Conducting Classroom Discussions in the Manner of an Orchestra Using a Mobile Phone Based Response Analyzing System

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Abstract
This paper deals with the use of a Response Analyzer (RA in the following) that uses mobile phones as a tool to support the class. This technique aims at an interactive form of debates in university classes while controlling the direction of the discourse even with a large number of students.

1. Introduction
In 2005, a debate-oriented class was conducted using mobile phones as RA-tools to support the class. In debate-oriented classes, many different opinions are flying about and from this liberty arises a tendency towards an enlargement of the topics discussed in the class. If a speaker emphasises misleading aspects and therefore the field of discussion increases too much, the teacher might have to restore the discussion points or push for a summary. The effort to maintain the main discussion points imposes an extraordinary burden on the teacher. Therefore, if the result of the discussion has been prepared in advance, it will be possible to practically conduct debate-oriented classes since the teacher will be able to guide the discussion towards the result and deepen the student’s understanding of the discussion points.

2.1 Outline of the used system
The system is based upon the students’ mobile phones and the teacher’s personal computer. The students use their own mobile phones as terminals to access the RA-server via the internet while the teacher uses his own notebook as a terminal to sum up the different answers and create an overview (Figure 1).

(Figure 1) RA, RM attendance

2.2 Aims of the research project
In general, it is difficult to debate in large scaled classes. Therefore, this project aims at an efficient mode of conducting debate-oriented classes with a large number of participants using the RA-system. Furthermore, using a structure similar to the structure of an orchestra, the participating students are split up into numerous groups. Then, the teacher call select certain students to present their point of view and, using this method, control the direction of the discussion (Figure 2). In case of an entirely free debate-oriented class (without a prepared aim of discussion), it might occur that in the end there is no result (no understanding of the progress and subject of the debate) at all. Therefore, if the teacher prepares the debate and its progress as part of the preparation of the class, the progress of the debate can be controlled (by selectively choosing certain students to present their opinions) and the understanding of a limited set of conclusions can be deepened (right-answer-model).

(Figure 2) Debates using the structure of an orchestra

2.3 Research methods
We conducted a debate-oriented class asking 28 male and female undergraduate students whether they agree or disagree with the prime minister’s visits of the Yasukuni shrine. The students received copied discussion material related to the topic. Before the debate started, the students were split up into groups according to the reasons they gave for their agreement or disagreement with the visits at the Yasukuni shrine. Below are possible reasons for agreement or disagreement with the prime minister’s visits at the Yasukuni shrine as prepared by the teacher. They aim towards different fields of study and the students were free to chose from those reasons according to their opinion (Figure 1).

- Diplomatic problems $\alpha$ (e.g. Asian relationships, frictions with China, American-Japanese contracts)
- Historical background $\beta$ (e.g. Decisions of the Tokyo Court, enshrined class A war criminals)
- Juristic problems $\gamma$ (e.g. Separation between secular state and religious organisations, problems concerning the constitution)

Agreement: $y$, Disagreement: $n$

- Agreement due to diplomatic reasons: $\alpha/y$ (2 students)
- Disagreement due to diplomatic reasons: $\alpha/n$ (13 students)
- Agreement due to historic background: $\beta/y$ (6 students)
- Disagreement due to historical background: $\beta/n$ (2 students)
- Agreement due to juristic reasons: $\gamma/y$ (1 student)
- Disagreement due to juristic reasons: $\gamma/n$ (4 students)
The participating students were separated into groups as pointed out above (orchestra-like structure). The teacher, using the RA attendance (Figure 1), nominated individual students out of the groups α/y - γ/n to present their point of view (command).

In case that the presentation of a representative of one of the groups had logical shortcomings, the chairman picked another student from the same group to back up the student’s argument (Figure 2).

\[ α/y + α/y → Support \]

In order to create an even better surrounding for a discussion, students belonging to the same groups but expressing opposite opinions are chosen to discuss their points of view.

\[ α/y + α/n → Discussion \]

The teacher, using the RM attendance (Figure 1), selectively names the students who shall present their opinion to control the complete progress of the debate.

\[ α/y + β/y + γ/y → Guidance toward agreement \]
\[ α/n + β/n + γ/n → Guidance toward disagreement \]

The teacher guided the students towards the right-answer-model α/n, which was the intended result set up as part of the general preparation of the class (guidance according to written musical notes, Figure 3).

α/n means disagreement to the prime minister’s visits at the Yasukuni shrine due to diplomatic problems as emphasised by Dr. Calder’s insistence “Facing history” (2006/05/4, Asahi newspaper). According to the article mentioned above (which led to the right-answer-model), the logical structure of this argument covers a lot of different points.

Debates using the structure of an orchestra (Figure 3)

1. Chinese-Japanese relations (history)
2. Chinese-Japanese relations (diplomacy)
3. Methods to memorize the dead ~
4. Problems related to Japan’s efforts to become a standing member in the UN-Security Council
5. The influence of Japan’s voice towards Asia and the United States

While using those points as a basis, the process in which the students thought developed reached a debate that repeatedly reflected itself. In the class the teacher made it possible for the students to experience a discussion that took over the leading role. Hence the progress of the debate, indicating the aspects mentioned above as a orientation, demanded opinions based upon those points. Furthermore, the teacher selected students according to the RM attendance (Figure 1) who might state a more relevant comment. Additionally, the teacher’s expectations were not transmitted to the students while the debate was conducted.

In order to lead the students toward the prepared result, the teacher has to select the students by name.

3. Conclusions

According to the result of the questionnaire the efficiency of the debate-oriented class using the RA-system (Figure 4), an increase in effective showed up. Additionally, many students stated that the understanding of the subject was deeper in the model class than in a usual debate-oriented class. If the subject of the class is to deepen understanding of certain provided results and the methods of discussion are set and limited, the assumption of the teacher could be reflected in the result.

By using this system it was easy for the teacher who conducted the class to predict the content of the students comments in advance and to pick students who could speak appropriate opinion towards the prepared conclusion, so the teacher perceived an effective smoothness of the debate.

(Figure 4)

In order to achieve a deeper understanding of provided results in a debate with set conditions while attempting to control the development of the debate, a RA based upon mobile phones was practically applied. We discussed the practical application of a method that combine the one-directional lecture based method using limited solutions and the method of teaching that gives a certain liberty to the students to discuss their opinions.

4. Reference