TEACHING PROBABILITY AND STATISTICS TO PRE-SERVICE ELEMENNTARY SCHOOL TEACHERS

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The importance of statistics education has been rising also in Japan. However, we have not developed any substantial curriculum for teaching probability and statistics to pre-service elementary school teachers. We introduce a syllabus of the class about the statistical charts such as bar and line graphs, pie charts and histogram, as an example.

INTRODUCTION

The importance of statistics education has been rising also in Japan. However, we have not developed any substantial curriculum for teaching probability and statistics to pre-service elementary school teachers. As a teacher of a teacher-training college, I have begun to make a new curriculum. I tried to start the class about the statistical charts in 2014. Here, I introduce a syllabus of the class about the statistical charts such as bar and line graphs, pie charts and histogram.

SYLLABUS

Course Title	Introduction to statistical charts for elementary education
Course Objectives	1. To acquire knowledge about various statistical charts. 2. To know how several statistical chart are dealt with by the textbooks of various subjects. 3. To learn how to teach reading and drawing of the statistical charts.
Course Goals	1. To understand the characters, utility and some careful points for various statistical charts. 2. To bring up the ability which can show theoretically which statistical chart to use according to the situation. 3. To be able to propose and put in practice the class which the students solve their problems by utilizing some statistical charts.
Class Schedule	The 1st time: orientation (explanation of course objectives and goals) The 2nd time: various statistical charts (bar chart) The 3rd time: various statistical charts (pie chart and band chart) The 4th time: various statistical charts (line graph) The 5th time: various statistical charts (histogram) The 6th time: various statistical charts (cross-tabulation table) The 7th time: various statistical charts (composite chart) The 8th time: statistical charts in the textbooks of arithmetic (I) The 9th time: statistical charts in the textbooks of arithmetic (II) The 10th time: statistical charts in the textbooks of science The 11th time: statistical charts in the textbooks of social studies The 12th time: statistical charts in the textbooks of Japanese language The 13th time: PPDAC cycle The 14th time: review and discussion

In M. A. Sorto, A. White, & L. Guyot (Eds.), *Looking back, looking forward. Proceedings of the Tenth International Conference on Teaching Statistics (ICOTS10, July, 2018), Kyoto, Japan.* Voorburg, The Netherlands: International Statistical Institute. iase-web.org

NUMBER OF ATTENDANCES

2014		2015		2016	
Mathematics	16	Japanese language	5	Mathematics	11
Japanese language	2	Mathematics	4	Japanese language	3
Social studies	2	Social studies	1	Science	3
Art and Design	1	Music	1	Psychology	2
Psychology	1	Psychology	1	Home economics	1
				Study of education	1
Total	22	Total	12	Total	21

KEY WORDS AND MAIN TOPICS

The 2nd time	Qualitative data and quantitative data Discrete data and continuous data Nominal scale and ordinal scale Interval scale and ratio scale	The types of bar charts based on the kinds of the data and the scales of the data
The 3rd time	Pie chart and band chart	The appropriate choice of a bar chart and a band chart
The 4th time	Trend, periodicity, size of the fluctuation, changing point	The four keywords to master a line graph
The 5th tome	The area of the rectangle	The differences of a bar chart and a histogram
The 8th time	The textbook of arithmetic in the 3rd and 4th grade	To check the contents in the textbook in detail
The 9th time	The textbook of arithmetic in the 5rd and 6th grade	To check the contents in the textbook in detail
The 10th time	The textbook of science	To draw some appropriate statistical graphs form the data
The 11th time	The textbook of social studies	The statistical charts which are often appeared in the textbook of social studies, not in the textbook of arithmetic
The 12th time	The textbook of Japanese language	The methods of describing the questionnaire results by using some statistical charts
The 13th time	PPDAC cycle	Some tricks for making PPDAC cycle circulate
The 14th time	Teaching statistical charts	Review and discussion

CONCLUSION

We obtain some conclusions through the class as follows:

- Many students don't have some fundamental acknowledgments about statistical charts, e.g., the types of data, the four keywords to master a line graph, the differences of a bar chart and a histogram.
- Many Students are able to read most of statistical charts correctly but not to draw many statistical charts correctly.
- A student who has an interest in statistics education is too little.
- The number of times of the lesson is too little to achieve our course goals.
- We need to reconsider elementary statistics education by noting the relation with other subjects.