013, and midterm and final exams at the school level have gradually been phased out since the introduction of the 2015 revised curriculum. Currently, most schools do not conduct school-level midterm or final exams. Instead, most elementary schools conduct process-focused performance assessments at the classroom level. However, in the past three years, standardized online achievement assessments have been developed again at the national level for schools to use.

Research on the Implementation of Formative Assessment in South Korea

As mentioned earlier, in South Korea's elementary schools, formative assessment is conducted to determine the level of student achievement during the learning process. This assessment provides feedback to improve student learning and adjust teaching methods, ultimately emphasizing process-focused assessment that maximizes each student's potential. However, many studies have shown that various issues need to be addressed for proper implementation, and the degree of execution varies among teachers.

The following is a summary of the current state of process-focused assessment, which emphasizes formative assessment, based on research conducted in Korea.

Kang et al. (2014) analyzed the differences in perception and actual conditions of formative assessment according to whether elementary school teachers had completed evaluation training and their years of teaching experience. The study found that teachers who had completed evaluation training showed higher confidence and professionalism in assessment compared to those who had not. Therefore, it was suggested that practical evaluation training should be well-conducted for teachers. Secondly, 51% of respondents perceived formative assessment as "an assessment to confirm student learning during lessons and improve learning achievement through feedback," while 43% of teachers with over 20 years of experience viewed it as "checking the learning content in the latter part of the lesson." Additionally, when examining the actual methods of formative assessment, the most common were test papers (34%), followed by questioning (31%), textbook problems (25%), and student

numbers (10%). The barriers to formative assessment were lack of time (39%), class size (37%), complexity of preparation (16%), and difficulty in utilization (8%). The types of feedback provided were symbols (41%), scores (26%), written comments (20%), and verbal comments (12%). This study emphasized the need for training to improve assessment professionalism in conducting formative assessments and providing appropriate feedback, and the necessity of policy support to ensure the successful implementation of formative assessments.

Hong et al. (2017)** investigated how elementary school teachers perceive process-focused assessment and qualitatively analyzed their practical experiences to reveal its significance. The study involved nine teachers with over ten years of teaching experience and practical experience in process-focused assessment. The Consensual Qualitative Research (CQR) method was used. The study found that although teachers accurately understood the policy direction of process-focused assessment, they experienced significant confusion during implementation. The difficulties were mainly due to external factors such as school regulations, parents, and students' existing perceptions of assessment. To address these challenges, teachers suggested the need for close-knit training, improvements to the national education information system, and the sharing of assessment paradigms with parents.

Park(2017) explored the meaning of student assessment in lessons. The study suggested that if assessments are appropriately used during the learning process, they can provide feedback for both student learning adjustment and teacher instructional adjustment. It emphasized the need to diversify the purposes and methods of assessment while maintaining teacher autonomy. In other words, if teachers clearly understand process-focused assessment, there would be no difficulties in implementing it in schools. The study called for the clarification of concepts, sharing them with educational stakeholders, and creating a supportive cultural and educational environment. These points were also mentioned in earlier studies by Kan et al. (2014) and Hong et al. (2017).

Ban et al.(2018) investigated the perceptions of elementary and middle school teachers on process-focused assessment. The study selected 1,311 teachers from 135 elementary schools and 723 teachers from 96 middle schools nationwide using stratified proportional cluster sampling. The survey content included teachers' approval of the introduction of process-focused student assessment, expectations and concerns, the timing and method of introduction, and quality assurance measures. The results showed that over 68% of elementary and middle school teachers supported the introduction of process-focused student assessment. However, there were significant concerns about the objectivity and fairness of assessments, excessive workload, and the lack of teachers' assessment expertise. Elementary school teachers preferred a phased introduction by subject. Both elementary and middle school teachers emphasized the need for reducing administrative tasks, optimizing student numbers, and fostering a research-friendly atmosphere through the activation of subject study groups.

Jeon et al. (2019) conducted a ten-month ethnographic qualitative study at a school that had been implementing process-focused assessment for six years to explore the actual implementation methods, challenges, and significance of process-focused assessment in schools. The study identified various practices such as contextualizing assessments, utilizing diverse assessment tools, not evaluating based on isolated events or results, involving students in assessment planning, providing assessments as learning opportunities, using learning outcomes as data for observing student learning processes rather than academic achievements, and focusing on

individual student growth. The teacher's role was seen as a facilitator and an active participant in the learning process, aiming to visualize and remember students' learning journeys. The challenges identified included familiarity with traditional assessment methods and parents' perceptions of assessments. The study described the implementation of process-focused assessment as experiencing "cyclical time."

Kim(2022) explored the practical methods of process-centered assessment among elementary school teachers through in-depth interviews, categorizing the implementation types into 'acceptance,' 'compliance,' 'adherence,' and 'compromise.' Twelve elementary school teachers who practiced process-focused assessment participated in the study. The findings revealed that teachers were motivated to consider and use appropriate assessment methods to confirm learned content, moving away from past result-focused assessments and adopting performance assessments. Additionally, the frequency of feedback increased to elicit meaningful changes in students during lessons, leading to more frequent teacher-student interactions and adjustments in teaching methods to manage lesson quality. The types of process-focused assessment implementation were divided into four categories based on the characteristics of teachers or subjects. The 'acceptance' type, which changed both teaching and assessment methods, was the most ideal implementation of the policy's intended educational changes. The qualitative research suggested that external factors such as school regulations, parents' complaints, school evaluation methods, and entrance exam systems could hinder the 'acceptance' type but could increase internalization if resolved. Although the number of 'acceptance' cases was relatively small, the 'compromise' type, which partially implemented process-focused assessment, and the 'adherence' type, which recognized the necessity of the policy but did not implement it, were observed in some subject-specific cases. Thus, teachers who practiced process-focused assessment contributed to changing the methods of teaching, learning, and assessment to some extent.

Part 2: Country Findings

National Approach to Teacher-led Learning Circles

For the project on the teacher-led formative assessment practice in South Korea, one national researcher was selected, and three teacher-led learning circles were established. The national researcher in South Korea had experience writing a book on formative feedback to enhance student learning and had conducted numerous teacher training sessions on this topic nationwide. Consequently, the national researcher had already established an extensive network with numerous teachers. Utilizing this network, the national researcher recruited facilitators and teachers to participate in the teacher-led learning circles in three different regions: Jeollabuk-do, Jeju-do and Gyeongsangnam-do.

The first teacher-led learning circles was composed of 12 teachers from the "Jeollabuk-do" (hereinafter referred to as the JB). Among them, two were facilitators, and the remaining members were participating teachers.

The JB is located in the southwest of the Korean Peninsula and approximately 192 kilometers from Seoul. As of 2024, the total population of the JB is around 1,750,000. The largest city is Jeonju City, with a population of about 640,000. Most of the JB consists of rural and fishing areas.

All participating teachers in the teacher-led formative assessment circle in the JB are elementary school teachers. Among them, three work in the major city, Jeonju City, while the remaining teachers work in schools located in smaller cities or rural areas. Two of the participating teachers work at the same school, while the others are from different schools. Hence, the project involved a total of 10 schools. Regarding the facilitators, one of the them is affiliated with the local education office not a school field as a school inspector.

During the process of recruiting teachers to participate in the teacher-led learning circle in the JB, the national researcher received assistance from a JB facilitator with whom they were already acquainted. As the first action, the national researcher explained the project to the JB facilitator and then worked with her to recruit participating teachers. Secondly, the participating teachers were informed about the purpose of the project, and those who resonated with its goals voluntarily participated. All teachers from the JB participated in the project without any dropouts until the project concluded.

The second teacher-led learning circle was composed of 12 teachers from the "Jeju-do" (hereinafter referred to as the JJ). Among them, two were facilitators, and the remaining members were participating teachers.

The JJ is located in the southwest of the Korean Peninsula and is the largest island in Korea. The JJ is approximately 465 kilometers southwest of Seoul, the capital city of South Korea. As of 2024, the total population of the the JJ is about 695,000, and it has an area of 1,849 square kilometers. The JJ has two large cities : Jeju City and Seogwipo City. These two cities are located at opposite ends of the island, with Jeju City being the larger city with a population of approximately 490,000 and Seogwipo City having a population of about 180,000. Most of the JJ region consists of rural and fishing areas.

All teachers participating in the teacher-led formative assessment circle in the the JJ are elementary school teachers. Among them, seven work in the major city, Jeju City, while the remaining three teachers work in elementary schools located in Seogwipo City. All participating teachers were from different schools, thus the number of schools involved in the project was 11. Regarding the facilitators, one of them was affiliated with the local education office not a school field.

During the process of recruiting teachers to participate in the teacher-led learning circle in the JJ, the national researcher's previous experience proved beneficial, as she had conducted several teacher training sessions on formative assessment and feedback in the JJ. This experience enabled the national researcher to already be well-acquainted with the JJ facilitators. Therefore, as the first actions, the national researcher was to explain the project to the JJ facilitators and then work with them to recruit participating teachers. As in other regions, the purpose of the project was explained during the recruitment process, and the participating teachers joined voluntarily. All teachers from the JJ participated until the end of the project without any dropouts.

The third teacher-led learning circle was formed in the "Gyeongsangnam-do" region(hereinafter referred to as the GS). Initially, the GS circle consisted of 12 teachers, but only 8 participants remained until the end of the project. Therefore, the following describes the final 8 participants. Among these 8 participants, there was 1 facilitator, and the remaining 7 were participating teachers.

The GS is located in the southern part of the Korean Peninsula and is adjacent to the sea. The GS is approximately 268 kilometers south of Seoul. As of 2024, the total population of the GS region is about 3,265,000, with an area of 10,541.7 square kilometers. The GS consists of major cities, smaller cities, rural areas, and fishing villages.

All teachers participating in the teacher-led formative assessment circle in the GS are elementary school teachers. The schools they work at are all located in small cities or rural areas. Among them, two work at the same school, while the others are from different schools. Therefore, the number of schools involved in this project was 6.

Similar to the JJ, during the process of recruiting teachers to participate in the teacher-led learning circle in the GS, the national researcher's previous experience proved beneficial. As she had conducted several teacher training sessions on formative assessment and feedback in the GS, the national researcher is already well-acquainted with the GS facilitators. Therefore, as the first actions, the national researcher was to explain the project to the GS facilitators and then work with them to recruit participating teachers. Similarly, the project's objectives were communicated during the recruitment phase, and the teachers willingly chose to participate.

The project involved Pre- and Post- Teacher surveys targeting a total of 36 teachers from the three participating regions : the JB, the JJ and the GS. The results are as follows:

Among the 36 teachers, 33 responded to the pre-survey, and 25 responded to the post-survey. Based on the post-survey results, the average teaching experience of the participating teachers was 19 years, and they taught a range of grades from 1st to 6th in elementary school. The number of students they taught varied, with 42.3% teaching 15 or fewer students, 7.7% teaching 16-20 students, and 50% teaching 21-30 students. The schools where they worked were located in urban areas (23%), rural areas (38.4%), suburban areas (15.4%), mid-sized cities (34.5%), and small towns (7.7%).

Additionally, to ensure the successful progress of the project, workshops, tutorials, and network events were conducted. Notably, two network events were held. In the first newtwork event, the project's goals and directions were shared, and discussions were held on how each teacher would apply formative assessment and feedback in their classroom. In the second network event, all teachers shared their project implementation processes and outcomes, providing an opportunity for them to exchange their successes and obstacles faced during the project.

Promising Teacher-led Formative Assessment Practices

1. Introduction

In South Korea, three teacher-led learning circles were established. The teachers involved used diverse formative assessment methods and feedback strategies. These approaches were customized based on students' grade levels, subject characteristics, or achievement standards.
To support the teacher-led formative assessment practice, workshops were conducted and teachers in learning circle learned about diverse formative assessment techniques and feedback methods. Additionally, some teachers had already formed study groups to explore formative assessment and feedback prior to participating in this project. Despite the diversity in the formative

assessment methods and feedback approaches they used, there were many similarities.
In the main text, the teacher-led formative assessment methods that were actually used by the teachers will be presented, along with the survey results. The surveys were conducted twice: a pre-survey and a post-survey. The responses were not individually matched between the pre- and post-surveys. The number of responses for the pre-survey was 33, and the number of responses for the post-survey was 25.

2. Teacher Formative Assessment Practices

Some teachers in the JB region created checklists to verify what needed to be learned, or developed step-by-step formative assessment questions to assess students' understanding and provide feedback. They also engaged in activities such as using practice books to help students review and reinforce areas where they were weak.

Some teachers in the JJ region provided guidance on the unit to be learned, shared achievement standards and activities before the lesson began, and created questionnaires using KWL to assess understanding. Additionally, they used methods such as questioning, quizzes, and exit passes during the lesson to check students' comprehension and provided individual feedback.

Some teachers in the GS region had students use learning journals to review their own learning processes, created and used learning growth checklists together with students, and assessed student understanding using checklists or learning growth checklists. They also provided formative feedback and encouraged students to conduct self-assessments.

Teachers in the three regions used similar yet diverse formative assessment methods, provided various forms of feedback, and engaged in activities that encouraged students to self-assess their learned content.

The following section describes the formative assessments used by the teachers in the learning circle, categorized into (1) learning intentions and success criteria, (2) questioning and classroom discussion, (3) feedback, and (4) self- and peer-assessment.

Learning intentions and success criteria

One of the essential factors in formative assessment practices is ensuring that students clearly understand what they need to learn and recognize what constitutes evidence of learning. For this purpose, teachers wrote learning objectives on the board to explain what needs to be learned and to describe the learning process (teachers in the GS). They also created and shared learning progress checklist related to the learning objectives so that students would know which actions demonstrate their learning. Additionally, they shared the achievement standards for each unit with the students.

There were five survey items related to learning intentions and learning outcomes (or success criteria), and the survey responses support the aforementioned contents. The survey asked current level of confidence with using each formative assessment practice, and the results are presented in Table 1. The survey items included: (1) using words that emphasize knowledge, skills, concepts, or attitudes when stating learning objectives (pre-survey average = 3.39,

post-survey average = 4.08), (2) reminding students of the connection between the content being learned and the overall learning goals (pre-survey average = 3.82, post-survey average = 4.36), (3) sharing learning objectives using words familiar to students (pre-survey average = 3.88, post-survey average = 4.28), (4) differentiating and sharing success criteria related to the learning objectives with students (pre-survey average = 3.36, post-survey average = 3.96), and (5) having students use learning objectives and success criteria during their learning (pre-survey average = 3.82, post-survey average = 4.28). The pre-survey averages for these items ranged from 3.36 to 3.88 out of 5, and the post-survey averages ranged from 3.96 to 4.36, with all but one item averaging above 4 points

As a result of the post-survey, the item with the highest average, Item 2, was reminding students of the links between what they are learning and the overall learning objectives. Conversely, the item with the relatively lower average, Item 4, was about differentiating success criteria and sharing them with students. However, when creating an analytical scoring rubric, it is necessary to present performance levels for each evaluation criterion. Therefore, teachers who created analytical scoring rubrics presented differentiated success criteria. For example, Teacher K from the GS learning circle categorized performance levels in the analytic rubric as 'Doing Well,' 'Improving,' and 'Keep Trying,' providing criteria for each performance level in various evaluation criteria. Although teachers differentiated performance levels in analytic rubrics, there were no cases identified where success criteria were explicitly defined based on the different levels of ability.

The item with the largest difference between the pre-survey and post-survey averages was the item 1, which involved using words that emphasize knowledge, skills, concepts, or attitudes when stating learning objectives, showing a difference of 0.69 points (= 4.08 - 3.39). For four out of the five items, the combined frequency of responses indicating "Mostly Confident" and "Highly Confident" was over 80% in the post-survey, except for one item.

Overall, these results suggest that teachers are using learning objectives and success criteria while implementing formative assessments, sharing these with their students, and have become more confident in using learning objectives and success criteria for formative assessments.

Table 1. Learning Intentions and Learning Outcomes: The Level of Confidence with Using Each Formative Assessment Practice

		Not at all confident (1)	Slightly confident (2)	Somewhat confident (3)	Mostly confident (4)	Highly confident (5)	Weighted average
Learning goals are stated using words that emphasise knowledge, skills, concepts and/or attitudes.	Pre	3.03%(1)	15.15%(5)	36.36%(12)	30.30%(10)	15.15%(5)	3.39
	Post	0.00%(0)	7.69%(2)	7.69%(2)	50.00%(13)	30.77%(8)	4.08
Pupils are reminded about links between what they are learning and the overall learning goals.	Pre	0.00%()	3.03%(1)	33.33%(11)	42.42%(14)	21.21%(7)	3.82
	Post	0.00%()	3.85%(1)	11.54%(3)	26.92%(7)	53.85%(14)	4.36
Child-friendly language is used to share learning goals with pupils.	Pre	3.03%(1)	3.03%(1)	24.24%(8)	42.42%(14)	27.27%(9)	3.88
	Post	0.00%(0)	3.85%(1)	11.54%(3)	34.62%(9)	46.15%(12)	4.28
Success criteria related to learning goals are differentiated and shared with pupils.	Pre	0.00%(0)	18.18%(6)	36.36%(12)	36.36%(12)	9.09%(3)	3.36
	Post	0.00%(0)	3.85%(1)	26.92%(7)	34.62%(9)	30.77%(8)	3.96
Pupils demonstrate that they are using learning goals and/or success criteria while they are working.	Pre	3.03%(1)	3.03%(1)	24.24%(8)	48.48%(16)	21.21%(7)	3.82
	Post	0.00%(0)	3.85%(1)	11.54%(3)	34.62%(9)	46.15%(12)	4.28

Based on the previously presented survey items, participating teachers were asked to which each formative assessment practice is currently embedded in their classroom. The results are presented in Table 2. A higher number indicates a greater frequency of embedding the related formative assessment practice into classroom. The survey items and averages are as follows: (1) using words that emphasize knowledge, skills, concepts, or attitudes when stating learning objectives (pre-test average = 3.64, post-test average = 3.88), (2) reminding students of the connection between the content being learned and the overall learning goals (pre-test average = 3.79, post-test average = 4.16), (3) sharing learning objectives using words familiar to students (pre-test average = 4.06, post-test average = 4.32), (4) differentiating and sharing success criteria related to the learning objectives with students (pre-test average = 3.58, post-test average = 4.04), and (5) having students use learning objectives and success criteria during

their learning (pre-test average = 3.76, post-test average = 4.16). The pre-test averages for these items ranged from 3.58 to 4.06 out of 5, while the post-test averages ranged from 3.88 to 4.32. With the exception of one item, all post-test averages were above 4 points. This indicates that, on average, teachers addressed the content of the items in over 75% of their lessons, except for the first item. The third item, sharing learning objectives using words familiar to students, had the highest average in both the pre-test and post-test. The item with the greatest difference between pre-test and post-test averages was differentiating and sharing success criteria related to the learning objectives with students, with a difference of 0.46 points (= 4.04 - 3.58).

These results suggest that teachers, while implementing formative assessments, used learning objectives and success criteria content in over 75% of their lesson time on average. They aimed to share learning objectives using words familiar to students and experienced a relatively significant change in differentiating and sharing success criteria with students when using teacher-led formative assessments.

Table 2. Learning Intentions and Success Criteria: The Extent to which Each Formative Assessment Practice is Embedded in Classroom

		Never = does not happen yet (1)	Sporadic = happens about 25% of the time (2)	Emerging = happens about 50% of the time (3)	Established = happens about 75% of the time (4)	Embedded = happens about 90% of the time (5)	Weighted average
Learning goals are stated using words that emphasise knowledge, skills, concepts and/or attitudes.	Pre	0.00%(0	12.12%(4)	30.30%(10)	39.39%(13)	18.18%(6)	3.64
	Post	0.00%(0	3.85%(1)	19.23%(5)	57.69%(15)	15.38%(4)	3.88
Pupils are reminded about links between what they are learning and the overall learning goals.	Pre	0.00%(0	3.03%(1)	30.30%(10)	51.52%(17)	15.15%(5)	3.79
	Post	0.00%(0	0.00%(0)	15.38%(4)	50.00%(13)	30.77%(8)	4.16
Child-friendly language is used to share learning goals with pupils.	Pre	0.00%(0	3.03%(1)	24.24%(8)	36.36%(12)	36.36%(12)	4.06
	Post	0.00%(0	0.00%(0)	15.38%(4)	34.62%(9)	46.15%(12)	4.32

Success criteria related to learning goals are differentiated and shared with pupils.	Pre	0.00%(0	12.12%(4)	30.30%(10)	45.45%(15)	12.12%(4)	3.58
	Post	0.00%(0	3.85%(1)	23.08%(6)	34.62%(9)	34.62%(9)	4.04
Pupils demonstrate that they are using learning goals and/or success criteria while they are working.	Pre	0.00%(0	9.09%(3)	21.21%(7)	54.55%(18)	15.15%(5)	3.76
	Post	0.00%(0	0.00%(0)	19.23%(5)	42.31%(11)	34.62%(9)	4.16

Questioning and classroom discussion

Formative assessment employs various evaluation techniques, such as eliciting related prior knowledge with formative assessment items, leading class discussions based on assessment results, using incorrect responses to inform teaching and learning, and having students explain what they have learned to others.

For example, a teacher in the JJ region shifted from a simple problem-solving evaluation method to having students explain the process of solving problems themselves and then explain it to their peers. This approach allowed students to refine their expressions and clarify their understanding by explaining what they knew to a friend. Another teacher in the JJ region used the KWL method (Know, Want to know, Learned) to create questions for formative assessment to gauge understanding. This teacher presented various questions during the lesson to assess students' comprehension and used quizzes, entrance/exit passes, and other techniques to check understanding. Additionally, another teacher in the JJ region started each session by having students repeatedly ask themselves key questions, enabling them to self-check their learning progress and verify their target objectives.

Teachers were asked how confident they were with each question item when conducting formative assessments(Table 3). The survey items were: (1) using assessments to facilitate class discussions (pre-test average = 3.27, post-test average = 3.68), (2) using items to elicit students' prior knowledge on a topic (pre-test average = 3.73, post-test average = 3.88), (3) allowing students to share questions during the lesson (pre-test average = 3.85, post-test average = 3.88), (4) using students' incorrect responses in teaching and learning (pre-test average = 3.88, post-test average = 4.04), and (5) enabling students to explain what they are learning to others (pre-test average = 3.3, post-test average = 3.84). The pre-test averages for these items ranged from 3.27 to 3.88 out of 5, while the post-test averages ranged from 3.68 to 4.04. The post-test average was higher than the pre-test average for all items, but the differences for items 2 and 3 were very small, at 0.07 and 0.03, respectively. Additionally, only one item (using students' incorrect responses in teaching and learning) had a post-test average above 4 points.

In both the pre-survey and post-survey, teachers reported the highest confidence in utilizing students' incorrect responses to enhance teaching and learning. In contrast, they expressed relatively lower confidence in using assessments to facilitate classroom discussions. According to the post-survey results, 57.7% of teachers felt 'Mostly Confident' or 'Highly Confident'

about using assessments to facilitate classroom discussions. In contrast, for other items, this combined percentage was over 69%, indicating a relatively lower confidence in facilitating discussions.

Given these outcomes, teachers used various questioning and assessment methods to check students' learning status and comprehension while conducting formative assessments. They reported the highest confidence in using incorrect responses to enhance teaching and learning. However, they expressed the lowest confidence in using assessment results to facilitate classroom discussions. This lower average is not attributed to teachers' lack of knowledge on how to facilitate classroom discussions using assessment results. Instead, it is likely due to the fact that teachers more frequently use formative assessment results to enhance teaching and learning or to provide individual feedback to students.

Table 3. Questioning and Classroom Discussion: The Level of Confidence with Using Each Formative Assessment Practice

		Not at all confident (1)	Slightly confident (2)	Somewhat confident (3)	Mostly confident (4)	Highly confident (5)	Weighted average
Assessment is used to facilitate classroom discussions.	Pre	3.03%(1)	12.12%(4)	42.42%(14)	39.39%(13)	3.03%(1)	3.27
	Post	0.00%(0)	11.54%(3)	26.92%(7)	38.46%(10)	19.23%(5)	3.68
Questions are used to elicit pupils' prior knowledge on a topic.	Pre	0.00%(0)	9.09%(3)	24.24%(8)	51.52%(17)	15.15%(5)	3.73
	Post	0.00%(0)	15.38%(4)	11.54%(3)	46.15%(12)	23.08%(6)	3.8
Pupils are able to share their questions during a lesson.	Pre	0.00%(0)	6.06%(2)	27.27%(9)	42.42%(14)	24.24%(8)	3.85
	Post	0.00%(0)	11.54%(3)	15.38%(4)	42.31%(11)	26.92%(7)	3.88
Pupils' incorrect responses are used to guide teaching and learning.	Pre	0.00%(0)	3.03%(1)	27.27%(9)	48.48%(16)	21.21%(7)	3.88
	Post	0.00%(0)	7.69%(2)	15.38%(4)	38.46%(10)	34.62%(9)	4.04
Pupils can explain to others what they are learning.	Pre	0.00%(0)	15.15%(5)	45.45%(15)	33.33%(11)	6.06%(2)	3.3
	Post	0.00%(0)	3.85%(1)	23.08%(6)	53.85%(14)	15.38%(4)	3.84

Teachers were surveyed on how frequently they included questioning and classroom discussions in their lessons when implementing formative assessments. The results are presented in Table 4. The survey items were: (1) using assessments to facilitate class discussions (pre-test average = 3.21, post-test average = 3.44), (2) using items to elicit students' prior knowledge on a topic (pre-test average = 3.61, post-test average = 4.04), (3) allowing students to share questions during the lesson (pre-test average = 3.48, post-test average = 4.00), (4) using students' incorrect responses in teaching and learning (pre-test average = 3.64, post-test average = 4.08), and (5) enabling students to explain what they are learning to others (pre-test average = 3.36, post-test average = 3.84). The pre-test averages for these items ranged from 3.21 to 3.64 out of 5, while the post-test averages ranged from 3.44 to 4.08. The post-test average was higher than the pre-test average for all items, with the differences for items 3 and 5 being particularly large, at 0.52 and 0.48, respectively.

According to the post-survey results, teachers reported that using questions to prompt students' prior knowledge on a subject, allowing students to share questions during the lesson, and utilizing students' incorrect responses to enhance teaching and learning occurred in over 75% of their lessons. In contrast, using assessments to facilitate classroom discussions was relatively less frequent in their lessons.

Table 4. Questioning and Classroom Discussion: The Extent to which Each Formative Assessment Practice is Embedded in Classroom

		Never = does not happen yet (1)	Sporadic = happens about 25% of the time (2)	Emerging = happens about 50% of the time (3)	Established = happens about 75% of the time (4)	Embedded = happens about 90% of the time (5)	Weighted average
Assessment is used to facilitate classroom discussions	Pre	0.00%(0)	24.24%(8)	39.39%(13)	27.27%(9)	9.09%(3)	3.21
	Post	0.00%(0)	19.23%(5)	26.92%(7)	38.46%(10)	11.54%(3)	3.44
Questions are used to elicit pupils' prior knowledge on a topic.	Pre	0.00%(0)	9.09%(3)	36.36%(12)	39.39%(13)	15.15%(5)	3.61
	Post	0.00%(0)	3.85%(1)	15.38%(4)	50.00%(13)	26.92%(7)	4.04
Pupils are able to share their questions during a lesson.	Pre	0.00%(0)	15.15%(5)	33.33%(11)	39.39%(13)	12.12%(4)	3.48
	Post	0.00%(0)	11.54%(3)	7.69%(2)	46.15%(12)	30.77%(8)	4

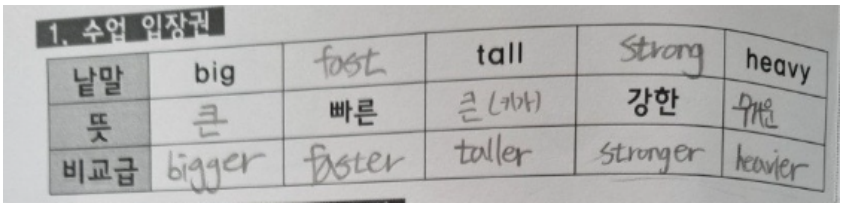
Pupils' incorrect responses are used to guide teaching and learning.	Pre	0.00%(0)	18.18%(6)	18.18%(6)	45.45%(15)	18.18%(6)	3.64
	Post	0.00%(0)	7.69%(2)	15.38%(4)	34.62%(9)	38.46%(10)	4.08
Pupils can explain to others what they are learning.	Pre	0.00%(0)	15.15%(5)	39.39%(13)	39.39%(13)	6.06%(2)	3.36
	Post	0.00%(0)	3.85%(1)	30.77%(8)	38.46%(10)	23.08%(6)	3.84

Feedback

Formative assessment results should be used as feedback for both teachers and students. Teachers utilized various feedback methods, such as feedback using analytical scoring rubrics, feedback through demonstrations, feedback via real-time assessment strategies (e.g., using colored cups to signal understanding, showing the level of understanding with the number of fingers held up), feedback using exit passes or entrance passes, checking performance processes and providing feedback based on learning progress charts, feedback using recall prompts, feedback using example prompts and scaffolding prompts (오류! 참조 원본을 찾을 수 없습니다), among others. Figure 2 shows an example of feedback using a learning progress checklist. In this example, the teacher used colors on the learning progress checklist to mark parts that would serve as hints, allowing students to identify their mistakes on their own (KMY teacher from the GS region). This method enabled the teacher to distinguish between students who could immediately correct their tasks based on the given hints and those who could not, as well as to identify students who needed more time for supplementary instruction.

Figure 1. Feedback Example Using Example Prompts and Scaffolding Prompts (GS Area Teacher KMY)

A student struggling to create a game using comparatives
Teacher: (noticing the red button) What's difficult?
Student: I don't know what to do.
Teacher: You don't know what to do, huh?

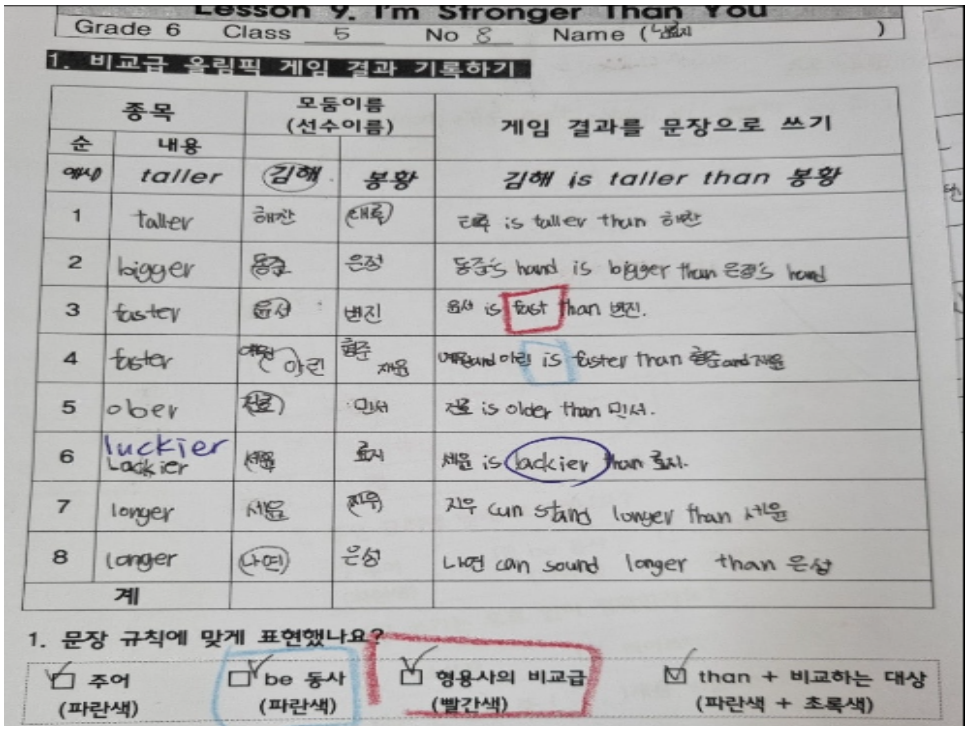

1. 수업 입장권

낱말	big	fast	tall	strong	heavy
뜻	큰	빠른	큰 (키가)	강한	무거운
비교급	bigger	faster	taller	stronger	heavier

Example Prompt:
Teacher: So, we just thought of various adjectives we can compare here. Would you like to choose one from these? Or you can pick a different one if you prefer.
Student: I'd like to compare birthdays.

Scaffolding Prompt:
Teacher: Birthdays can be earlier. Which adjective can we use? You could ask who is older.
Student: Old.
Teacher: Great! Old is good. Now, how do we make it a comparative?
Student: Older.
Teacher: Let's make a sentence then. A is older than B.
Student: A is older than B.
Teacher: Now, so your friend can understand, could you express it with a picture or a sentence here? Have you finished? Are you happy with the sentence you created?

Figure 2. Feedback Example Using the Learning Progress Checklist (GS Area Teacher KMY)


Lesson 9. I'm Stronger Than You

Grade 6 Class 5 No 8 Name ( )

1. 비교급 올림픽 게임 결과 기록하기

순	종목 내용	모둠이름 (선수이름)		게임 결과를 문장으로 쓰기
예시	taller	김해	봉황	김해 is taller than 봉황
1	taller	해찬	태욱	태욱 is taller than 해찬
2	bigger	동규	은성	동규's hand is bigger than 은성's hand
3	faster	윤상	범진	윤상 is fast than 범진.
4	faster	예원 아린	현준 재윤	예원and아린 is faster than 현준and재윤
5	older	찬호	민서	찬호 is older than 민서.
6	luckier Lackier	세윤	효지	세윤 is lackier than 효지.
7	longer	서윤	지우	지우 can stand longer than 서윤
8	longer	나연	은성	나연 can sound longer than 은성
계				

1. 문장 규칙에 맞게 표현했나요?

☑ 주어 (파란색) ☐ be 동사 (파란색) ☑ 형용사의 비교급 (빨간색) ☑ than + 비교하는 대상 (파란색 + 초록색)

A survey was conducted with participating teachers on the topic of feedback. There were five survey items, and the results are presented in Table 5. The survey items were: (1) whether the feedback given to students is connected to the original learning intentions and success criteria (pre-test average = 3.7, post-test average = 4.16), (2) whether assessment techniques used during lessons help teachers understand if students are comprehending what they are learning (pre-test average = 3.55, post-test average = 4.00), (3) whether diagnostic information from standardized tests is used to identify strengths and needs in teaching and learning (pre-test average = 3.33, post-test average = 3.72), (4) whether students provide information about their own learning (pre-test average = 3.42, post-test average = 3.84), and (5) whether students can explain what they are learning to others (pre-test average = 3.27, post-test average = 4.00). The pre-test averages for these items ranged from 3.27 to 3.7 out of 5, while the post-test averages ranged from 3.72 to 4.16. In terms of confidence related to feedback, teachers' averages increased from at least 0.39 points to a maximum of 0.73 points from the pre-test to the post-test.

Interpreting the results focusing on the items with post-test averages of 4 or higher (items 1, 2, and 5), it appears that teachers provided feedback related to the original learning intentions and success criteria, used assessment techniques to gauge students' understanding, and perceived that students were fairly confident in explaining what they were learning to others.

In contrast, items 3 and 4 had post-test averages below 4. Based on these items, it seems that teachers were relatively less confident in using diagnostic information from standardized tests to identify strengths and needs in teaching and learning. This could be related to the limited use of standardized tests that consider all ability groups among elementary students in Korea. In Korea, since about three years ago, CBT standardized tests for elementary students considering all ability groups have been developed at the national level and are implemented at the discretion of schools. The lack of standardized tools to assess all ability groups made it difficult for teachers to extract diagnostic information from these tools.

In summary, teachers reported using feedback in various ways, and the survey indicated that they linked feedback to the original learning intentions and success criteria, used various assessment techniques to understand students' comprehension, and felt confident that students could explain what they were learning to others."

Table 5. Feedback: The Level of Confidence with Using Each Formative Assessment Practice

		Not at all confident (1)	Slightly confident (2)	Somewhat confident (3)	Mostly confident (4)	Highly confident (5)	Weighted average
Feedback to pupils is linked to the original learning goal(s) and success criteria.	Pre	0.00%(0)	6.06%(2)	36.36%(12)	39.39%(13)	18.18%(6)	3.7
	Post	0.00%(0)	3.85%(1)	15.38%(4)	38.46%(10)	38.46%(10)	4.16
Assessment techniques are used during lessons to help the teacher determine how well pupils understand what is being taught.	Pre	0.00%(0)	6.06%(2)	39.39%(13)	48.48%(16)	6.06%(2)	3.55
	Post	0.00%(0)	0.00%(0)	23.08%(6)	50.00%(13)	23.08%(6)	4
Diagnostic information from standardised tests is used to identify strengths and needs in teaching and learning.	Pre	0.00%(0)	15.15%(5)	42.42%(14)	36.36%(12)	6.06%(2)	3.33
	Post	0.00%(0)	0.00%(0)	34.62%(9)	53.85%(14)	7.69%(2)	3.72
Pupils are involved in providing information about their learning.	Pre	0.00%(0)	9.09%(3)	48.48%(16)	33.33%(11)	9.09%(3)	3.42
	Post	0.00%(0)	0.00%(0)	30.77%(8)	50.00%(13)	15.38%(4)	3.84
Pupils can explain to others what they are learning.	Pre	3.03%(1)	15.15%(5)	36.36%(12)	42.42%(14)	3.03%(1)	3.27
	Post	0.00%(0)	3.85%(1)	19.23%(5)	46.15%(12)	26.92%(7)	4

A survey was conducted to determine how often teachers include feedback in their lessons when practicing formative assessment, and the results are presented in Table 6. The survey items were: (1) whether the feedback given to students is connected to the original learning intentions and success criteria (pre-test average = 3.52, post-test average = 4.08), (2) whether assessment techniques used during lessons help teachers understand if students are comprehending what they are learning (pre-test average = 3.61, post-test average = 4.08), (3) whether diagnostic information from standardized tests is used to identify strengths and needs in teaching and learning (pre-test average = 3.24, post-test average = 3.72), (4) whether students provide information about their own learning (pre-test average = 3.48, post-test average = 4.00), and (5) whether students can explain what they are learning to others (pre-test average = 3.42, post-test average = 3.88). The pre-test averages for these items ranged

from 3.24 to 3.61 out of 5, while the post-test averages ranged from 3.72 to 4.08. For all items, the post-test averages were at least 0.47 points higher than the pre-test averages. This suggests that feedback occurred more frequently in lessons after the pre-test was conducted.

The post-test results indicate that teachers reported more frequent occurrences of providing feedback to students that was connected to the original learning intentions and success criteria, using various assessment techniques during lessons to gauge understanding, and having students provide information about their own learning."

Table 6. Feedback: The Extent to which Each Formative Assessment Practice is Embedded in Classroom

		Never = does not happen yet (1)	Sporadic = happens about 25% of the time (2)	Emerging = happens about 50% of the time (3)	Established = happens about 75% of the time (4)	Embedded = happens about 90% of the time (5)	Weighted average
Feedback to pupils is linked to the original learning goal(s) and success criteria.	Pre	0.00%(0)	9.09%(3)	42.42%(14)	36.36%(12)	12.12%(4)	3.52
	Post	0.00%(0)	3.85%(1)	11.54%(3)	53.85%(14)	26.92%(7)	4.08
Assessment techniques are used during lessons to help the teacher determine how well pupils understand what is being taught.	Pre	0.00%(0)	12.12%(4)	33.33%(11)	36.36%(12)	18.18%(6)	3.61
	Post	0.00%(0)	3.85%(1)	15.38%(4)	46.15%(12)	30.77%(8)	4.08
Diagnostic information from standardised tests is used to identify strengths and needs in teaching and learning.	Pre	0.00%(0)	24.24%(8)	39.39%(13)	24.24%(8)	12.12%(4)	3.24
	Post	0.00%(0)	3.85%(1)	30.77%(8)	50.00%(13)	11.54%(3)	3.72
Pupils are involved in providing information about their learning.	Pre	0.00%(0)	0.00%(0)	15.15%(5)	33.33%(11)	39.39%(13)	4.28
	Post	0.00%(0)	0.00%(0)	26.92%(7)	42.31%(11)	26.92%(7)	4
Pupils can explain to others what they are learning.	Pre	0.00%(0)	18.18%(6)	36.36%(12)	30.30%(10)	15.15%(5)	3.42
	Post	0.00%(0)	3.85%(1)	19.23%(5)	46.15%(12)	26.92%(7)	4

Self- and Peer Assessment

When implementing formative assessment, teachers had students engage in self-assessment and peer assessment. For example, in the GS region, students were asked to record and self-evaluate learning confirmation questions in their notebooks (JYS from GS region). Another teacher in the GS region used learning journals, having students create questions on their own or with a partner, exchange these questions, and find answers while sharing their thoughts and providing feedback to each other. The questions and answers were written in the notebooks, and the content summarized through learning writing allowed for the teacher's post-feedback. In the GS region, teachers also had students create their own questions, solve them, have their peers attempt the questions, and use methods such as explaining the incorrect answers to their peers (see Figure 3) (HYM from GS region).

Figure 3. Examples of Self-Created Problems, Self-Solving/Peer-Solving, Self-Assessment, and Peer Assessment

of Self-Created Problems	Self-Solving/Peer-Solving	Self-Assessment/Peer Assessment/ Feedback

A teacher in the JJ region consistently had students perform self-assessments during class (Teacher SML). After explaining what they learned and the process of solving problems to their peers, students conducted self-assessments just before the end of the class and sought help from the teacher or peers for areas they found lacking. This shows that teachers used self-assessment and peer assessment methods when implementing formative assessments.

A survey was conducted with participating teachers regarding self-assessment and peer assessment. There were five survey items, and the results are presented in Table 7. The survey items were: (1) providing opportunities for students to indicate how challenging they expect the lesson or activity to be at the beginning (pre-test average = 3.18, post-test average = 3.64), (2) having students record their own progress (pre-test average = 3.15, post-test average = 3.8), (3) encouraging students to review their learning using various assessment techniques (pre-test average = 3.21, post-test average = 3.84), (4) having students visually record their learning progress to track and celebrate their learning (pre-test average = 3.52, post-test average = 3.8), and (5) allocating time for students to report on parts of their learning during parent-teacher meetings (pre-test average = 3.09, post-test average = 3.48). The pre-test averages for these items ranged from 3.09 to 3.52 out of 5, while the post-test averages ranged from 3.48 to 3.84.

Compared to other topics, the average ratings for teachers regarding self-assessment and peer assessment remained in the 3-point range. The ratings for this topic were relatively lower than for other topics.

It is not common practice in elementary schools for students to discuss their learning outcomes during parent-teacher meetings. Additionally, teachers seemed to focus more on activities that help students understand the lesson content rather than using graphs for self-assessment.

Table 7. Peer and Self-Assessment: The Extent to which Each Formative Assessment Practice is Embedded in Classroom

		Not at all confident	Slightly confident	Somewhat confident	Mostly confident	Highly confident	Weighted average
Pupils are given an opportunity to indicate how challenging they anticipate the learning will be at the beginning of a lesson or activity.	Pre	3.03%(1)	15.15%(5)	42.42%(14)	39.39%(13)	0.00%()	3.18
	Post	0.00%(0)	11.54%(3)	19.23%(5)	57.69%(15)	7.69%(2)	3.64
Pupils are encouraged to record their progress.	Pre	3.03%(1)	18.18%(6)	42.42%(14)	33.33%(11)	3.03%(1)	3.15
	Post	0.00%(0)	7.69%(2)	19.23%(5)	53.85%(14)	15.38%(4)	3.8
Pupils are encouraged to use a range of assessment techniques to review their own work.	Pre	0.00%(0)	27.27%(9)	33.33%(11)	30.30%(10)	9.09%(3)	3.21
	Post	0.00%(0)	7.69%(2)	19.23%(5)	50.00%(13)	19.23%(5)	3.84
A visual record of pupils' progress is maintained to track and celebrate pupils' learning and show areas of/for development.	Pre	3.03%(1)	9.09%(3)	36.36%(12)	36.36%(12)	15.15%(5)	3.52
	Post	0.00%(0)	11.54%(3)	15.38%(4)	50.00%(13)	19.23%(5)	3.8
Time is set aside during parent/ guardian teacher meetings for pupils to be involved in reporting on some aspects of their learning.	Pre	3.03%(1)	30.30%(10)	27.27%(9)	33.33%(11)	6.06%(2)	3.09
	Post	0.00%(0)	19.23%(5)	19.23%(5)	50.00%(13)	7.69%(2)	3.48

A survey was conducted to determine how often students were encouraged to perform self-assessment and peer assessment during class when implementing formative assessment, and the results are presented in Table 8. The survey items were: (1) providing opportunities for students to indicate how challenging they expect the lesson or activity to be at the beginning (pre-test average = 3.12, post-test average = 3.64), (2) having students record their own progress (pre-test average = 3.15, post-test average = 3.8), (3) encouraging students to review their learning using various assessment techniques (pre-test average = 3.12, post-test average = 3.76), (4) having students visually record their learning progress to track and celebrate their learning (pre-test average = 3.39, post-test average = 3.88), and (5) allocating time for students to report on parts of their learning during parent-teacher meetings (pre-test average = 3.12, post-test average = 3.44). The pre-test averages for these items ranged from 3.12 to 3.39 out of 5, while the post-test averages ranged from 3.44 to 3.88.

Similar to the ratings for teachers' confidence, the ratings for how often students were encouraged to perform self-assessment and peer assessment during class were generally low. However, based on the records of teachers, many teachers used self-assessment and peer assessment as methods of formative assessment, indicating that these assessments were conducted in ways different from the survey items.

Table 8. Peer and Self-Assessment: The Extent to which Each Formative Assessment Practice is Embedded in Classroom

		Never = does not happen yet	Sporadic = happens about 25% of the time	Emerging = happens about 50% of the time	Established = happens about 75% of the time	Embedded = happens about 90% of the time	Weighted average
Pupils are given an opportunity to indicate how challenging they anticipate the learning will be at the beginning of a lesson or activity.	Pre	3.03%(1)	15.15%(5)	51.52%(17)	27.27%(9)	3.03%(1)	3.12
	Post	0.00%(0)	11.54%(3)	23.08%(6)	50.00%(13)	11.54%(3)	3.64
Pupils are encouraged to record their progress.	Pre	3.03%(1)	12.12%(4)	57.58%(19)	21.21%(7)	6.06%(2)	3.15
	Post	0.00%(0)	11.54%(3)	19.23%(5)	53.85%(14)	11.54%(3)	3.68
Pupils are encouraged to use a range of assessment techniques to review their own work.	Pre	0.00%(0)	30.30%(10)	33.33%(11)	30.30%(10)	6.06%(2)	3.12
	Post	0.00%(0)	7.69%(2)	23.08%(6)	50.00%(13)	15.38%(4)	3.76

A visual record of pupils' progress is maintained to track and celebrate pupils' learning and show areas of/for development.	Pre	3.03%(1)	6.06%(2)	54.55%(18)	21.21%(7)	15.15%(5)	3.39
	Post	0.00%(0)	3.85%(1)	30.77%(8)	34.62%(9)	26.92%(7)	3.88
Time is set aside during parent/ guardian teacher meetings for pupils to be involved in reporting on some aspects of their learning.	Pre	6.06%(2)	21.21%(7)	33.33%(11)	33.33%(11)	6.06%(2)	3.12
	Post	3.85%(1)	15.38%(4)	30.77%(8)	26.92%(7)	19.23%(5)	3.44

3. Technology and Formative Assessment

Teachers aimed to minimize issues in learning by utilizing online tools when conducting formative assessments. A teacher in the JB region used technology during English classes for elementary students. They employed Google Classroom and online boards to store student records (Figure 4) and used online tools such as AI, electronic dictionaries (ChatGPT, ASKUP, Google Translate, PAPAGO Translator, etc.) to help students struggling with reading and writing in English (Figure 5). Additionally, new basic vocabulary for each unit was learned using an online vocabulary learning app at home or during morning self-study time (Figure 6). Students were also encouraged to upload their writings to Google Classroom by groups, allowing others to read and provide feedback on each other's work. This method saved significant time compared to copying each student's writing for the entire class.

Figure 4. Collecting Materials in Google Classroomt

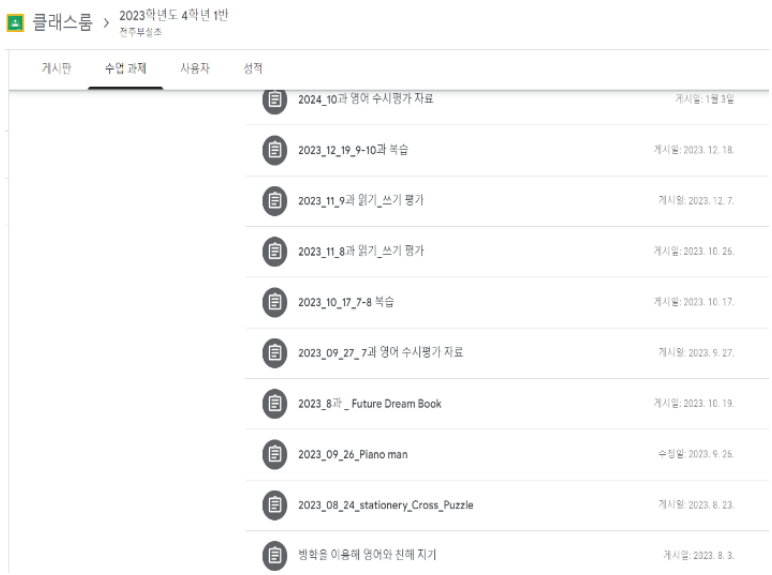


Figure 5. Finding Photos Related to the Text Using ASKU

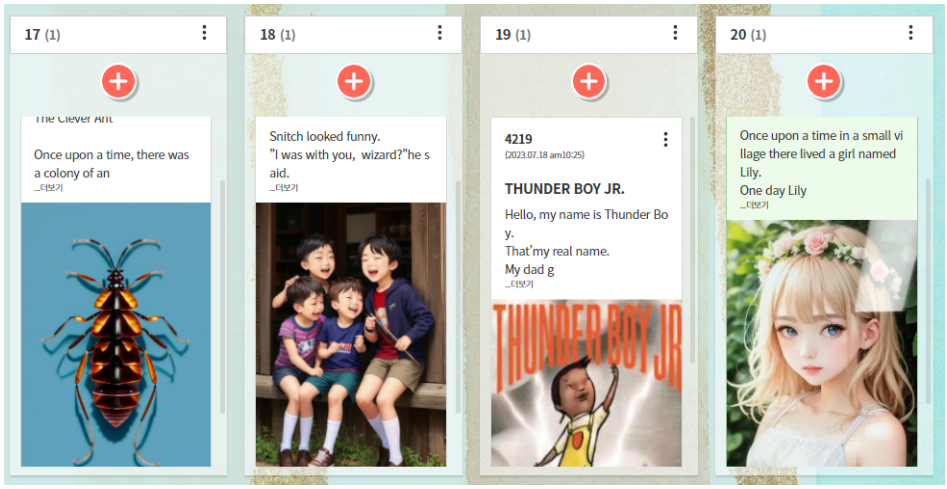
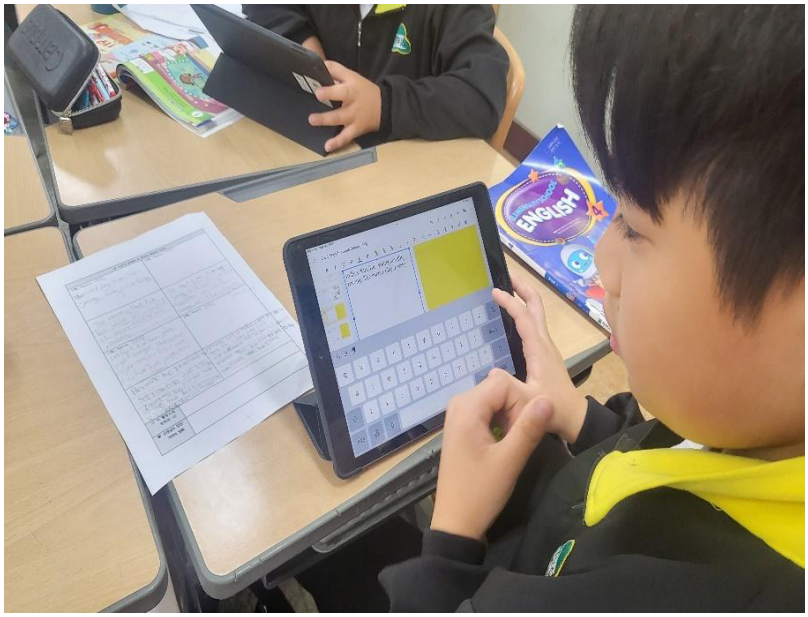


Figure 6. Using a Tablet to Study Vocabulary with an Online Dictionary



When asked if digital technology hinders the implementation of formative assessment, about 54% indicated that it does not(Table 9). This suggests that the schools where the participating teachers work provide good support for technology, and teachers are effectively utilizing it for formative assessments..

Table 9. Accessibility of Digital Technology to Support Formative Assessment Practices

Did not experience	Not a Barrier	A Slight Barrier	Somewhat of a Barrier	A Moderate Barrier
7.69%(2)	53.85%(14)	15.38%(4)	11.54%(3)	7.69%(2)

4. Formative Assessment and Student Feedback

Since much has already been described about formative assessment and feedback, this section will be brief. Teachers provided numerous opinions on the effectiveness of the various formative assessment methods they used. Many methods for providing effective feedback to students were suggested. Analytical scoring rubrics or learning progress charts helped students assess learning objectives and success criteria, aiding in their self-assessment. Methods for gauging students' understanding of the lesson, such as using colored cups, fist-to-five for understanding, entrance and exit passes, creating and solving their own questions, or working with other students, were highlighted. Table 10 presents some of the statements from teachers about what they considered effective feedback.

Table 10. Examples of Cases Mentioned as Effective Feedback in Formative Assessment Practice

- Learning Progress Checklist (Analytical Scoring Rubric): By checking it themselves, students could easily see how much they understood and how well they were performing, allowing them to identify and improve their weak areas.
- Five-Finger Strategy: Given the nature of physical education classes held in the auditorium or playground, it was very effective in quickly gauging students' levels of fear and confidence. Additionally, the effort students put into increasing the number of fingers they showed demonstrated their proactive growth.
- Entrance Pass: This allowed teachers to diagnose students' initial behaviors and became a routine that increased students' participation in class.
- Exit Pass: By informing students in advance that exit tickets would be used before the learning activity, it increased their engagement and focus. It provided an opportunity to organize learning content and verify important points."

5. Benefits of Using Formative Assessment for Teachers' Practices

Teachers provided various examples of the changes and growth they experienced while using formative assessment (Table 11). The characteristics that emerged from these examples are as follows:

First, teachers prepared lessons to enable students to achieve deeper understanding. For instance, in science classes, rather than simply focusing on students knowing scientific knowledge or transmitting this knowledge, teachers now conducted lessons that helped students understand and engage in the inquiry process for deeper comprehension.

Second, teachers became adept at checking students' understanding and identifying misconceptions to help them grow. By using learning progress checklists, exit passes, entrance passes, and various methods to check students' understanding, teachers aimed to find and assist with areas where students misunderstood or struggled. One teacher involved in the project noted a shift from giving feedback based on ability groups to providing more individualized feedback.

Third, teachers learned about various formative assessment practices and put more efforts into lesson preparation. According to participating teachers, they continually shared the work of other teachers in the learning community, learning about various formative assessment methods. A head teacher noted that, while usually conducting classes alone, collaborating with a homeroom teacher in this project led to a better understanding of student performance and greater dedication to lesson preparation.

Fourth, teachers developed confidence in formative assessment. One teacher mentioned that before participating in the project, they were unsure if their formative assessments were correct. However, through the project, receiving feedback from other teachers gave them confidence, and learning about good examples from other teachers helped them improve.

Fifth, teachers realized that various formative assessment methods could also positively impact slower learners. A teacher testified that they often felt frustrated and sympathetic towards students who struggled to keep up in class. Learning about and considering various formative assessment methods shifted their mindset from 'it's inevitable' to 'everyone can do it.'

Sixth, before participating in the project, assessments were predominantly teacher-led, but they observed a shift towards students actively participating in assessments and providing feedback. One teacher noted that during class activities, they initially led the assessments. However, through nudges in reading and writing English classes, students began giving spontaneous feedback to their peers and immediately applying it to their activities. This allowed the teacher to have more time, and they noticed students actively engaging in class activities.

Table 11. Teachers' Statements on Benefits of Using Formative Assessment Practices for Teacher

Case 1	A. Teacher Background Variables (Years of Experience, Gender, Grades Taught, etc.): 17 years, Male, Grades 3-6 . B. Changes and Growth Experienced: Previously, my lessons focused on ensuring students knew scientific knowledge related to the learning objectives. However, through this project, my approach shifted to emphasize understanding and practicing the scientific inquiry process. For example, in an experiment comparing the amount of solute dissolved in water based on the type of solute, the traditional approach focused on teaching that sugar dissolves better than salt. However, in actual experiments, factors like the number of stirs or the grain size can result in salt dissolving better than sugar. This highlighted the need for variable control and how, without it, experimental results can vary. The lesson plan changed to help students discover this through experimentation. Additionally, whereas lessons previously ended with summarizing scientific knowledge (e.g., "In water of the same temperature, sugar dissolves better than salt, which dissolves better than baking soda."), now they conclude with students identifying what went well and what went wrong in their experiments. C. Future Practices: I want to guide students to participate more actively in predicting and verifying their experimental results.

Case 2	A. Teacher Background Variables (Years of Experience, Gender, Grade Taught, etc.): 24 years, Female, 3rd grade. B. Changes and Growth Experienced: I was able to plan and review each lesson more thoroughly. Additionally, I found myself shifting from simply grouping students into high, medium, and low achievers and giving generic feedback to providing individual feedback and assisting each student with their specific difficulties. After reviewing formative assessments, I could identify misconceptions or difficulties with the day's lesson and think about how to address these issues in the next class. C. Future Practices: I plan to continue using the learning progress checklist and exit pass strategies, which I implemented this time, in the 2024 school year to further support students' growth.
Case 3	A. Teacher Background Variables (Years of Experience, Gender, Grade Taught, etc.): I am a female teacher with 24 years of experience, currently serving as a head teacher. At a school with approximately 180 students, I teach all grades. For grades 1-2, I mainly read picture books and engage in related activities, while for grades 3-6, I teach Korean for 17 hours per semester. In consultation with homeroom teachers, I primarily conduct activities centered on reading one work per semester and teach related Korean language units. B. Changes and Growth Experienced: As a head teacher, I often prepared, conducted, and concluded lessons independently. Through this project, I was able to communicate regularly with homeroom teachers about individual student work. I also prepared lesson tasks with greater care and realized the importance of continuous formative assessment for observing student changes and growth. Through open classes, I was able to exchange various opinions on reading activities with other teachers and share their concerns. Additionally, by continuously sharing the work of other teachers participating in the learning community, I learned about various formative assessment practices. The greatest joy was realizing that I could modify and implement assessments in collaboration with teachers of the same grade or fellow colleagues. C. Future Practices: I used to focus solely on the day's lesson. However, I now want to consistently practice designing the evaluation process in advance, envisioning the ultimate growth and changes in students. I also aim to continuously share this process with homeroom and fellow teachers, planning and implementing responsible lessons and assessments that can truly foster student growth and change.
Case 4	A. Teacher Background Variables (Years of Experience, Gender, Grade Taught, etc.): 24 years, Female, 6th grade homeroom teacher. B. Changes and Growth Experienced: The biggest change was sharing and asking for help from colleagues. It was a significant change to share self-assessments with colleagues, something I hadn't done much before. I appreciated having colleagues and was grateful for their support. C. Future Practices: I want to reach out and suggest sharing and collaborating on evaluations. I plan to continue implementing self-assessment in math. I also want to keep listening to students' opinions and, in 2024, I am determined to have students create their own self-assessments."

Case 5	A. Teacher Background Variables (Years of Experience, Gender, Grade Taught, etc.): 7 years, Male, 1st grade. B. Changes and Growth Experienced: Through this project, I learned that formative assessment and feedback greatly benefit both teachers and students. Directly implementing these practices in my lessons has instilled confidence in me. Before the project, I used to check the learning content for all students through simple Q&A sessions, but upon reflection, I realized that this process was just a passing phase in the lesson and didn't help in understanding each student's learning level. After the project, I am making efforts to conduct formative assessments to gauge individual students' learning levels. Furthermore, I consider it a significant change that I am now implementing processes to provide feedback based on formative assessment results to help students' learning. The word 'collaboration' stands out to me from this project. Personally, I felt during Session 6 that I could develop more through collaboration. There were times during the project when I wondered if I was on the right track, but through the collaborative process in Session 6, listening to other teachers' thoughts on my project and learning about good projects from other teachers provided an opportunity for growth. It made me seriously consider the importance of collaboration. C. Future Practices: I want to continue implementing the processes of formative assessment and feedback during my lessons. I aim to compare the results of formative assessments with summative assessment results to see if students' understanding remains consistent over time.
Case 6	A. Teacher Background Variables (Years of Experience, Gender, Grade Taught, etc.): 17 years, Female, 1st grade. B. Changes and Growth Experienced: I often felt frustrated and sympathetic when seeing students who struggled to keep up during class. It was challenging and difficult to help those students achieve the learning objectives within class time. Through this project, I started thinking and considering various methods to help students reach their goals within class time. This changed my mindset from 'it can't be helped' to 'everyone can do it.' Having taught 1st grade for a long time, I used to think that because they were young, the teacher had to do everything for them, and I planned and conducted many teacher-led activities. However, I realized that creating opportunities for students to act and move independently is also the teacher's role, and I began to consider student-led assessments. C. Future Practices: I want to organize and systematize the various stages of formative assessment that I applied step-by-step. I also aim to incorporate various assessment methods such as peer assessment and self-assessment to capture diverse forms of evaluation.
Case 7	A. Teacher Background Variables (Years of Experience, Gender, Grade Taught): 23 years, Female, 4th grade homeroom teacher. B. Changes and Growth Experienced: Previously, lessons and assessments were mainly teacher-led. However, through this nudge, while conducting English reading and writing activities, I observed students taking the lead in assessments rather than the teacher being at the center. It was very impressive to see students spontaneously giving feedback to their peers and immediately applying that feedback to their activities. The teacher had more time to observe, and students were very busy utilizing the class time effectively.

6. Benefits of Using Formative Assessment for Students' Learning

Teachers mentioned various effects of formative assessment on students' learning. Here are a few examples(Table 12). First, formative assessment helped correct students' misconceptions. Second, through the learning progress checklist, students could compare their actual achievement level to the learning objectives, identify areas for improvement, and seek help accordingly. Third, formative assessment increased students' experiences of success in their learning. Fourth, it contributed to academic improvement. For instance, when students received feedback through exit passes, their concentration in class improved, and as they gradually achieved their goals, they felt a sense of accomplishment and increased confidence.

Table 12. Examples of Teachers' Statements on the Advantages of Formative Assessment for Students

Case 1	Using learning boards helped in easily identifying whether students were progressing smoothly or experiencing difficulties in their learning process, allowing for immediate feedback to those in need. Furthermore, students could compare their own situations with others, providing opportunities to correct misconceptions or deepen their understanding. It also gave confidence to students who were progressing well but lacked self-assurance. (A teacher from JJ region)
Case 2	The formative assessment strategy using learning progress checklists and colored cups provided students with opportunities for critical thinking by allowing them to self-assess their level of achievement during class activities. Initially, students had vague perceptions of their abilities, thinking 'I am good' or 'I am not good.' However, by accurately checking the success criteria through the learning progress checklist, they were able to understand their level of achievement precisely, clearly recognize areas for improvement, and request assistances. (A teacher from JB region)
Case 3	Through formative assessment, students were able to accumulate successful learning experiences. The response from students, 'Teacher, I did this too,' indicated to those who felt burdened by the practice book that there were problems worth attempting. (A teacher from GS region)
Case 4	The aspects that were heavily emphasized for academic improvement were 'goal guidance and exit passes.' Clearly understanding what needs to be known or done through the session objectives and finally receiving confirmation and feedback through exit passes increased class concentration and reduced hesitation towards the final unit goal. Additionally, as students gradually achieved small goals, they felt a sense of accomplishment. It was particularly noticeable this year, likely due to the impact of this project, that students with low confidence would say, 'I can do this,' and others would express admiration or recognition for the progress of slower students with reactions like 'Oh~.' (A teacher from GS region)

Learning Processes to Support Teachers' Formative Assessment Practices

7. Professional Learning Supports for Teachers

First, teachers expanded their understanding of formative assessment and feedback and shared experiences through workshops and network meetings. In Korea, participating teachers gathered for network events. These events lasted for two days and one night, during which they learned about the project as well as methods for formative assessment and feedback.

Second, interaction within learning circles and with teachers from other regional learning circles regarding formative assessment and feedback methods was helpful. Teachers who participated in the same project met regularly and shared experiences, gaining knowledge about implementing formative assessment and finding it easier to continue practicing it. They learned what good models of formative assessment looked like through examples from other regions. The experience of sharing with participants from other regions and maintaining good relationships made them realize the joy of learning together and motivated them to continue with the learning community.

Third, when problems arose, teachers discussed and shared expertise with colleagues within the school. A teacher from the JB region mentioned that helping students grow and develop through formative assessment was not easy. However, they sought help and advice

from fellow teachers to solve problems encountered in managing the class. With the advice and cooperation received, they were able to help the students. Another teacher from the JB region struggled with finding meaningful self-feedback methods for both the highest and lowest performing students. To address this, they discussed the issue and sought advice from members within the formative learning circle and colleagues at the same school. They created a new self-assessment form tailored to the highest performing students and provided individual feedback to guide the lowest performing students.

8. Supports and Barriers to Teachers' Use of Formative Assessment

Teachers suggested various opinions on the problems they encountered and solutions they implemented while practicing formative assessments. Based on their records, the following points are highlighted:

First, the varying levels of student learning within a class made it difficult to implement formative assessments. Some students quickly understood the material and had extra time, while others needed more time to grasp the same content. During the time the teacher provided feedback to slower learners, they had to prepare additional learning materials for the faster learners to keep them engaged, which increased the teacher's preparation workload.

Second, large class sizes made it challenging to implement personalized formative assessments. Teachers felt that formative assessments and detailed feedback were more manageable in smaller classes.

Third, students did not always have an accurate understanding of the learning progress checklist and their achievement levels. This led to some trial and error in implementing formative assessments. For example, a teacher from the JB region mentioned that students marked their understanding level with colored cups based on their learning progress checklists. However, some students did not accurately recognize their levels and chose colors based on what their peers selected. To address this, the teacher reviewed the learning progress checklist with the students to reassess their achievement levels, helping them better understand their learning status and identify areas for improvement.

Fourth, there were psychological burdens for students required to assist others during collaborative learning activities and peer assessments. To alleviate this, the teachers allowed students to move around and participate in various ways, reducing the burden of always having to help peers and creating a more dynamic classroom environment. This also boosted the self-esteem of students who previously only received help, as they had opportunities to assist others.

Fifth, using entrance passes, exit passes, and class buttons (indicating unknown content with colored buttons) sometimes resulted in insufficient class time, especially in science classes with numerous experiments. Teachers addressed this by adjusting the frequency and focus of assessments and feedback according to the lesson content, thus reducing the burden on both students and teachers while ensuring concentrated feedback time. One teacher mentioned that using exit passes every class led to long lines, with some students trying to avoid the process altogether. To mitigate this, they introduced diverse exit pass activities, such as answering

questions, reading, speaking, and incorporating games, reducing negative perceptions and enhancing effectiveness.

Sixth, evaluations and feedback using notebooks required additional guidance for students not accustomed to writing, such as writing thoughts and neat handwriting. Teachers addressed this by gradually increasing the writing amount over time and allowing students ample time to summarize their learning at the end of the class. For instance, students started writing three lines in March (beginning of the semester) and gradually increased to five lines by September (beginning of the second semester), eventually writing more by the end of the school year. Initially, students were given about five minutes at the end of class to write, which was later reduced as they became more efficient.

Seventh, when using self-created questions for formative assessment, students initially focused only on the number of incorrect answers. To resolve this, teachers provided detailed explanations for incorrect answers and ensured students reattempted the questions. Additionally, they dedicated separate time to reissue and solve the incorrect questions, helping students focus more on the problem-solving process rather than just the number of mistakes, and encouraging them to avoid repeating the same errors.

Part 3: Conclusions and Next Steps

Summary of Findings

Key features of effective teacher-led formative assessment practices for students

In Korea, there were three Teacher-Led Formative Learning Circles, divided into three major regions. The participants were elementary school teachers, teaching various grades from 1st to 6th. The following outlines the characteristics of formative assessment as identified through documents and survey responses provided by the teachers:

First, one crucial element for implementing formative assessment is ensuring that students clearly understand what they need to learn and recognize what constitutes evidence of their learning. Teachers wrote learning objectives on the board to explain what needed to be learned and described the learning process. They also created and shared learning progress checklists related to the learning objectives to help students understand what actions demonstrated their learning. Additionally, they shared achievement criteria for each unit with the students. Survey results showed that teachers felt more confident using and sharing learning objectives and success criteria with students when implementing formative assessments (Table 1). Teachers reported using content related to learning objectives and success criteria in over 75% of their lessons, sharing objectives in familiar terms for students, and showing significant changes in differentiating and sharing success criteria during teacher-led formative assessments.

Second, teachers used various questioning and assessment methods to check students' learning status and understanding when implementing formative assessments. They felt most confident about using incorrect responses in teaching and learning. However, they were less confident about using assessment results to facilitate class discussions. This might be because

teachers were more accustomed to using formative assessment results for individual feedback rather than for promoting class discussions.

Third, teachers reported using feedback in various ways and indicated in surveys that they employed diverse assessment techniques to understand students' comprehension, relating feedback to original learning intentions and success criteria. Examples included feedback using analytical scoring rubrics, demonstration-based feedback, real-time assessment strategies (e.g., using colored cups to signal understanding, showing comprehension with number of fingers), feedback using exit or entrance passes, progress checklists, recall prompts, example prompts, and scaffolding prompts. Teachers provided feedback related to learning intentions and success criteria, used assessment techniques to gauge understanding, and believed that students were confident in explaining their learning to others. In contrast, teachers felt less confident about using diagnostic information from standardized tests to identify strengths and needs in teaching and learning.

Fourth, teachers encouraged students to engage in self-assessment and peer assessment. For example, they had students record and self-assess learning confirmation questions in their notebooks, create and exchange questions with peers using learning journals, and provide feedback based on these exchanges. Teachers also allowed students to create their own questions, solve them, and have peers attempt them. However, compared to other topics, the average ratings for self-assessment and peer assessment were relatively low, remaining in the 3-point range. This could be attributed to certain survey items not aligning well with the Korean context. For instance, it is not common practice for students to discuss their learning outcomes during parent-teacher meetings in elementary schools. Survey responses regarding the frequency of self-assessment and peer assessment in class were generally low. However, teacher records indicated that many teachers used self-assessment and peer assessment as formative assessment methods, contrary to the survey ratings.

Main benefits of the use of formative assessment practices for teachers

The advantages of utilizing teacher-led formative assessment for teachers can be summarized as follows: First, teachers became better prepared for their lessons to enable students to achieve deeper understanding. Second, they were able to check students' understanding during lessons and identify misconceptions to help students grow. Third, they learned about various formative assessment practices and dedicated more effort to lesson preparation. Fourth, they developed confidence in formative assessment. Fifth, they realized that different formative assessment methods could also positively impact slower learners. Sixth, prior to participating in the project, teachers predominantly led the evaluations, but this shifted to students actively participating in assessments and providing feedback.

Key characteristics of professional learning that support teachers' formative assessment practices

Teachers participating in the project attended a two-day workshop and multiple network meetings to broaden their understanding of formative assessment and feedback, and to share experiences. They also exchanged ideas and received feedback on their practices within their

learning circles and with teachers from other regional learning circles. Seeing good examples from others helped them gain a better understanding and confidence in formative assessment practices. Additionally, when they encountered problems while implementing formative assessment, they collaborated with and sought advice from their colleagues within the school, sharing knowledge and expertise.

Key barriers to effective formative assessment for teachers and students and strategies, if any, to address these barriers

Implementing formative assessment goes beyond theoretical learning, as unforeseen issues can arise when applying it in a real classroom setting. Teachers encountered various problems while executing commonly known formative assessment methods and also found solutions. The difficulties they faced included differences in students' learning levels within the class, large class sizes, inaccurate understanding of the learning progress checklist and self-assessment of achievement levels, and psychological burdens on students who felt they always had to help others during collaborative learning activities. Additionally, there were issues with insufficient class time when using entrance tickets, exit passes, or class buttons (indicating unknown contents with colored buttons). Evaluating and providing feedback using notebooks required extra guidance for students not accustomed to writing, such as writing their thoughts and neat handwriting. Furthermore, when using self-created questions for formative assessment, students initially focused only on the number of incorrect answers.

Next Steps for Teacher-Led Learning Circles

According to participating teachers, teacher-led formative assessment in Korea helps students clearly understand their learning goals, assesses individual student comprehension using various methods, and deepens students' understanding of the learning content. It also encourages student participation in lessons and assessments rather than being solely teacher-led. These practices ultimately enhance the quality of instruction and promote student growth, making them crucial teaching and learning activities. Such activities are essential in the school setting and significantly contribute to the development of both teachers and students. Through this project, teachers learned a great deal about implementing formative assessment and feedback and how to adapt these practices to their school contexts. The next steps should include:

First, maintaining professional learning communities for teachers to continuously apply formative assessment and feedback in their lessons and share their experiences. Establishing and operating formative assessment and feedback study groups and forming professional learning communities outside of school will ensure ongoing collaboration and commitments to these practices.

Second, the knowledge and practical methods learned by participating teachers should be disseminated to fellow teachers, schools, and educational offices. Individual efforts are not enough; educational offices should organize events like lesson-sharing festivals and use online learning platforms to share practical examples and know-how on formative assessment strategies with other teachers.

Third, continuous research on the effects of implementing formative assessment and feedback is necessary. Identifying and studying successful cases of instructional innovation through formative assessment and feedback, and pinpointing key characteristics that lead to positive outcomes, are crucial.

Fourth, educational offices should support the sharing of experiences and know-how on formative assessment and feedback with new teachers through facilitators or mentors. This support would help transmit valuable insights and practices to new educators.

Fifth, international collaboration on formative assessment, as seen in this project, is highly valuable. Learning from the experiences of other countries, understanding how they overcame challenges, and witnessing the resulting changes in teachers and students can provide significant insights.

For the widespread adoption of formative assessment and feedback in Korea, teachers' associations should encourage such gatherings and request administrative authorities to support these learning communities. Additionally, teachers' associations should actively promote and support the dissemination of exemplary cases of formative assessment and feedback.

Formative assessment and feedback are often challenging to sustain without the voluntary enthusiasm of teachers. Practicing these assessments individually can create discomfort among some colleagues due to parental comparisons of teachers. If teachers within the same grade level share their practices and knowledge on formative assessment and feedback and implement them together, it would foster a more positive environment for these practices to thrive.

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