

Abstract

## Design of an Introductory Statistics Education Model: Understanding of Student, Interaction, and Activity-Based Learning

Beomsoo Han

Chonbuk National University

Every excellent teaching, which makes students to learn something better, has its own principles and characteristics which make it outstanding for teaching and learning effectively; therefore, it is important to use these common elements into introductory statistics classes to have more success in lectures. The use of information technology can help to accomplish an excellent lecture because it supports a simultaneous communication method. In this dissertation, we examined the common principles or characteristics from outstanding lectures and preceding research. We also looked at how technology can assist to make excellent teaching and learning, especially in classroom activities.

There are three questions of interest as following:

- How can teachers understand the status of each student's comprehension?
- How can teachers make timely interaction with each student?
- How can teachers make activity-based learning with all students simultaneously?

When we tried to find the answers of these questions, we found that there exist three most important common features, which make a lecture excellent: (1) Real-time understanding of Students' comprehension, (2) Timely Interaction, and (3) Simultaneous Activity-Based Learning. With these features, we proposed an UIA model, which stands for Understand of students, timely Interaction, and simultaneous Activity-based learning. In terms of implementing the model, the use of information technology in a classroom lecture is mandatory. Furthermore, in order to apply for statistics education class, we carefully gathered more specific elements from introductory statistics

lectures; after that, we update the model from UIA model to UIA-SE model, which is more focused on the introductory statistics education in a classroom lecture. Based on this model, we developed a Real-time Statistics Education System (RT-SES), and used this in actual classroom lecture to verify the effectiveness. We also surveyed its usability through responses by attending students. As a consequence, the implemented system made it possible to interact with all students at the same time, and it encouraged every student to participate in class activities more than traditional class; furthermore, the interactions between students are increased significantly. These results indicate that the UIA-SE model is valuable to apply for statistics education, and it also can be useful to the development of statistics education software.