A development of system to support making presentations focused on logical structure and expression

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In the research activities of university laboratories, presentation is a very important approach to explain research to others. In order to explain the research accurately, it is desirable that the expression and structure in presentation are consistent, without leap of logic constitution. In this study, we focus on two types of logicalities of research presentation. One is logical expression (logicality of expression) and the other one is logical structure (logicality of structure). The logical expression (consist expression) is composed of the logical design and the logical text. The logical design consists of the consistency of font, size, and color of text used in presentation. The logical text consists of the consistency of nouns, verbs, and terms for research content used in presentation. The logical structure in presentations consists of contents and their order that can be explained in proper order. For example, the first slide explains the research of the "Background", and next the slide explained the research of the "Subject" come in sequence. Then, the slide explained the research of the "Method" come next the "Subject" slide, and the slide explained the research of the "Evaluation" come next the "Method" slide. At last, the slide explains the research of the "Conclusion". It is important to organize presentations while thinking of these logicalities for explaining research accurately.

However, it is difficult for novice researchers to make presentations with the consideration of these logicalities. Novice researchers are not often aware of the logical expressions when organizing presentations because they mostly focused on making individual slides. If the logical expression in presentation is broken, the audience is not likely to understand the presentation because of the lack of the logical expressions. Also, it is not easy for novice researchers to make presentations because of the differences in research fields, laboratory styles and presentation time. So, it becomes difficult to explain the research accurately because of the differences in research fields, laboratory styles and presentation time if the two types of logicalities are broken.

The purpose of our research is to resolve these issues by developing a system to support making presentations focused on logical structure and expression for novice researchers to make presentations so that audiences can understand presentations properly.

Our approach is to comparing the presentation made by novice researchers and the model include the styles and the features in laboratories of novice researchers. Also, to feedback using the difference.

About the logical expression, the logical text is only targeted in this study because the feedbacks to be more effective so that we often overlook the logical text.

In the following sections, we addressed five methods. The first method is to define the logical structure element model for relation between the presentations and the structures. The second method is to define the logical structure evaluation model corresponding our laboratory styles. The third method is to define and calculate the evaluations indexes based on the second methods. The fourth method is to propose the method of finding the logical text. The fifth method is to develop a system as the Web application.

For the first method, we defined the logical structure element model so that novice

researchers can understand logical structures easily. This model involves the elements required for presentations, which are “Subject”, “Background”, “Method”, “Evaluation”, “Conclusion”, and “Relevance”.

For the second method, we defined the logical structure evaluation model based on our laboratory styles. In this study, we extracted the model from the slides made by our laboratory members. This model involves the main-elements that are minimum required for presentations and the sub-elements that describe the main-elements. The sub-elements can express differences in the laboratory styles and features.

For third method, we proposed the three evaluations indexes for the logical structure and calculated those indexes in our laboratory. The evaluations indexes have different roles. The balance of main elements evaluates whether slides are created with correct proportions. The importance of sub elements evaluates whether sub elements are in presentations. The placement of main elements that combines the distance of main elements and the front-and-back of main elements has the role for preventing the topic from changing suddenly.

For fourth method, we targeted the two nouns as the logical text. One is the nouns used as subject and object. The other one is the nouns used as verbs. We detected noun combinations after using natural language processing to measure the high similarity between words in slides.

For the fifth method, we developed the system using Flask, a web framework written in python. As the first step of using this system, novice researchers chose and tagged slides between sub-elements on the system. Next, system extracted structure and text from slides tagged sub-elements. Finally, system showed feedbacks by evaluating the differences.

In order to evaluate this system, we conducted three evaluation experiments. First, we extracted the logical structure evaluate model and calculated the evaluate indexes using other university laboratories. As a result of the first evaluation experiment, we proved the difference in each laboratory by comparing and discussing each model and indexes. Second, we conducted an evaluation experiment using testing tasks. As a result of the second evaluation experiment, we proved consistency of the feedbacks from this system and academic advisor of our laboratory. Third, about the method of finding the logical text, we compared and discussed the noun combinations using presentations of practice and final versions. Aa a result of the third evaluation experiment, we showed that this method was suitable, and feedbacks was effective in some situations. These results of the three evaluate experiments proved that the proposed system’s feedbacks can encourage the users to revise and improve their presentation.

One of the challenges of this study is that novice researchers are not able to choose and tag slides correctly. To solve this problem, we think that new support functions are necessary to provide tagging suggestions or to tag automatically by the system.