

Statistics Education for 4-9th Students by Developing a Software K-Plots

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Abstract

Recent development of IT & network technology has enabled us to develop many softwares for statistics education. An international classroom project for the 4-9th students called census@school is also going on to share data, idea, experience in learning and teaching statistics. A software called TinkerPlots, www.keypress.com/x5715.xml, has been developed for this project and it includes dynamic graphs, useful examples for students, and simple data analysis. It is a reasonably good software for students, but we feel that its operation is not easy for students and examples do not suit for Korean students. Also it is not a free software. We decided to develop a new software called K-Plots which has an easy operation and good examples for Korean students. K-Plots includes graphs in math books of the 4-9th grade students and the graphs are linked dynamically. Masking is also possible between data and graphs. K-Plots is developed by Java to prepare for mobile environment such as Android system. An international collaboration for developing this kind of software would be possible.

Key Words: Statistics Education, dynamic graphs, statistical software

1. Introduction

An international classroom project for the 4-9th students called census@school is going on to share data, idea, experience in learning and teaching statistics. A software called TinkerPlots, www.keypress.com/x5715.xml, has been developed for this project and it includes dynamic graphs, useful examples for students, and simple data analysis. TinkerPlots is a well designed software and is helpful to understand the concepts of statistics if a student becomes to know how to use it.

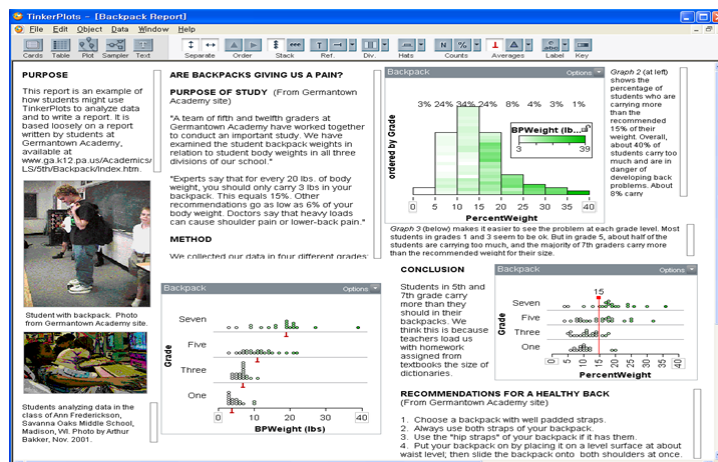


Figure 1. An Example of TinkerPlots

However, we feel that the TinkerPlots is not easy for students to learn its operation and examples do not suit for Korean students. Also it is not a free software. We decided to develop a new software called K-Plots which has an easy operation and good examples for Korean students.

2. K-Plots System

K-Plots includes graphs in math books of the 4-9th grade students and the graphs are linked dynamically. Masking is also possible between data and graphs. K-Plots is developed by Java to prepare for mobile environment such as Android system. The system consists of four windows, Data Sheet, Variable Sheet, Graph Window and Output Window as Figure 2. Six types of graphs such as bar graph, dot graph, histogram, pie chart, scatter plot, line graph are available. Modules for basic statistics and cross table are also available in order to analyze data,

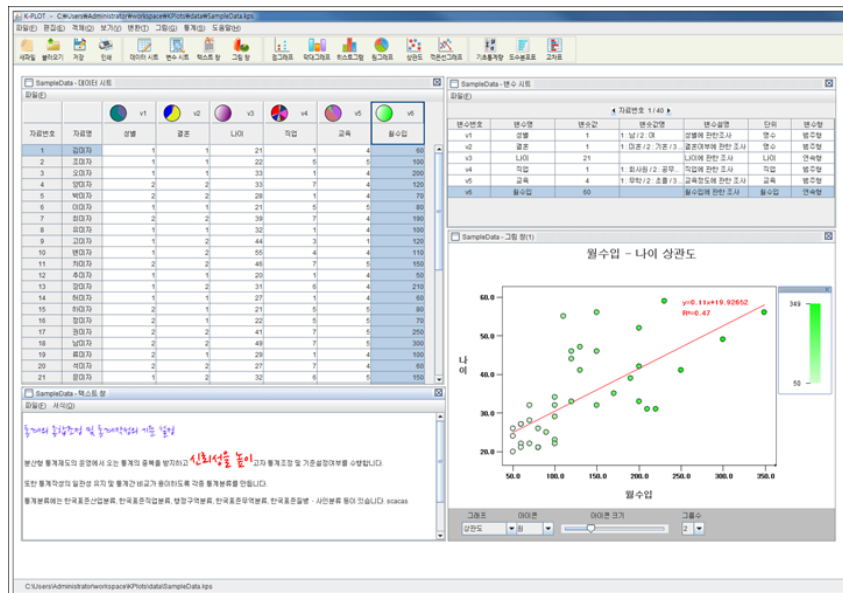


Figure 2. Data Sheet, Variable Sheet, Graph Sheet of KPlots

Data Sheet and Graph Window are linked each other. If you click a variable name on Data Sheet using the mouse, the color of points on the scatter plot in Figure 2 is changed depending on the characteristic of the variable. Also, if you click a point on the scatter plot, the color of the corresponding data on Data Sheet is changed. Several Graph Windows can be linked also with the Data Sheet as Figure 3. Communication with graph module and statistics module can be done either by dialog as Figure 4 or clicking icons of the graph.

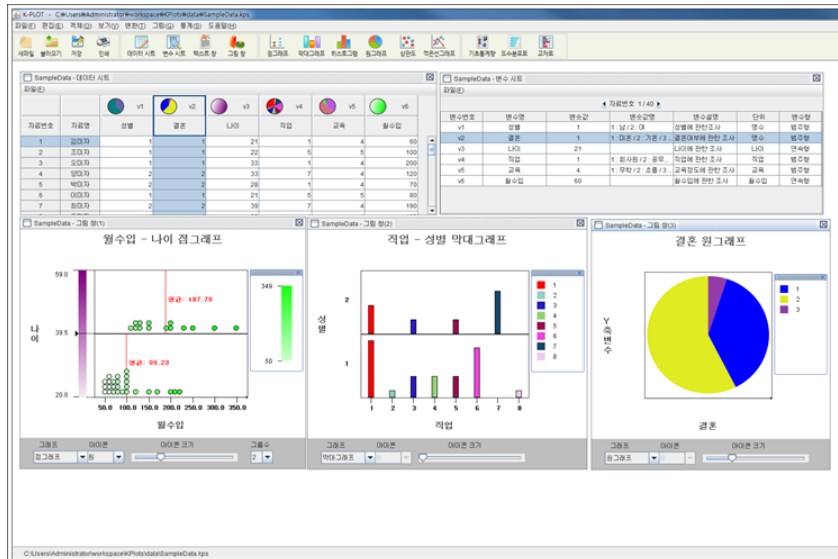


Figure 3. Several graphs can be linked with the Data Sheet.

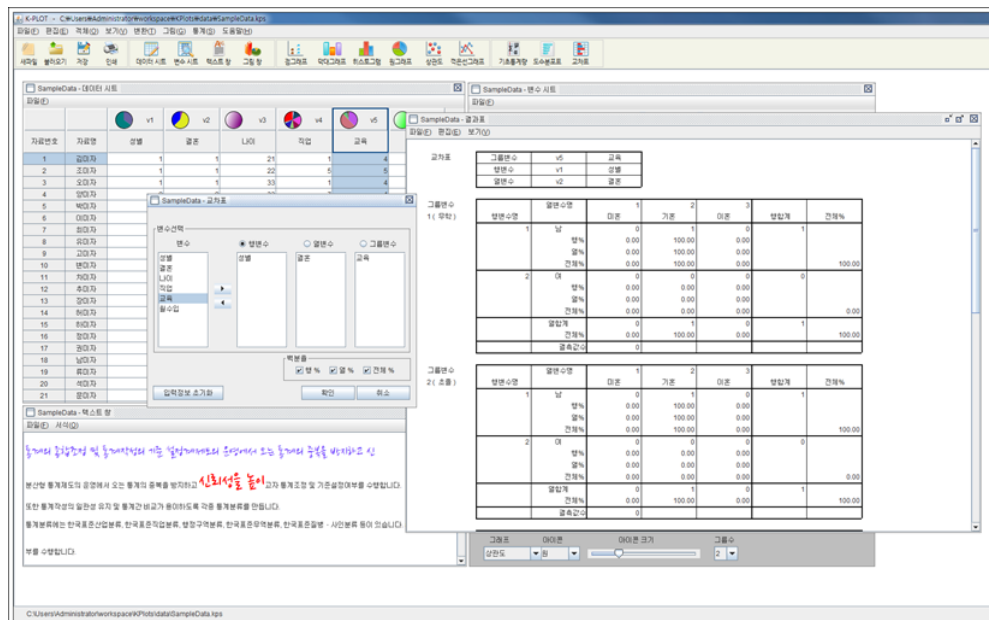


Figure 4. Dialog for cross table and its results

4. Discussion

K-Plots is a prototype software and it is used at the selected elementary schools in Korea. We have had a positive response from them and we are developing the second version which include more graphs and user friendly features. We believe that an international collaboration for developing this kind of software would be possible to teach statistics for 4-9th grade students.