

## Outline of the Study on Secondary Analysis of Results of the National Assessment of Academic Ability

### 1. Purpose and summary of the study

#### (1) Purpose of the study

The purpose of the study is to develop methods of utilizing the survey results by carrying out a secondary analysis of the survey results over multiple years, and to demonstrate the findings obtained from the secondary analysis. The first National Assessment of Academic Ability was conducted in FY2007 while the 10<sup>th</sup> was implemented in FY2017. During this period, the survey results have been published every year, and various additional analyses based on the survey results have been carried out. The Curriculum Research Center of the National Institute for Educational Policy Research has also conducted school-visit surveys, detailed analysis of the answers to free-response questions, and analysis of the survey results over multiple years so as to contribute to further use of the surveys and survey results by the schools and boards of education.

#### (2) Summary of the study

In this study, research was conducted focusing on the following two points:

- (i) A case study on effective measures to improve academic ability by the schools and boards of education.
- (ii) Basic research for the construction of a database of the survey results and for various secondary analyses.

For (i), the aim was to conduct a survey through visiting the schools and boards of education and to identify effective measures to improve overall academic ability in terms of gaining a broad view of the changes taking place over time in the survey results, and utilizing the survey results. By capturing the genuine efforts being made to further improve education in the face of the various difficulties confronting the schools and the boards and education, and analyzing these findings to come up with suggestions, the study gives specific examples of ways to utilize the survey results. In addition, the case examples of schools that were visited were compiled in a separate booklet as the third collection of already published case collections.

For (ii), various secondary analyses were attempted such as a detailed analysis of the answers to free-response questions, correlation analysis between the results of the survey relating to the subjects and the results of the questionnaire, correlation analysis between the subject of Japanese language, and of mathematics and arithmetic. This study

demonstrated the findings obtained from a secondary analysis of the survey results, and explored which secondary analysis methods were possible.

[Period of the study: FY2015 – FY2016, Research Project Leader: Atsushi Umezawa (Director of the Curriculum Research Center)]

## 2. Outline of the study outcomes

### **(1) Study on utilization of the survey results**

In this study, a detailed review was conducted of the relevant items and values for the results of the survey relating to subjects and the results of the questionnaire. As a result, the three perspectives given below emerged. Based on these perspectives and other factors, the aim was to identify the actual situation of efforts that contribute to improving and enhancing the curriculum guidelines by first identifying and then visiting the “schools that are producing results” in order to conduct a survey.

First perspective: Schools that have achieved results through the school’s own efforts.

Schools with a high rate of financial aid for school attendance, schools with a low cram school attendance rate, schools with a small percentage of the C and D quartile levels.

Second perspective: Schools that have managed to resolve problems that were continuously seen in each of the subjects.

Third perspective: Response rate for items in the questionnaire relating to students’ attitudes towards learning, etc.

Focus on the percentage of answers which were “strongly positive” for items concerning motivation for learning and self-esteem.

As a result, what became apparent was that the following factors were effective in improving the academic ability of the students: an environment where all the teachers and staff look squarely at the situation the school is in, and with a clear understanding of the problems, share this recognition amongst themselves and work tenaciously on the same problems, an environment where the teachers, with the cooperation of the students’ families, tirelessly assess the growth of the students and encourage their further growth; an environment where the teachers carefully note where particular students are getting stuck and work on their understanding by having them take small steps; and an environment where students teach and learn from each other, and teachers teach and learn from each other.

### **(2) Study relating to secondary analysis of the answers to free writing questions**

In the survey relating to the subjects of the National Assessment of Academic Ability, the number of possible answer types was limited to a maximum of 10 for each question. Therefore,

even if the answers were grouped into the same answer type, on closer examination, there was an assortment of answers that could be further broken down. In addition, the primary purpose when analyzing the answers was completion in a single fiscal year. Therefore, in this study, the questions related to quotes from elementary school Japanese language and questions related to ratios in elementary school mathematics were selected from the free writing questions, and the diversity of the answers was inspected and the trends of answers over multiple years were explored in detail.

As a result, even if answers were grouped into the same answer type, a more detailed classification showed the challenges faced by the students in greater detail. This suggests the importance of examining the design of classification that could lead to better teaching based on an analysis of errors. Even with the same correct answers, there were differences in the quality of the answers. This suggests that the same thing can be said even about the errors, giving rise to the need to develop questions and establish answer types to better understand the quality of students' understanding and where they are getting stuck.

### **(3) Expectations of future analysis in light of the efforts in this study**

Since further analysis seems to be needed in the future based on the results of the analysis tested in this study and the issues, consideration will be given to further utilizing the results of the questionnaire and to conducting a quantitative analysis of the results of the free writing question.

The correlation coefficient between the respondents' correct answer rate (number of correct answers) and answers (positive / negative) to individual questionnaire items was calculated, and a regression analysis carried out, but deeper understanding was not reached on how the results of the quantitative analysis could be used by the boards of education and schools. In this study, we focused on the strongly positive answers of specific items of the student questionnaire when visiting the schools to conduct the survey, and were able to refer to these answers when gauging the efforts of the school, but it is thought that by increasing the items covered by the study, identifying questionnaire items that will more clearly show the efforts of the school, and looking at the survey results over multiple years, it will be possible to identify the correlations between long-term trends and the school's efforts, and the effect of these on the percentage of questions answered correctly in the subjects. In addition, if in the future, one idea is also to analyze the survey results of the National Assessment of Academic Ability, which is conducted as a complete enumeration survey, by linking them to various other surveys, an analysis should be conducted in the future linking them to school surveys such as the School Basic Survey and the National Survey on Physical Fitness and Exercise Habits, or surveys which clarify the family or regional situation such as the National Census, and consideration should be given to organizing the data

and refining the tasks accordingly.

In terms of conducting a quantitative analysis of the free writing questions, aside from analyzing the details given in the free writing with regard to issues that can be seen to be going beyond the subjects or fiscal years, the aim was also to identify certain trends through quantitative analysis. However, one major obstacle was that the design of the questions and the composition of the answer types differed, which meant that the analysis did not lead to a clear conclusion. In the future, one idea is to refine the issues that need to be analyzed once again and to study the design of questions that go beyond the framework of the subjects.