

# A Typology of Speeches within Board Game Players for Analyzing the Process of Games

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## ABSTRACT

This paper introduces a typology of speeches within board game players in order to examine their communication process from the view point of pedagogical effectiveness using an environmental education game "KEEP COOL". We already have analyzed the speeches issued by players applying KJ method as basic analysis. To generalize the classification of speeches, we introduce new typology mainly focusing on the players' aspect for its playing. Using new grouping method the characteristic of process became apparent.

## Author Keywords

board game, environmental education, players' interaction, speeches

## 1. BACKGROUND

### 1.1. Communication within players of educational games

The use of simulation games has come to be popular way for environmental education. One of the most well-known simulation games might be "FISH BANKS" [6]. This computer aided simulation game simulates social dilemma, then players may learn about the sustainable development. Even before the great progress of computers, commercial games using card and board have been brought into the market.

One of the expected effectiveness in using games is experience-based learning within its plays. In a well-distributed teachers' guide for environmental education which introduce several activities including some games, Greig presents several aims for education [1]. He has crime using such activities for the participants to understand the mechanism of the problems and to aware the variety of perspectives, interests, or values for environment. This deeper understanding than only to learn book knowledge

should be much acknowledged as the advantage of using games in education.

On the other hand, several non-digital games which do not use computers have made success for such educational purpose, even in recent years. "PERSUASION GAME" [8] in which players make one-to-one negotiation has come to popular as an educational or training tool in Japanese schools. We can also find this kind of games which promote face to face communication not only in the field of environmental education but also other purpose such as disaster prevention [5].

However, such verbal communication within board game players has not so much examined. Quantitative analysis like questionnaire method has examined the effectiveness of games comparing with other teaching methods [7]. On the other hand, certain communication within people has examined in the field such as qualitative psychology, cognitive science, or communication study. The communication process itself need to be examined.

From this point of view, we are developing the method to analyze such communication process using an environmental education game "KEEP COOL" [9]. This game is one of the most successful commercial games in the field of environmental education. Certain amount of this game is distributed in the market.

### 1.2. Overview of "KEEP COOL"

From this point of view, we are developing the method to analyze such communication process using an environmental education game named "KEEP COOL". "KEEP COOL" is one of the most successful commercial games in the field of environmental education. Certain amount of this game is distributed in the market.

The game, KEEP COOL, concerns with climate changes. 3 to 6 players take a role "6 global players" for each; OPEC,

Former Soviet Union, USA & Partners, Europe, Developing Countries and Tiger Countries. The players build Factories in order to reach his own economic or political target; an economic target means that he works out in his country and a political target means not only in his country but in a whole world as well. The First who gets one of his two targets is winner.

Following is the short summary of the procedure for the turn player.

1. Draw a disaster card from the disaster pile and roll a dice to decide whether a catastrophe occurs.
  - \*The more black factories are built, the more often catastrophe occur.
2. Collect income from your factories.
3. Investment: For your income you can buy black factories, green factories, protection tokens or innovation. You can do that any order as long as you have enough money.
  - \* Green factories are more expensive than black factories. If you take a part in innovation, you can build green factories cheaper. Innovation is effective to build green factories.
4. Climate recovery

### 1.3. Categorizing the speeches with KJ method

We have already tried to classify 446 speeches issued by the players of “KEEP COOL” with KJ method for basic analysis [2]. KJ method is one of idea generation method developed by Jiro Kawakita [3]. In this method, ideas proposed by the participants are written on small cards, and then classified into several groups on the basis of similarity. We have applied this method for the analysis of communication.



**Figure 1:** Players in “KEEP COOL”.

Table 1 shows the 17 categories provided with KJ method classification. As can be seen, these categories are fall into 5 types.

4 types which all 17 categories except for responses are fall into are classified from the viewpoint of the context of the game. First type, “Rules and Procedures” is most simple subject for players to run games. Speeches belonging to this category emerge when a player only move a token on the board or when he or she do not understand how to play. Second one, “Constructive Play” includes much complex subject compared with first one. Players who have the prospect to win the game or understand the system of the game will issue such speeches. Third one, “Strategy” is most influential for the progress of the game itself. In the game “KEEP COOL”, such speeches emerged in the negotiation between players. The last type, “Impression” will not affect the process of game directly. However, speeches in this category compare the game system to the real world metaphorically.

**Table 1:** Number of speeches classified with KJ method ( $N = 446$ ).

Categories	Total Occurrence
(Rules & Procedure: 276)	
1. Asking about Rules	49
2. Explaining Rules	33
3. Understanding of Rules	10
4. Misunderstanding of Rules	4
5. Making progress	85
6. Promoting the procedure	95
(Constructive Play: 62)	
7. Asking about Overall	7
8. Explaining Overall	8
9. Understanding of Overall	10
10. Misunderstanding of Overall	4
11. Describing Situation	14
12. Promoting the game	19
(Strategy: 36)	
13. Strategy meeting	14
14. Negotiation	22
(Impression: 14)	
15. Association with Real World	3
16. Impression on the Play	11
17. Responses	58

**1.4. Problems**

From the aspect of measuring pedagogical effects, General typology of speeches is required in order to analyze the communication process in games. It seems to be difficult to keep applying KJ method from 2 point of view. Firstly, it takes a good amount of time to categories to find similarity. Secondary, this method has the possibilities of variation within categories between playing of games or games itself because the categories are proposed after classified in KJ method.

**2. DEVELOPMENT OF TYPOLOGY**

**2.1. Two Dimensional Typology**

The starting point of developing typology was based on verbs which is apparent in the names of categories. To compare with first type “Rules and Procedure” and second one “Constructive Play”, we found similarities within the internal categories. “Ask”, “Explain”, “Understand”, “Misunderstand” and “Promote”, these5 verbs can be seen in the both types. On the other hand, categories with these verbs can not be found in “Strategy” and “Impression”. This discrepancy can be attributed to the small sample size. It might be easily imagine a players explain or ask about their own or someone’s Impression.

First dimension is classification based on the types of speeches. We have settled 3 typologies for speeches i.e., “non-descriptive”, “descriptive” and “directive”. Using this classification, Speeches like explanation of rules, games or situation which KJ-method has defined might be classified as “descriptive” and questions or requests as “directive”. Rest of all speech such as “Response” or laughing also be regarded as “non-descriptive”.

This classification enables the extraction of subjects which speeches are dealing with. For example, we found most of utterances belonging to “Understanding of Rules” and “Understanding of Games” such as “Yes” or “Well” are similar to “Response”. These discrepancies as a result of classification can be attributed to the difference of subjects or contexts within speeches. Indeed, some of them are answer for some other players question or request. For the meanwhile, other responses are issued only for making the conversation goes smoothly. The difference of “Understand” and “Misunderstand” also can be accountable with these contexts or subjects of speeches.

**Table 2:** Number of speeches classified with subjects (N = 719).

Subject	Total Occurrence
Ongoing Game	539
Abstract Game	108
Extraneous	72

Therefore, Second dimension prescribes the subject of each speech. To explore the 17 categories with speech data, we found comparatively concrete grouping of the subjects, i.e., “Ongoing Game”, “Abstract Game” and “Extraneous”. As the concept of this classification is, so to say, game play oriented, we gave it the state of most basic idea.

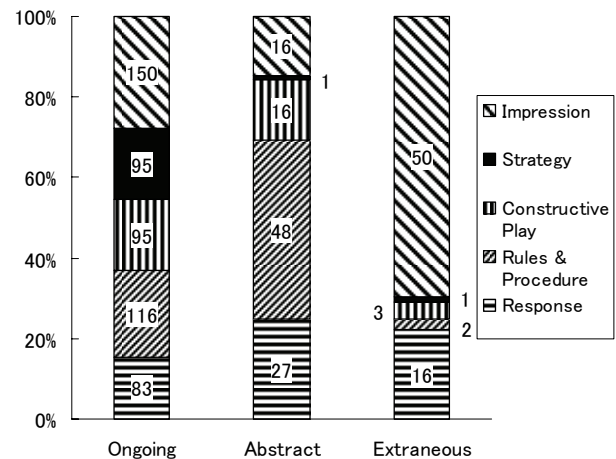
We apply both subject based classifications and previous one for speeches within the play of “KEEP COOL” in which 9 players has participated. For this time, we only deal with the turn of “USA and partner countries” for instance.

Table 2 shows that the most frequently talked subject is “Ongoing Game”. The percentage of previous classification within subjects is also shown in Figure 2. As can be seen, impression is major in “Extraneous” subject. In fact, players sometimes talk about the real world such as depletion of resources, pollution and international politics comparing with the process of games. Such speeches are classified into “Extraneous”. However, this kind of speech has the potential to describe the effectiveness of games in the aspect of association between the real world and games. On the other hand, speeches in “Ongoing Game” vary widely seen from the previous classification.

**2.2. Refining speeches in “Ongoing Game”**

To elaborate speeches concern with the subject “Ongoing game”, we propose 4 types of subcategories, i.e., “Personal Decision”, “Outside Decision”, “Situation of Play” and “Basic Process”. These categories are mainly focusing on the players’ decision making.

We also take account of tense for “Personal Decision”, “Outside Decision” and “Situation of Play”.



**Figure 2:** percentage of classification of KJ method.

To develop these subcategories, we have put close focus on a group in previous classification “Strategy” which influences the most for the process of the game. We found that speeches of “Negotiations” are dealing with “Ongoing Game”, but is not realized yet or going to achieve. On the other hand, subjects seen in the “Describing Situations” sometimes note about past event in the game, or future possibilities of the process of playing. Therefore, we introduce the concept of tense in the classification.

Table 3 shows the numbers of speeches elaborated classification within “Ongoing Game”. As can be seen, players have the most speech on future concerning with situation of play. Comparing “Personal Decision” and “Outside Decision”, players issued much rate of “Future” oriented speeches. Players joining negotiation assumed to have the opportunity to mention other players’ decision.

### 3. RESULTS

#### 3.1. Study 1: Analyzing whole speech by rounds.

The numbers of speeches which all players have issued during 3 rounds of "America" and the 10 minutes break between the second round and the third round are shown in Figure 3. Speeches dealing with "Ongoing" subject gradually increase during the playing, while speeches of "Basic Process" being on the decrease. This trend shows that players are gradually understand how to play the game, then absorbing into their negotiation or strategy. On the other hand, the number of speeches during the break shows that, they still seemed to keep talking about the game. There are possibilities of having impression or evaluation on games apart from playing the game.

#### 3.2. Study 2: Analyzing “Ongoing Game” speech from the perspective of subjects.

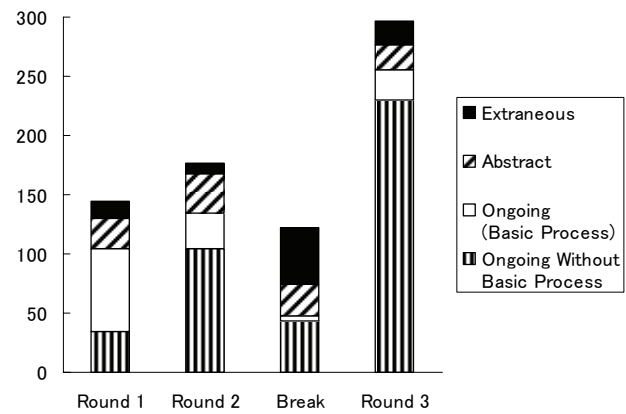
Speeches classified as “Ongoing” except for “Basic Process” is subcategorized based on the subject of its context. The percentage of its classification is shown in Figure 4. Speeches dealing with "Outside Decision" maintain an upward trend during its playing. This increase suggests the increase growth of negotiation within players.

**Table 3:** Number of speeches of elaborated classification within “Ongoing Game” ( $N = 542$ ).

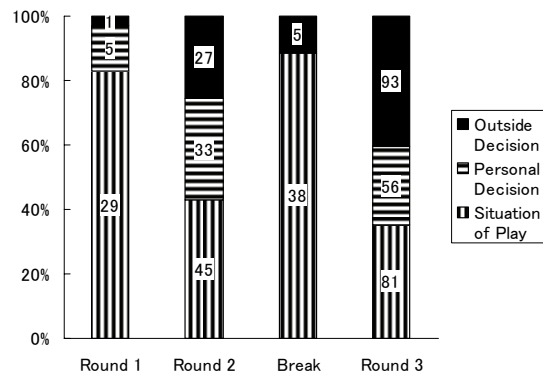
	Total Occurrence		
	Past	Present	Future
(Personal Decision: 94)	2	42	50
(Outside Decision: 127)	5	20	102
(Situation of Play: 193)	25	119	49
(Basic Process: 129)			

#### 3.3. Study 3: Analysis focusing on tense of the subjects.

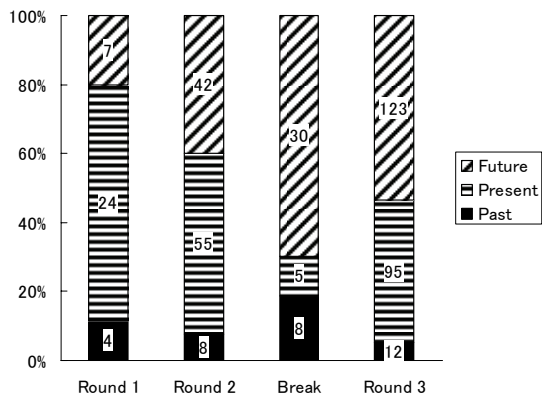
Further analysis focusing on tense of subjects is conducted. The percentage of types of tenses is shown in Figure 5. The percentage of speech with “Future” is increasing. This upward trend also supports the growth of negotiation together with the increase of "Outside Decision". The high percentage of “Future” shown in the break also shows the enthusiasm of the players. Players might be talking about their strategic even in the break of the game.



**Figure 3:** Numbers of speeches during the whole playing.



**Figure 4:** Percentage of subjects oriented classifications.



**Figure 5:** Percentage of tenses of subjects.

#### 4. CONCLUSION

We conclude that the typology we are developing has the possibilities to catch the communication process within board game players, in that it describes the characteristic of players' interaction with respect to each turn. It also defines the aspect of games which each player focuses on. It must be admitted that this study only deals with limited data, further data and study for classification, such as considering emotional reaction within speech, is required for describing the entire of pedagogical effects. Expansion of this method will be applicable not only for non-digital games, but also for digital games, such as measuring the pedagogical effects from the record of chat within online game players. Other possibilities will be focusing on real speeches issued by students playing cooperative games running on computers in schools.

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