

Democracy Education for Children using a Cartoon Video and Mock Voting

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ABSTRACT

In democracy education, determining how best to teach young children about democracy and how to measure the effectiveness of such learning is difficult, as "democracy" is a subjective and intangible concept. Given the challenge that this presents to educational planners, the author has created a cartoon video about democracy accompanied by an opportunity for children who watch the video to "mock vote." The author used the video in a series of elementary school visits to teach the children the meaning of democracy. The effects of the video learning were assessed by analyzing the children's questionnaire responses before and after the class using text data mining. It was found that the children were able to assimilate the contents of the video and the themes behind the story; that is, they understood the meaning of democracy and democratic elections.

INTRODUCTION

The core principle that education is among the most important factors promoting democracy has taken root in multiple societies since John Dewey's *Democracy and Education* (Dewey 1916)¹. However, when designing and implementing suitable educational programs, how to teach young children about democracy presents a significant challenge, as democracy is an intangible concept, which makes it particularly difficult for young children to grasp. Furthermore, measuring the effects of an educational program involves a subjective concept such as democracy, where assessing the extent to which young learners understand fundamental ideas can be challenging. In this context, the author has created a cartoon video whose theme is democracy. The video presentation includes an opportunity for young viewers to engage in "mock voting." In the video, two characters are running in the Town's mayoral election, and the children, as townspeople, will vote for one of the two candidates. Following the vote, the story of the video follows one of two paths, depending on which candidate wins the election (two storylines were prepared beforehand). The author conducted multiple elementary school visits using the video to teach the children the meaning of democracy and the importance of elections. The effect of the video learning experience on the children's understanding of essential political matters was subsequently measured and analyzed. This article describes the contents of the video and elucidates its impact on the children's understanding of democracy. By analyzing the video and the accompanying mock voting, a framework for influencing the democracy-related awareness of children can be established. For this purpose, text data mining was used extensively. Before and after the video presentation, the children responded to a set of questions focused on video stories and the nature of

¹See Palmer, Bresler and Cooper eds. (2002) and Polito (2005) as recent works commenting on Dewey's writing.

democracy. By scrutinizing the text data generated from these student responses, a comprehensive picture of the children's understanding of democracy was formed.

LITERATURE REVIEW

Democracy and education

Numerous authors have recognized the relationship between democracy and education following Dewey's seminal book published in 1916. In the context of political socialization, although there are a variety of factors influencing one's internalization of political values and norms ([Dawson et al. 1977](#)), the school has been identified as the leading player in the political maturation process of children and young adults ([Massialas 1969](#); [Travers 1983](#)). Based on this recognition, there have been numerous studies demonstrating the substantial role of schools in advancing political socialization, including [Dowson and Prewitt \(1969\)](#), [Greenstein \(1970\)](#), [Haller and Thorson \(1970\)](#), [Ehman \(1980\)](#), and [Palonsky \(1987\)](#)², and more recently, the manifold positive research of [Kam and Palmer \(2008\)](#), [Tenn \(2007\)](#), [Highton \(2009\)](#) and [Berinsky and Lenz \(2011\)](#). Modernization theory, as represented by [Lipset \(1959\)](#), has long and convincingly argued that education plays a critical part in fostering political development, especially the expansion of democracy, emphasizing that a high level of education is a prerequisite for democracy. Researchers such as [Barro \(1999\)](#) and [Przeworski et al. \(2000\)](#) have verified this education-democracy relation empirically. [Glaeser et al. \(2004\)](#) presented evidence of the enormous impact that the environments and characteristics of schools, as core educational places, have on the growth of democracy and political institutions. Given these previous works, a variety of concrete educational programs for teaching children and young adults about democracy have been proposed, and there have been various research attempts investigating the correlation between actual educational plans and the political behaviors of learners, including efforts by the [General Accounting Office \(1990\)](#), [Simon and Merrill \(1998\)](#), [Linimon and Joslyn \(2002\)](#), [McDevitt and Kiouisis \(2006\)](#) and [Öhrvall and Oskarsson \(2018\)](#)³. Building on such previous academic work, this article assesses the learning effects of an original cartoon video used as a novel form of democracy education on young students' understanding of democracy.

Video as a learning tool

Every democracy-learning program has a particular target, and the contents and processes of these programs change depending on factors such as age, grade level, and area. For example, for young children less than ten years old, ease of understanding is a matter of overriding concern. Moreover, the elements to which a program attaches the most significant importance differ with the audience's age. The central question here is, how do we effectively teach young children about democracy? In recent years, the educational effects of multimedia-based learning tools have attracted a great deal of attention. According to the dual coding theory hypothesized by Allan Paivio, there are two ways by which one can expand learning: visual imagery and verbal associations. Paivio argues that the human brain deals with imagery representations better than verbal representations ([Paivio 1971](#); [Clark and Paivio 1991](#)). Multiple studies have confirmed that multimedia instructional resources are more effective for learning than existing text-based materials ([Mackey and Ho 2008](#); [Mayer and Moreno 2002](#); [Rose 2003](#)). Of the various multimedia tools available, video, which can integrate such elements as sound, image, text, and speech, is perhaps the most prevalent. Insofar as learners can develop or expand their knowledge through the context that a video provides ([Brown, Collins and Duguid 1989](#)), using video can be pretty practical for context-based learning ([Choi and Johnson 2007](#)). Moreover, video learning has additional benefits: it promotes motivation, improves concentration, and heightens one's degree of satisfaction ([Choi and Johnson 2005](#); [Mackey and Ho 2008](#)).

METHODS

Understanding the video's content and theme

Given the demonstrated usefulness of video learning, the author created a cartoon video with the theme of politics and elections and made several elementary school visits to teach young students the

²In addition, see Kawata (1987) for research on Japanese democracy education from the viewpoint of political socialization.

³See also Groot (2018) for a study on mock voting in schools.

meaning of democracy. Through March 2020, 19 classes in 16 Japanese elementary schools were conducted. While, as described above, the beneficial educational effects of video learning have primarily been validated, the content of the video, what the children watch, and the themes and concepts of the video as they relate to what the children should learn needs further exploration. The children understand the basic story, and the words spoken by the characters in the video do not necessarily mean that they can correctly interpret the meaning or assimilate the message that the video's creator intended to convey⁴. In particular, in the case of themes that may not be easy for children to understand—themes like politics and democracy—the gap between content and theme may be vast. Accordingly, when analyzing the actual effects of a video, it is essential to grasp the superficial, content-based understanding of the learners and their substantive, theme-based comprehension. As a matter of course, both factors are deeply interconnected. Thus, to assess the ramifications of such a multimedia tool, it is necessary to extract from a relatively obscure picture of the learner's understanding and recognition of the video's contents a clear picture of the learners' structured thoughts and interpretations regarding the underlying themes.

This article outlines the nature of the author's video and the basic flow of the author's school visits, then analyzes the effects of the video presentations, distinguishing between the children's content-based and theme-based understanding. The data source is a questionnaire that the children were asked to complete before and after watching the video. As a method of analysis, this article adopts text data mining for extracting superficially anonymous information from the questionnaire responses and for statistically figuring out an invisible structure of children's consciousness in terms of democracy. An analysis of the data suggests that the video contributed positively to the children's understanding of the concept of democracy.

Cartoon video and school visits

The title of the video is "Democracy in Polititown." The story has a standard first half and two alternative second halves (depending on which candidate wins the mayoral election featured in the video)⁵. The story is rough as follows:

1. First half

Freeman and Elecsa, two children who live in Polititown, believe that if a bridge would be built over the local river, the Town people could quickly go to the nearby meadow and lake. They ask the mayor to build such a bridge. However, according to the mayor, building a bridge costs much money, and if that money is spent on a bridge, the Town would not be able to hold its annual parade that everyone looks forward to for the next ten years. The mayor proposes putting the issue to a vote in the upcoming mayoral election.

Two candidates will run in the election: Candy is the candidate supported by the people in the Town who want to build the bridge; Date is the candidate supported by the people who think building a bridge is not important enough to cancel the parade. (The children viewing the video are asked to consider whom they would support and cast their vote.) Farmer Able, a resident of Polititown, is asked by Voty, an election official, to cast his vote. However, he replies that "This vote does not affect me at all," and he abstains. (The children's mock votes are now tallied.)



Figure 1-1. Freeman (left) and Elecsa (right) Characters in "Democracy in Polititown"

⁴Regarding the relation between "viewing" and "cognition," see Mayer (2001). Regarding the learning system and emotional recognition, see Picard et al. (2004) and Boulay and Luckin (2016).

⁵In Japanese, the title is *Polipoli mura no minsyusyugi*; the story is the same as in the English version, although the names of the characters are different, e.g., Freeman is *Demo-kun*, Elecsa is *Ele-chan*, Farmer Able is *Abu-don*, and Voty is *Boto-san*. In the school visits, the Japanese version was played.

b. Second half (Candy-wins version)

Farmer Able has a great harvest and plans to sell his fruit at the parade. However, he hears from Voty that the parade has been canceled, and he becomes angry. Voty replies calmly that people who do not participate do not complain about the decision after the fact. Farmer Able regrets his behavior and declares that he will run in the next mayoral election.

c. Second half (Date-wins version)

Farmer Able goes every day to tend to the giant apple tree that his grandmother planted, but he trips on a rock on his way and hurts his leg. As a result, he cannot go to the tree and complains to Voty that he could go if there were a bridge over the river. Voty replies calmly that people who do not participate do not complain about the decision after the fact. Farmer Able regrets his behavior and declares that he will run in the next mayoral election.

The general flow of the school visits

Each school presentation begins with an explanation of the class. The children are told that "elections" are the learning theme of the class and that they will study the theme by viewing a cartoon video. They are also told that the story is set in Polititown, where a mayoral election is to be held, and that they (the students) would be able to determine the next mayor through their voting. The students are then asked to fill out a questionnaire (described below).

The first half of the video is then played. At the end of the first half of the video, Figure 2, which summarizes the opinions of two candidates, is displayed. The students then consider who is the best candidate and subsequently express their opinions and discuss their thoughts. Typical examples of the children's opinions are shown in Table 1. Following the discussion, the students cast their votes⁶. Figure 3 shows photos of the ballot box and voting ticket. After reviewing the video and seeing Farmer Able's abstention, the ballot box is opened, and the votes are counted. The second half of the video, either the Candy-wins version or the Date-wins version, is played depending on the result. At the end of the class, the students are again asked to fill out the questionnaire.



Figure 1-2. Farmer Able Characters in "Democracy in Polititown"



Figure 1-3. Candy (left) and Date (right) Characters in "Democracy in Polititown"

Candy's opinion	
We should build a bridge	<ul style="list-style-type: none"> Townpeople will be able to go to the meadow, forest and lake across the river without having to walk down a long and windy road. The Polititown Parade will have to be cancelled for 10 years in order to pay for it.
Date's opinion	
The town must hold the Polititown Parade	<ul style="list-style-type: none"> Townpeople is looking forward to the Polititown Parade. The town can't afford to build the bridge.

Figure 2. Summary of two candidates' opinion

Table 1. Typical opinions of children

Typical opinions supporting Candy	<ol style="list-style-type: none"> If a bridge were built, people's life would become more convenient. The bridge will remain physically in the future, although the parade will not.
Typical opinions supporting Date	<ol style="list-style-type: none"> The parade is the Town's important tradition, and everyone is looking forward to it.

⁶ The class, including allowing the students to speak and counting the votes, was conducted by the author with the help of the school's homeroom teacher.

2. Even now, the people can go to the meadow and the lake through the long twisty road.



Ballot Box

Voting Ticket

Figure 3. Photos of mock-voting materials

RESULTS AND DISCUSSION

Results of the questionnaire

Students responded to a similar questionnaire before and after the class to measure any changes in their awareness and attitudes regarding elections and democracy⁷. As an example, Table 2 shows questionnaire results from a class in school A, situated in Hirosaki city, Aomori prefecture.

As can be seen in Table 2, although several students indicated before watching the video that they "Strongly agree" or "Agree a little" with the statement in Q1 that "Discussions among the group members are essential to decide something important for the group," more than 80% responded that they "Strongly agree" after seeing the video. For item Q2 ("Voting is the best way when something important cannot be determined through discussions."), the number of students who said that they "Strongly agree" increased sharply after viewing the video, and the total number of "Strongly agree" and "Agree a little" responses exceeded 70%. Concerning these two items, the effects of the class seem relatively straightforward.

Table 2. Results of Questionnaire (school A, fourth grade, 42 students)

Q1 : Discussions among the group members are essential to decide something meaningful for the group.

	Strongly Agree	Agree a little	Neither agree nor disagree	Disagree a little	Strongly Disagree
Before	25	13	4	0	0
After	34	6	2	0	0
Q2 : Voting is the best way when something important cannot be determined through discussions.					
Before	3	15	16	6	2
After	18	13	7	4	0
Q3: I would like to be a leader, pulling others together.					
Before	9	9	12	10	2

⁷ The questionnaire was written in Japanese, and the students answered in Japanese. The questions as they appear in Table 2 were subsequently translated into English. Student responses to the questionnaire were given anonymously.

Table 3. Answers to Q4 (Reasons for voting)

Reasons for voting for Candy	(A) Convenient life by the bridge is better than temporary joy from the parade. (B) After building the bridge, more people could come to the parade from the other areas. (C) If the bridge and parade both cost a lot, an option that could help children and older people should be chosen.
Reasons for voting for Date	(D) The parade would be a good opportunity for activating the economy. (E) While building the bridge, people would not come to the Town if nothing they wanted to see. (F) To create lasting memories through the parade is more precious than to build the bridge, which would be broken someday.

Table 4. Answers to Q5 (Opinions about Famer Able's behavior)

Opinions about Famer Able's behavior	(G) Not voting cannot be permitted. However, he regrets his behavior, which is good. (H) His decision to run in the next election when he reflects on his mistake is excellent. (I) No vote, no right to complain. What goes around comes around. (J) If not voting, you could not know what would be going on, and a result you did not want would come. (K) It is a shame not to vote when deciding something important.
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On the other hand, in the responses to Q3 ("I would like to be a leader pulling others together"), the number of positive answers (i.e., "Strongly agree" and "Strongly disagree") remained essentially the same after viewing. A similar result was seen in other school visits, regardless of grade level. Based on these observations, it would seem that, while the video and the class appear to promote the children's appreciation for the value of discussion and voting when deciding something important, this did not necessarily lead to more positive and concrete attitudes towards such things as being a leader. When watching the video and being pressed to make their decision regarding "Bridge or Parade," the children appear to realize the difficulty of narrowing various opinions to one and forming a collective opinion, which is, to some extent, reflected in the results of Q3.

The post-class questionnaire included two open-ended questions, Q4 and Q5. Table 3 shows excerpted responses to Q4: "Reasons for voting." Taken together, these answers indicate that the children were able to employ a basic thinking process weighing the two options and drawing a conclusion through the video and the class. Table 4 shows the responses to item Q5: "What did you think of Farmer Able is not voting?" Responses such as (G), (H), and (I), which are opinions regarding the video's contents, suggest that the children were able to correctly interpret the story that the video is attempting to tell. At the same time, responses such as (J) and (K), which are opinions regarding the general concept of democracy, suggest that the children can connect their vote with the final result of the mock voting and can recognize that a mass decision is an aggregate of each vote, and therefore, abstention means an abandonment of the right to have one's opinion included in the result.

Text data mining⁸

1. Data

Based on the questionnaire results described above, the structure of the children's awareness of voting and democracy was analyzed using text data mining⁹. For this purpose, Q5 ("What did you think of Famer Able is not voting?") was quite helpful, as it not only reveals the children's thinking about the contents of the video, but it also indicates their basic ideas regarding voting and elections. Consequently,

⁸ R, a statistical package, and KH Coder, a text mining tool for Japanese, were used for the analysis.

⁹ For research on text mining for Japanese in the political field, see Catalinac (2016; 2018).

text data mining was used to analyze the responses to Q5 of the 317 children (from 16 schools) who had attended the video presentation to develop a comprehensive picture of the children's democracy-related awareness.

2. Correspondence analysis

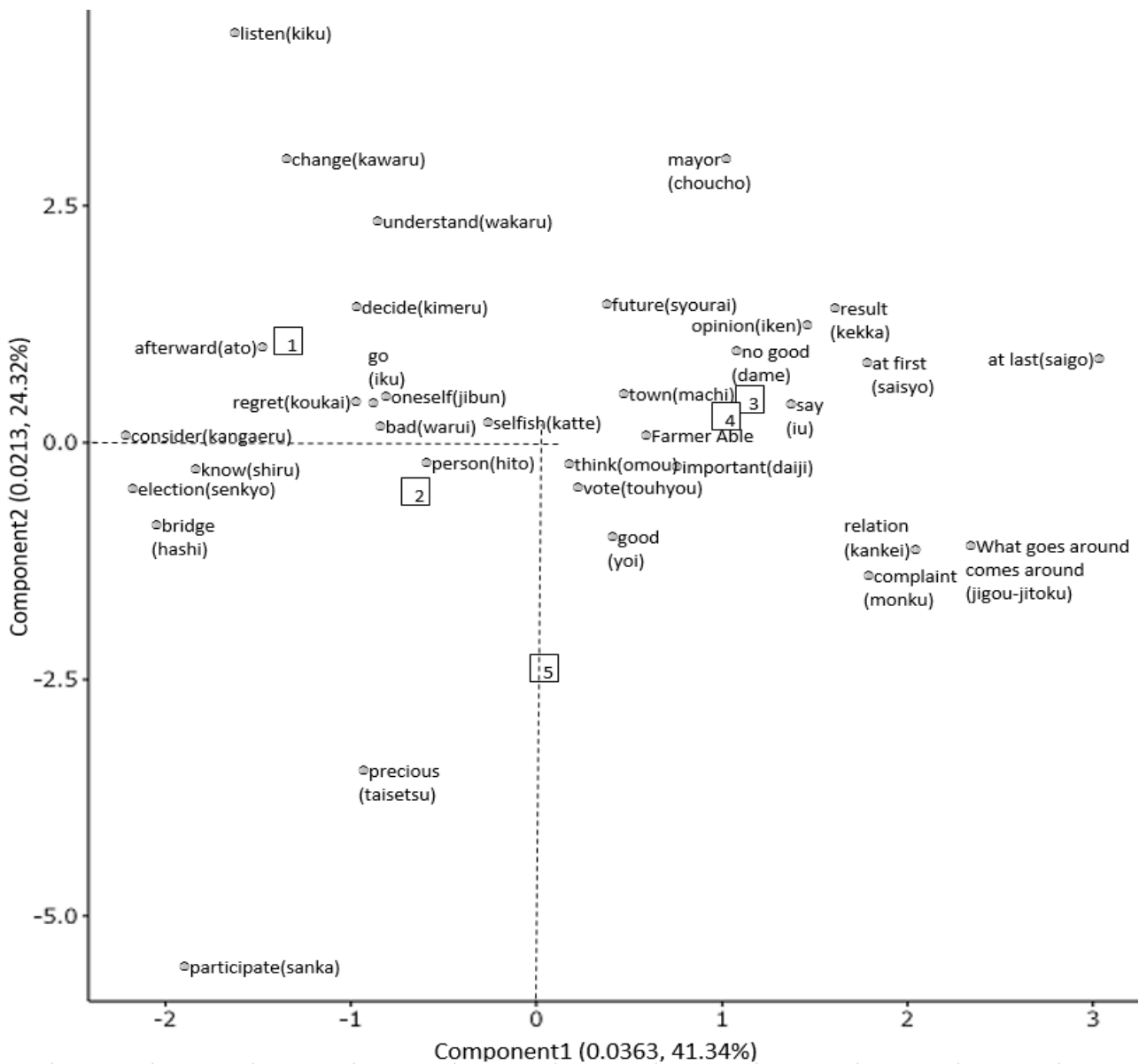


Figure 4. Result of correspondence analysis

First, relations among the words used in the children's responses to Q5 and the correlations with their responses to Q3 ("I would like to be a leader pulling others together") were assayed using correspondence analysis. Q3 was chosen here because, even after the class, the children's responses to Q3 were somewhat split than their responses to Q1 and Q2, making Q3 a more suitable partner for identifying a difference in consciousness among the children. (The Q1 and Q2 responses were strongly concentrated on the positive end of the scale, with "Strongly agree" and "Agree with a little" accounting for nearly all of the responses. Such a condition may not allow for a detailed analysis.

Figure 4 shows the results of the correspondence analysis of responses to Q5 and their correlation with the responses to Q3 after completion of the class¹⁰. The horizontal and vertical axes are the two

¹⁰ Results were displayed in Japanese. Figures 4 and 5 show the English translations.

primary components of the factor scores obtained from the analysis. Words for which the patterns of use in context are similar are plotted close to each other in the two-dimensional space; the numbers 1-5 indicate the responses to Q3 (1 is 'Strongly agree,' two is 'Agree on a little,' 3 is 'Neither agree nor disagree,' four is 'Disagree a little,' and five is 'Strongly disagree').

In the correspondence analysis, words characterizing a sentence that is plotted far from the origin (0, 0), such as "What goes around comes around (*jigou-jitoku* in Japanese, meaning to be the same afterward)," "at last (*saigo*)," "participate (*sanka*)," "consider (*kangaeru*)," "election (*senkyo*)," and "listen (*kiku*)" can be regarded as characteristic words showing the peculiarity of the response. As for the correlations with Q3, there are many positive-imagined words associated with Farmer Able's reflection and his intention to run in the next election, including "precious (*taisetsu*)," "regret (*koukai*)," "participate (*sanka*)," "change (*kawaru*)," "know (*siru*)," and "understand (*wakaru*)," situated in the space in the same direction from the origin as responses 1 and 2. In addition, some words that can be linked to Farmer Able's bad behavior and the unhappiness that it led to, such as "what goes around comes around (*jigou-jitoku*)," "result (*kekka*)," "no good (*dame*)," and "complaint (*monku*)," are plotted in the space in the same direction from the origin as 3, 4 and 5. These features suggest that the children's responses to Q3, which express their personal opinion about being a leader, are closely related to their responses to Q5, which indicate both their impression of the video story and their awareness of democracy.

3. PCA and correlation analysis

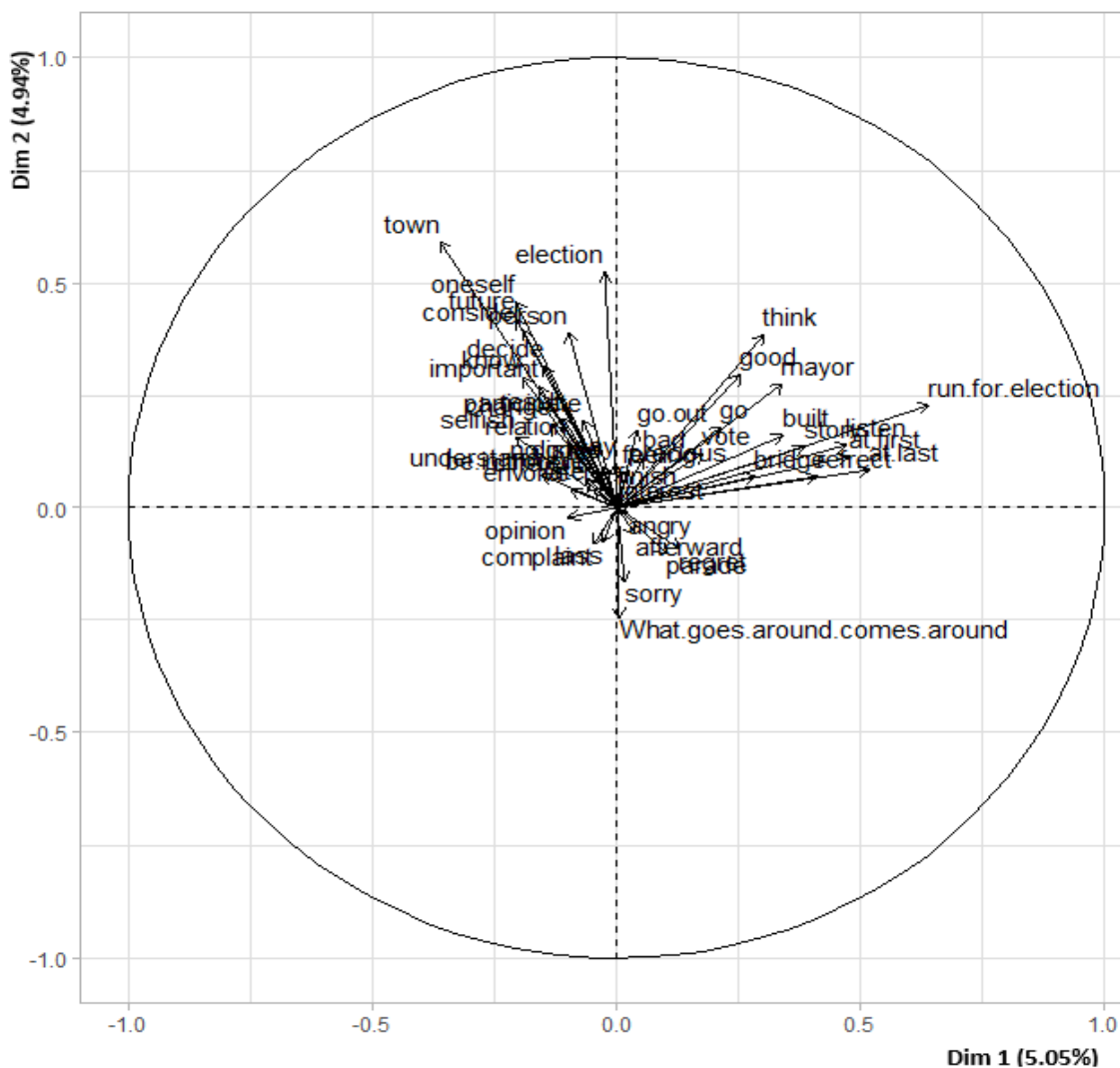


Figure 5. PCA graph of variables

Based on the correspondence analysis results, a more detailed picture of the structure of the children's awareness can be produced through principal components analysis (PCA).

Figure 5 shows the graph of the variables of the PCA conducted here using the 50 most frequently used words in the responses to Q5. In all, the PCA produced four principal components with an eigenvalue greater than 2.0. Figure 5 shows the two-dimensioned space defined by the two components with the largest eigenvalues.

The horizontal axis here can be interpreted as representing the children's opinions concerning the video story, especially Farmer Able's behavior, with terms such as "run for election (*rikkouho*)," "reflect (*hansei*)," "mayor (*chouchou*)," "town (*machi*)," and "oneself (*jibun*)." The vertical axis can be interpreted as indicating the children's thoughts about elections and democracy, with terms such as "what goes around comes around (*jigou-jitoku*)," "sorry (*zannen*)," "good (*yoi*)," "bad (*warui*)," and "think (*omou*)." Given the PCA graph consisting of these two dimensions, it seems reasonable that the responses to Q5 are influenced not only by the children's impressions of the video but also by their awareness of the nature of an election, which leads to the conclusion that the video had some effect on the children's understanding of democracy.

Table 5. Correlation between Q3 and Principal Component Scores

	Score 1	Score 2	Score 3	Score 4
Pearson Correlation	-0.06825	-0.13462	0.069579	0.006444
Sig.(2-tailed)	0.2256	0.01647	0.2167	0.909
N	317	317	317	317

Table 5 shows the correlations between the responses to Q3 and the principal component scores of the four components with eigenvalues greater than 2.0 in the above PCA. As shown, the correlation coefficient for Score 2 (dimension 2 in Figure 5) is statistically significant at the 0.05 level. This suggests a connection between the children's awareness of political matters, as represented by the election, underpinning their interpretation of the video story and their straightforward thoughts regarding democracy, especially about being a leader.

CONCLUSION

Focusing on democracy education, this article introduced a new tool to expand the understanding of democracy among young children. It included a cartoon video with an opportunity for mock voting. An analysis of school visits using the video and responses to a before-and-after questionnaire suggested that the video presentation promoted the children's understanding of the meaning of elections and influenced their opinion of democracy. Thus, the cartoon video and the school visits offer a new resource for democratic education. The author plans to continue conducting school visits to teach more students the essentials of democracy and, at the same time, increase the sample size of the study. Through the additional school visits, new insights not established in the current study are anticipated.

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