

## Abstract

# OECD ESP Longitudinal Study of Skill Dynamics (III) : Feasibility Issues in the Korean Context

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This research is the third-year research of the 'OECD Education and Social Progress (ESP) Longitudinal Study of Skill Dynamics (2014-2016)' conducted by KEDI in collaboration with OECD/CERI. The purposes of the OECD ESP three-year longitudinal study are to identify diverse variables influencing the process of developing skills and to analyze the socioeconomic results brought about by learning environments and abilities. To this end, the first-year (2014) and the second-year (2015) research developed a variety of measurement tools to measure variables such as 'skills,' 'learning contexts' and 'social progress' which can be used by OECD member countries through international joint efforts, and verified the validity and reliability of such tools in Korean context by conducting large-scale domestic preliminary survey. That is, to validate measurement tools which are being developed through joint efforts with OECD, the research conducted and analyzed the first preliminary survey in 2014 and the second preliminary survey in 2015. The third-year research in 2016 analyzed the three-year longitudinal data and the possibility of the implementation of the main survey to validate the OECD longitudinal design in Korea for preparing for the international longitudinal study that will be conducted in the OECD member countries. The main research is to analyze the feasibility of implementing the plan for the main survey in Korea as suggested by the OECD, to perform statistical analysis on the longitudinal data collected for three years, and to build the basis for the large-scale international

longitudinal study.

To achieve the aforementioned objectives, the preliminary surveys were conducted three times from 2014 to 2016. The targets for the survey are the students from Seoul and Daegu (2014). The survey in 2016 was conducted from May to June targeting the students from Daegu, who were recruited for the first-year longitudinal study in 2014. However, considering the students who were in the first grade in 2014 were not capable of completing the questionnaire, their parents had to complete the survey on behalf of their children. The results of the analysis showed different tendencies from the results of the students in other grades, so that the students in the first grade primary school were excluded in the second-year study in 2015 after a discussion with OECD. Accordingly, the target for the study in 2016 are a total of 3,114 students, including 1,227 of sixth graders in primary school, 941 of third graders in middle school and 948 of third graders in high school. The survey was conducted for all the students in the concerned grade of the target school, which is the same as the ones in the first and second year. In this sense, the target for the questionnaire survey in 2016 are the students from Daegu who participated in the surveys in 2014 and 2015. For the three-year longitudinal study, the research conducted the questionnaire with the same students and with the same question items.

〈Table 1〉 Target for the Preliminary Survey of OECD ESP Longitudinal Study

Phase	Period		Targets												
			P1	P2	P3	P4	P5	P6	M1	M2	M3	H1	H2	H3	
1	2014	May~June	■			■				■			■		
2	2015	May~June		-			■				■			■	
3	2016	May~June			-				■			■			■

The specific analyses based on the collected data are as follows: (1) The analysis on validation and reliability of the measurement tools by ‘confirmatory factor analysis’ and ‘Crombach’s alpha analysis’ based on the collected data in 2016; (2) The equalization of the measurement tools by measurement invariability analysis on the data in 2014 by

regions, genders and grades (primary 6 / middle 3 / high 3) of the students; (3) The 'descriptive statistics analysis' to diagnose the level of skills, learning contexts and social progress of the students; (4) The 'two-way analysis of variance' to verify the difference in the level of background variables, including regions, grades, genders, academic level of the parents, household economical status and experience of early childhood education, as learning contexts, cognitive and social-emotional skills, and social progress; (5) The 'latent growth analysis' to analyze the causal relationship with the lapse of time and the process of development by utilizing the longitudinal data of 2014, 2015 and 2016. The research methods include literature analysis, questionnaire surveys, experts meetings and OECD experts meetings, and the questionnaire was reviewed by the Institutional Review Board (IRB). The results of the research are as follow.

#### **Analysis on Possibility of Implementation from the Perspective of Stabilization of the Measurement Tools**

The research analyzed possibility of implementing the Longitudinal study design suggested by OECD in Korea from the perspective of learning contexts, social-emotional skills, stability of the measurement tools for social progress, utility of the results of statistics analysis, suitability of the longitudinal study design and other following business for the longitudinal study (logistics). First, the research examined the regional, gender and grade identity for stabilization of the measurement tools, which means that the analysis aims to verify whether the measurement tools may be used both in Seoul and Daegu (regional identity), regardless of gender difference (gender identity) and regardless of grades (grade identity). The results show that the most of the measurement tools function regardless of regions, gender and grades. As the result of the personality test (BFI) turns out to be somewhat unstable in every category, including regional, gender and grade identity, though BFI test is used in a diverse range of countries and verified in the preceding researches, it is necessary to share the results of the preliminary survey in Korea with OECD and to consider an improvement plan. In addition, although the same students responded to the test on happiness level in both 2015 and 2016, the validity of the test on happiness level in 2016 is lower than the one in 2015. Thus, it seems to conduct additional research and revision of question items to increase the validity. Nevertheless, as the fact that most

other measurement tools function regardless of gender and grade of the students in both regions is verified, it is expected to be able to increase the utility of these measurement tools in the future.

### **Analysis on Possibility of Implementation from the Perspective of Utility of the Results of Statistics Analysis**

In order for the results of statistics analysis to be useful in educational fields, the results of the analysis on the longitudinal data should reflect the educational reality and be able to provide educational fields with useful information. Possibility of implementing the longitudinal study has been discussed from the perspective of utility of the results of statistics analysis. In particular, the research conducted an analysis comparison of descriptive statistics in 2015 and 2016, an analysis on the difference in skills and social progress level in accordance with background variables, and a latent growth analysis on a range of variables, including happiness. Above all, as the research conducted surveys on the students in 2015 and 2016, the utility of the statistics analysis is discussed by comparing the results from 2015 and 2016. According to the results of the research over the past two years, it is shown that there is no big difference between the background variables for social-emotional skills and cognitive skills, and the result of descriptive statistics analysis. Since the data has been collected from the same target, the results from some of the items, including the experience of children education, the academic level of the parents, household economical status and taking private education, are revealed similar every year. These results may be used to indirectly prove the fact that the responses from the respondents are reliable. Also, the cognitive skills and social-emotional skills sometimes were found increasing or decreasing influenced by development characteristics and the environment, in most cases the level of increase and decrease is insignificant.

Second, the difference in skills and social progress level by background variables, such as grade, gender and household factors of the students, has been verified by the same method used last year. This year, the research added the analysis on difference between regions based on the collected data in 2014. Verifying that the measurement tools function equally for the students in both Seoul and Daegu by verification of measurement identity, the research has examined whether there is any interactions between regions and the

background variables. The results of the analysis suggests that there is significant difference in happiness level and social progress by gender of the students, and that female students have more positive recognition than male students in subordinate factors in happiness level test, such as acknowledgement of self, friendship, learning in school and satisfaction. Female students recorded significantly higher value than male students in the factors relevant to citizen participation, including participating in future vote, donations and voluntary activities. Also, there is difference by regions in subordinate factors of happiness level (satisfaction and friendship) and safety level (experience of being bullied), and the interaction between grade and gender is statistically significant in extroversion, affinity, faithfulness and emotional stability. Such interactions are often observed in educational fields. Such a characteristics may be related to the behavior expected by local culture, and it may reveal the necessity to search for plans to enhance skills of the students considering the characteristics of schools and local community. Besides, as it is revealed that there is significant difference in most of subordinate factors (extroversion, affinity, faithfulness, emotional stability and openness), morality and creativity in accordance with the experience of early childhood education, the research points out the importance of early childhood education in developing social-emotional skills.

Third, the research conducted latent growth analysis by utilizing the third-year data. The results of the analysis shows that the happiness of the students tend to decrease. On the other hand, the happiness can be increased again by learning contexts and social-emotional skills. It means that the school environment (support from friends, pleasant atmosphere in class, support from teachers, unconstrained communication, strict rules and disciplinary atmosphere) is changing in accordance with the viewpoint of the students. It is necessary to constantly promote practical policies, such as consultation between a teacher and students during the free semester. In addition, the factors composing social-emotional skills, including motivation, morality and creative personality cause a positive influence on happiness of the students. It is necessary to reflect the factors (sense of humor, accepting adventure and self conviction) positively influencing happiness in the various programs currently being conducted in schools rather than to develop a new policy and programs to enhance those factors.

### **Analysis on Possibility of Implementation from the Perspective of Suitability of Longitudinal Study Design**

The possibility of implementation from the perspective of suitability of longitudinal study design in particular has been discussed from the point of sampling (sample grade and its size), research period, research cycle and measurement tools. First, desirable sample grade and its size has been analyzed from the side of the possibility of implementing the research. The plan for the OECD ESP longitudinal study main survey is being formulated to select first graders in primary and middle school (seventh graders) as the sample. However, as pointed out in the first-year research, it is necessary to target fourth graders in primary school as the starting grade of the research since first graders have difficulty in responding to the questionnaire independently. Moreover, the OECD ESP longitudinal study is planned to conduct surveys by sampling targets in schools and by utilizing school organizations. If samples are collected through schools, it is possible to collect a variety of data from parents and teachers as well as students. As OECD estimates that 5,000 is the appropriate size of the sample, it seems no trouble to collect samples from each grade only in Seoul and Daegu considering the school condition in Korea.

Second, another factor that needs to be considered is whether the students from only two grades may significantly show the educational status of Korea. It has yet been finalized how long the OECD EPS survey will continue. If the longitudinal study lasts for 3 years, the targets of the study will include from first graders to third graders in primary and middle school. In Korean educational context, while those periods may be meaningful in a sense that they may show the circumstances in the early phase of entrance to school and free-semester program to search for career path, it may be difficult to cover the issues of private education which is closely related to happiness and social progress and the influence of competition in college admission. In this sense, it may be argued that the longitudinal study should be designed to last at least 6 years to cover both primary and middle schools. If it is done so, it is necessary to design the study with 2 samples of primary and middle schools. If it is impossible to have 6 years for the research, it will be desirable to have at least 3 cohorts as in the preliminary surveys in Korea.

Third, the plan for the OECD longitudinal study design in December 2015 indicates that the questionnaire survey will take place once a year. As for the research period for

the core longitudinal study, the first survey will take place during April through May 2020 in the northern hemisphere and during October through November in the southern hemisphere, and the survey will occur at the same time every year. In Korea, the students from the first grade through twelfth grade shall participate in the survey. It seems appropriate to conduct the survey once a year. Simply, there may occur differences in the results of the survey since some countries start the semester in March and others in September, so that if the survey takes place at the same time, some may participate in the survey in the beginning of the semester and others at the end of the semester. In this light, it is desirable to allow each participating country to start the survey according to their annual educational plans.

Fourth, the items of the measurement tools are to some extent valid since they are composed of the items which were revised after evaluating the first-year and second-year research. However, it is necessary to examine the fact that most of the values tend to decrease from primary through high school. According to the third-year analysis results, the students tend to give low values to some question items as they grow old. Surely it is difficult to conclude because the analysis was not conducted for the same student, though it may be possible to have similar results when the research follows the same student in a long-term period. There is possibility of interpreting the result that the education in Korea makes students experience drop in happiness level or social progress as they receive more education, and it may cause a considerable dispute. In order to establish reliable and stable data, it is necessary to identify this trend occurs only in Korea, or it takes place the same in every country. If this happens the same in every country, it is essential to discuss how to equalize the measurement, while if it occurs only in Korea, it is required to analyze and discuss the reasons for this.

#### **Analysis on Possibility of Implementation from the Perspective of Following Business (Logistics) of Longitudinal Study**

The OECD ESP longitudinal study is planned to take place from April through May every year. As the preliminary survey started in May to June, it is expected to have difficulty in conducting the survey from April as OECD planned. For the survey in the first year, it seems that it will increase the possibility of implementation if it is rescheduled to start

the survey in May to June. Moreover, it seems necessary to conduct basic research first to select sample schools and to coordinate with schools from one year before the commencement of the main survey to make it more efficient. To manage and maintain samples, it should be considered the research period, the role of coordinating teachers, advancement to higher level schools and cooperation with relevant organizations. First, it is expected that it will be beneficial for managing and maintaining samples to conduct a questionnaire survey every year in order to improve the quality of the actual proof analysis and to have more opportunities to contact the survey target students. Second, it is required for coordinating teachers not only to receive, distribute, collect and send back the surveys, but to play an active role, including maintaining and tracking the samples, and helping the students in lower grade to respond to the survey. In this sense, this research suggests specifying the roles of coordinating teachers and establishing the support system. Third, if the ESP longitudinal study lasts more than 4 years, it is needed to prepare that the samples of middle school advance to high school in the fourth year. Although this will not hamper the possibility of implementation of the research, it is necessary to prepare in advance to collect plentiful data. Moreover, the students' advancement may cause the issues of the characteristics of the data. As there are many types of high schools in Korea, the data in high school may not represent the high school education in Korea according to the result of the students' advancement. To deal with such issues, it is necessary to consider some methods including recomposition of the samples or weighting the samples. Finally, to successfully conduct the OECD ESP longitudinal study in Korea, Korean Educational Development Institute (KEDI) is required to share the duties with relevant organizations, including the Ministry of Education, the Offices of Education and schools, and to enhance mutual cooperation.

While the cognitive skills and social-emotional skills of students have been reported to have decisive influence on the success and happiness in the future lives, most of the research on this topic have been conducted with a method of cross-sectional study which analyzes at a point of time, which is limited to show how these skills change in the course of time and the dynamic interactions between environment and skills. This research analyzes the significant factors influencing skills in the collected data in the relevant year, as well as the changes in skills in the course of time by utilizing the characteristics of longitudinal

study since 2014 and the factors influencing these changes. Based on these analyses, the research suggests several policy suggestions as follow: (1) Research on teachers to establish creative school environment and creation of the environment; (2) Provision of support to create creative home environment and cooperation between homes and local communities; and (3) Efforts to establish the system to provide quality early childhood education for free of charge or at a low price. Finally, the future tasks are mentioned.

**Key words:** Social-emotional skills, longitudinal study, learning contexts, social progress, happiness level, OECD ESP