

Structuring Arguments in Civic Education - An Explorative Mixed-Methods Study

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- The explorative mixed-methods study analyses arguments within role-plays in civic education in a vocational class with 16 to 20 year-old students.
- The aim is to recognize the underlying structure of each argument.
- A model of discursive moves and a model of complexity levels were developed.
- The structures within the data could be made visible through the two models.

Purpose: The aim of this article is to show the underlying structure of developed argumentations in five role-plays recorded in civic education in a vocational school.

Method: Two models were developed to analyse discursive moves and to analyse complexity levels within students' arguments.

Findings: The models show the quality of argumentations in terms of structure from the two different perspectives of discursive moves and of complexity levels. An association between discursive moves and complexity levels may be assumed.

The ability of elaborating arguments and connecting them in more complex ways could not be significantly developed in this setting.

Research implications: The results illustrate the performance of the whole class. Further comparative analyses and the analysis of individual learners are needed to draw even more conclusions.

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1 INTRODUCTION

The political system in Switzerland, based on the principles of direct democracy, is complex and demands different skills from citizens in order to be able to participate. This participation is necessary for the legitimacy of the system and the state is thus interested in fostering the required skills. It is assumed that schools might play an essential role in preparing students for political participation (Koller, 2017, p. 52).

The aim of civic education is for young people to attain political maturity (Gollob, Graf-Zumsteg, Bachmann, Gattiker, & Ziegler, 2007, p. 5; Society for Political Didactics and Political Youth and Adult Education (GPJE) 2004, p. 9; Waldis & Ziegler, 2019). This can be achieved by teaching students to deal with the field of politics independently, to form and articulate their own opinions and to argue for their own perspective (GPJE, 2004). These skills are important for negotiations within the civil society and for the participation in the democratic process (GPJE, 2004). Additionally, individual argumentation is always embedded in a social context and can thus be part of a collective argumentation. Thus, it seems to be an important learning goal to recognize argumentations as a result of a discussion between two or more people (Detjen, Massing, Richter, & Weißeno, 2012) and also as a process rather than as a product (Gronostay, 2016, p. 42). Arguing practice in school is the focus of this publication. In order to be able to capture this arguing practice, an explorative mixed-methods study was carried out. In summary, the goal of this paper is to analyse collective argumentations in role-plays in civic education in vocational school. Therefore, the following research question will be investigated: What is the underlying structure of each argumentation in role-plays in terms of discursive moves and complexity levels?

This is further clarified by the following sub-questions:

- a. What is the distribution of different discursive moves?
- b. What is the distribution of different complexity levels?
- c. Is there an association between the discursive moves and the complexity levels?

For all research questions, similarities and differences between the five role-plays analysed are examined.

To answer this question, five role-plays were conducted within one class of a vocational school in Switzerland. These role-plays, which took place in 2014/2015 within one school year, will be structurally analysed, firstly with regard to discursive moves using a terminological inventory [‘Begriffsinventar’] based on Przyborski (2004). Secondly, with regard to the complexity of arguments, they will be analysed employing a 5-level-model. Since both models examine arguments in terms of structure, it will also be analysed whether there is an association between the two models.

In the following, I will explain the term ‘argumentation’ in civic education and show the basis on which the two models have been developed. After reviewing research approaches, the methods and data of this explorative mixed-methods study will be described before presenting the results and the conclusion of this paper.

2 THEORETICAL BACKGROUND

2.1. Argumentations in civic education

Petrik (2010, p. 54) describes argumentation as „a basic tool or key competence of democratic thinking and acting“. Being able to develop an argument and to argue individually or within a group is an important ability for initiating and supporting democratic processes and being part of a civil society in a democratic system.

In democracies with deliberative processes, as in Switzerland, this means being able to participate in political decision-making (Bächtiger & Steenbergen, 2013). Civic education should prepare students for this. However, it must be taken into account that the goal of argumentation in politics is to establish generally binding rules, while in civic education a teaching-learning process is initiated (Goll, 2012, p. 205).

When arguing, arguments are developed and an argumentation arises. The term argumentation refers to a monologue or dialogue-based social activity, "which is rationally guided, and primarily comprised of utterances" (Nielsen, 2011, p. 373). Descriptions of argumentation in civic education can be found in various competency models of civic education that emerged in the

German-speaking countries, following the debate of Pisa in the early 2000 (see e.g. Detjen et al. 2012; Krammer, 2008; Ziegler et al., 2012). In these models, argumentation is used in oral situations (Detjen et al. 2012; Ziegler et al., 2012) and is characterised by dispassion and reflection on the meta-level. According to the general literature, an argumentation starts with clarifying one's own position or that of a group and articulating this position. These positions are further developed through interactions with others and their subsequent feedback. After clarifying and articulating one's positions, the second part of the act is the arguing itself. Arguing should be matter-of-fact and is employed with the aim of convincing one's counterpart. The act ideally ends with a decision (Detjen et al. 2012, p. 69, 82; Lötscher & Sperisen, 2016; Massing, 2012, p. 262). In order to transfer this general description of argumentation to a subject-specific of civic education, political questions or a political context must be assumed (Manzel & Weißeno, 2017, p. 69; Krammer, 2008, p. 9) and both political language and the relevant specialised knowledge must be used (Gronostay, 2019; Richter, 2012, p. 183). For learners, argumentation is intended to pro-mote "deep-rooted political values and ideologies" (Petrik, 2010, p. 53) and "critical judgement and conflict resolutions skills" (Petrik, 2010, p. 57).

In civic education classes, argumentation is usually taught in oral, activity-oriented and interactive settings (Detjen et al., 2012, p. 84; Richter, 2012, p. 179). It is important to consciously promote argumentation. To this end, teachers must be clear about how they can help learners to recognise the quality of their argumentation and improve it accordingly (Gronostay, 2019, p. 30; Petrik, 2010, p. 54). For this teachers need characteristics that can describe and measure the quality of argumentation. The quality of argumentation can be assessed both in terms of content (Manzel & Weißeno, 2017, p. 75; Richter, 2012, p. 183) and in terms of structure (Manzel & Weißeno, 2017, 73).

To date we know little about the structure of argumentations conducted in interactive settings in civic education classes. Through sequence analysis, Gronostay (2016) was able to identify the frequency of references to individual categories of discursive moves in student discussions with assigned positions. Lötscher & Sperisen (2016), in turn, showed with their discourse analysis that decisions in class councils were often made by the intervention of teachers. Petrik (2010) developed a four-level argumentation model, in which the quality of the political perspective increases with each level. Using his data from two classes, he showed that the statements of learners in both classes can be classified in the lower two levels.

In this paper, I focus on discussions on political issues that have been conducted with vocational students. I will analyse these argumentations in terms of structure with regard to discursive moves and complexity levels. In previous research, as mentioned above, the data of several classes were analysed. In this study, data was collected five times during a school year in only one class.

2.2. Model of discursive moves

In the analysis of argumentations with discursive moves, the formal structure of an argumentation is made visible (Przyborski, 2004, p. 31). The individual statements of an argumentation are coded according to their function, e.g. the introduction of a new argument or the conclusion of a line of argumentation. The "interactive reference of the participants" (Przyborski, 2004, p. 43) is elaborated, which is a quality criterion for convincing others with arguments (Gronostay, 2019, p. 56). The use of this analysis and the discussion of the results are suitable for the promotion of argumentation in civic education. This analysis also makes it possible to critically reflect on individual arguments that have been presented (Gronostay, 2016, p. 53).

For the analysis of argumentation, various models were used and further developed in subject didactics. Zohar & Nemet (2002) have analysed science lessons using a code system for discursive moves. The authors formed categories such as formulating, disproving, confirming or concluding arguments and thus evaluated oral as well as written arguments of students.

In civic education, Lötscher & Sperisen (2016) based their analysis of class councils transcripts on the terminological inventory according to Przyborski (2004), which was developed from the documentary method for group discussions in order to understand discourses. Gronostay (2016) in turn developed her category system for the analysis of transcripts of controversial discussions based on studies by Leitão (2000) and Felton & Kuhn (see e.g. 2001). The category system thus obtained is comparable to the terminological inventory according to Przyborski (2004).

For this study's category system of discursive moves, the terminological inventory according to Przyborski (2004) was used and supplemented with categories from Gronostay (2016) and Lötscher & Sperisen (2016).

2.3. Model of complexity levels

In order to measure a student's level of a competence, reference is often made to the performance of complexity (Detjen et al., 2012, p. 23). Complexity is defined as the number of statements (quantitative evaluation) and the links between them (qualitative evaluation) which increase with each higher level. The complexity of a statement contains a quantitative and a qualitative level (Bernholt et al. 2009, p. 230). For this purpose, multilevel models have been presented in previous research (see e.g. at the didactics of science: Bernholt, Parchmann, & Commons, 2009; Kauertz, Fischer, Mayer, Sumfleth, & Walpuski, 2010; Neumann, Kauertz, Lau, Notarp & Fischer, 2007; for civic education e.g. Lötscher & Sperisen, 2016). A higher complexity level goes hand in hand with the further development of competence in a defined content area (Neumann et al. 2007, p. 107), a better integration and differentiation of knowledge structures (Neumann et al. 2007, p. 114), a higher level of cognitive activity (Kauertz et al., 2010, p. 142) and a more frequent switching of perspectives as well as increasing reflection (Bernholt et al., 2009, p. 238).

In order to measure the complexity of argumentations, models were developed based on the Toulmin model (2003), which names components of an argumentation (Manzel & Weißeno, 2017, p. 74-75; Erduran, Simon & Osborne, 2004, p. 928). It was concluded that such models are "too formal and quantitative" (Petrik, 2010, p. 57) and do not do justice to the analysis of interactive discourses presented in this article (Gronostay, 2019, p. 45-46). In order to measure the complexity of argumentation in civic education, Gronostay (2016, p. 48) restricted herself to "the number of reply moves per argument". Petrik (2010, p. 57-58) developed a model based on a qualitative approach according to Bybee (1997, cited in Petrik, 2010, p. 57). He presented complexity in four levels, ranging from a simple statement to considerations on the meta-level. Lötscher & Sperisen (2016) in turn adapted the model of hierarchical levels according to Grundler (2011, p. 199), devising a graduation of arguments which starts with a simple statement and leads up to complex justifications.

In this study, a multilevel complexity model was developed, which codes statements according to complexity and then counts the statements in each category (quantitative value). This approach was based on the considerations of Petrik (2010) and Lötscher & Sperisen (2016) as well as on structural models used in the didactics of chemistry and physics, which also tried to represent complexity in a graded and content-independent manner (see e.g. Bernholt et al. 2009; Kauertz et al. 2010). The above-mentioned work on political education was also included in the development of the model (Gronostay, 2016; Lötscher & Sperisen, 2016; Manzel & Weißeno, 2017; Petrik, 2010).

The two code systems of discursive moves and complexity levels (see below) were implemented to answer the research question above, i.e. to recognize the underlying structure regarding discursive moves and complexity levels of every argumentation made in role-play of a vocational school class. By applying two code systems, results were generated from two different perspectives with the goal of shedding light on the distribution of these structural elements in argumentations during role-play.

The resulting code system of discursive moves as well as the model of complexity levels will now be presented in the method section.

3 METHODS AND DATA

The data of the explorative mixed-methods study were based on five role-plays, which will be described in detail in the following section. Then, the methods of analysing the data are explained.

3.1. Intervention: Role-plays

The role-plays come from the educational game “ja-nein-vielleicht” [yes-no-maybe], which supports developing knowledge and different skills in civic education. It offers nine role-plays based on topics concerning democracy. The topics are given by a key question and discussed through different roles. Through the method of fishbowl discussion and moderated by one or two learners or the teacher, the three roles of supporters, opponents and undecided developed their argumentations on a given topic. The discussants sat in an inner semicircle in the middle of the classroom. The remaining classmates were the listening audience in the front of the classroom.

Every role-play started with a given photograph to introduce the topic (for all topics see Table 1), to develop a terminology and to lead over to the key question. The teacher carried out this initial sequence. Then the learners were given their roles by an online access to the educational game activated by the teacher. After that, the learners met in these groups to deepen their assigned position and collect arguments for their role. The teacher was generally available to answer questions and assist the groups in developing their arguments. The debate was then initiated by a presenter and ended with a statement from every group. The recommended length of a role-play was 30 minutes (for the precise length of each role-play see Table 1). Afterwards the learners voted on the key question before evaluating the method and the content together.

The instructions of the educational game stated to give the role of the moderation - like all the other roles - to students by chance. After the first role-play, the class decided to have the teacher as a moderator for the second role-play in order to learn how the role of a moderator can be fulfilled. Before the third role-play, the students wished to have the teacher again in the role of the moderator. For the fourth role-play, two students took the role of moderation voluntarily. One of the students had this role already in role-play 1. The teacher only supported the moderation for the last 3 minutes. In role-play 5, the role of moderation was selected by chance. The teacher again supported the moderation in the last 12 minutes, so from minute 22 up to the end (Table 1).

3.2. Participants

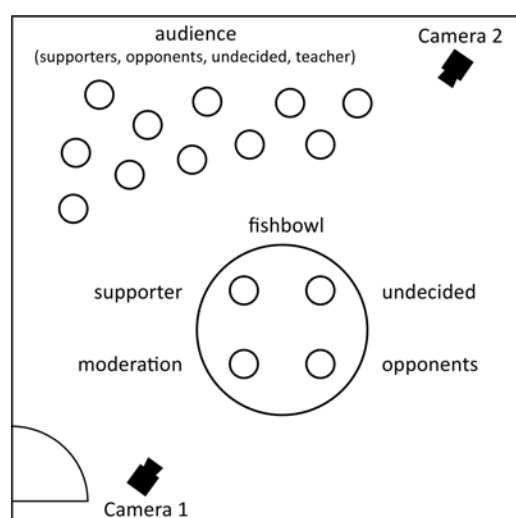
The role-plays were conducted in a vocational school in the canton of Aargau, a German-speaking canton in the northwest of Switzerland, from November 2014 to June 2015 (see Table 1) during the lessons of the so-called general education. The learners were between 16 and 20 years old (mean: 17,85 years, standard deviation (SD): 1,21). The class consisted of one woman and 12 men in the second of three years of their apprenticeship as production mechanics. It was the first time they had civic education in vocational school. The teacher was 31 years old and in his third year as a teacher of vocational schools.

Table 1: Characteristics of the five role-plays

Role-play	Key question	Date of recording	Length of role-play	Moderation
1	Can a democratically elected government be forcibly overthrown if it is not acting democratically?	November 2014	24:29	student A and student B
2	Should it be allowed for foreigners to work as policeman/policewoman, as it is already possible in some regions of Switzerland?	February 2015	25:30	teacher
3	Should people, who are entitled to vote, receive a fine, if they are not participating a vote or an election?	March 2015	41:33	teacher
4	Should a quota be introduced in the Swiss parliament demanding that at least 40% of the parliament members have to be female?	May 2015	31:28	student A and student C, teacher from min. 28:02
5	Should employees receive a financial compensation, if they have an accident at work?	June 2015	34:40	student D and student E, teacher from min. 22:49

3.3. Data collection

The described teaching sequences were fully recorded using two cameras. Camera 1 was placed in the classroom on the front left corner and recorded the inner circle during the debate. Camera 2 was placed on the back right (see Figure 1) and recorded the inner circle and the audience. No additional arrangements were taken for the collection of the sound.

Figure 1: Positions of the class and the cameras

Based on the record of camera 1, the entire debate was transcribed afterwards based on Kuckartz, Dresing, Rädiker & Stefer (2008). According to Kuckartz et al. (2008, p. 27), transcription rules should follow the purpose of the analysis. Therefore, the transcription was kept basic since this analysis is interested in the content of the argumentations rather than nonverbal cues and observations of speech. Speaker changes were marked by timestamps and information about the participant's names were anonymised (Kuckartz et al., 2008, p. 27-28).

3.4 Methods of Analysis

The study is based on qualitative content analysis, in which the evaluation is limited to the respective analysis model (Mayring, 2019, p. 3). Since the structure of an argumentation is to be

examined from two perspectives, two analysis models were developed using a mixed deductive-inductive approach (Kuckartz, 2014, p. 112): The first model analyses discursive moves, while the second aims to identify the complexity levels within an argumentation. The transcripts were analysed with the MAXQDA 12 software.

The transcripts were split into talk turns in order to code them in the subsequent qualitative analysis. In case it was not possible to set one single code for a talk turn, the talk turn had to be split. As they were two different coding models, the splits could be different from one model to the other.

Evaluating discursive moves and the complexity of argumentation includes the interpretation of the transcripts and the development of both models. As there are data of five role-plays, the verification of the model was made within the data and through two coders (the author is one of them). A coding manual with detailed descriptions was developed for this purpose. For both models a role-play was coded together and the coding manual was constantly revised. In a second step, both coders independently coded a role-play for each model. The resulting inter-coder reliability was evaluated through the program MAXQDA 12, a software for qualitative data analysis. Cohen's Kappa was 0,78 for the discursive moves as well as for the complexity. Differing codings were replaced after discussion. The codings of both analysis models were then quantified and interpreted.

The two coding systems are described below. The first coding system of the data was the coding based on the terminological inventory by Przyborski (2004, p. 64, p. 69-74). It identified individual statements in their "semantic form" (Przyborski, 2004, p. 61) in order to determine the relationship between individual statements based on their contents. The inventory differentiates very detailed, for example between explicit and implicit statements, which is beyond the scope of this study. For this reason, the terminological inventory was reduced to five categories. The employed categories for discursive moves are listed in Table 2.

As the terminological inventory was originally developed for group discussions and not for moderated role-plays, two categories were added: *off-topic* and *directive*. Gronostay (2016, p. 46) defined *off-topic* as an utterance which is not related to the discussed topic, such as organizational or disciplinary notes. In this study, her definition was expanded by categories concerning clarifying roles or the role-play itself. The second category *directive* is based on Löttscher & Sperisen (2016, p. 85). This category identifies discursive moves which demand for content without initiating a new topic. It was often used by moderators to switch from one topic to another or to ask participants for a statement.

Finally, the category *various* was added to the coding system and included all utterances which did not belong to the other categories. As this category had to be used only for 48 turns (3,59 %) out of 1341 turns, no other category was created. Often, turns of the *various* category were comments on directives without content or content developing moves, so that they could not be a discursive move following Przyborski's (2004) definition.

Turns that have been coded according to the categories *off-topic*, *directive* and *various* are referred to in the following as turns of discussion management activities. The turns coded according to the Przyborski terminological inventory correspond to the discursive moves themselves. They are referred to in the following as thematic turns.

Table 2 displays the code system of *discursive moves* with a definition and an example for each category.

Table 2: Code system of discursive moves

turns of discussion management activities		
category	definition	example
off-topic	not related to the discussed topic	I didn't introduce myself. I'm the presenter.
directive	is not initiating a new topic, but demands for content	You were the undecided ones. Has one side convinced you more than another?
various	doesn't belong to a category above	(Student 1: Can you convince him?) Student 2: Its going to be difficult
thematic turns		
category	definition	example
proposition	initiation of a new topic	You already know how much hospitals cost.
co-construction	developing and modifying a statement further	Student 1: This is discrimination. Student 2: Opposite the men. Student 3: No, I see a discrimination against men, if a women's quota of 60% would be.
consent	(explicit or implicit) agreement (of a statement)	Exactly.
denial	(explicit or implicit) negative or contrary statement (of a statement)	I don't think so. You can't force anyone.
conclusion	ending of a topic	Because it's better paid in Switzerland.

The second coding system analysed the *complexity levels* of each turn. The complexity of an argumentation shows the integration of different arguments within an argumentation and consequently the level of understanding concerning the discussed topic.

The quantitative level counts the number of statements in each argumentation and is a criterion of lower levels of the models (Kauertz et al., 2010, p. 142-143). The qualitative level represents "the afforded connections between single elements increases with each level of complexity" (Podschuweit, Bernholt & Brückmann, 2016, p. 146). The model presented here was developed based on the multilevel models and considerations presented in chapter 2.3. Table 3 shows the five levels of the adapted model explaining and exemplifying each level.

Table 3: Categories for complexity levels

Level	Complexity of an argumentation in civic education	Explanation	Example
1	Position	<ul style="list-style-type: none"> • Takes a position without generating or developing own content further • Demand for a precise content • Unfinished sentences, which will not be continued later 	<ul style="list-style-type: none"> • Yes • Could you put that in a number? • But on the other hand ...
2	One or several facts	Production of one or several incoherent facts	Because the government acted corruptly
3	Connection	Two or more facts are simply connected <ul style="list-style-type: none"> • As chronological sequence • With conjunctions 	<ul style="list-style-type: none"> • But if the women now show enough commitment, then the men become aware of it and then it changes by itself. • If you say 90% of men, then 10% of women have already made it.
4	Multilayer format	A more profound connection of two or more facts e.g. explanatory statement of a connection of level 3	If someone wants to become a policeman, then he actually wants to help the country get better. Why should he help Switzerland and not his country of origin?
5	Superordinate concept	The discussed topic is generalised and can be even detached from the argumentation itself and its related topic.	If the government is corrupt and behind it simply decides things that the people have not decided or they have not asked the people. They just did it. It's like when your parents want to go on holiday and don't ask you and just go there.

After having described the two coding systems, Table 4 displays the number of turns for each role-play for the two models. As already described in this chapter, the number of turns for the two models was different for two reasons. On the one hand due to the different splitting of the turns. On the other hand, an analysis of the complexity levels is only possible if the turn to be analysed has a content reference. For this reason, only the thematic turns were taken into account for the analysis of complexity levels.

Table 4: Number of turns

Role-play No.	Number of turns of discursive moves	Number of turns of complexity	
		in absolute numbers	in percentage of turns of discursive moves
1	220	132	60,0 %
2	255	167	65,5%
3	347	257	74,0 %
4	224	164	73,2 %
5	295	170	57,6 %

4. RESULTS

The results of the codings will be shown in three steps: first, the result of the discursive moves, second, the result of the complexity levels and third, the association between the discursive moves and the complexity levels.

4.1. Results of discursive moves

First, the results of the coding based on the code system of discursive moves are illustrated in Tables 5 to 7. Since the amount of discursive moves was between 220 and 347 per role-play, a comparison between the role-plays based on absolute numbers is not meaningful. For this reason, all three tables contain the proportion of a certain coding category measured by the total number of this category in the particular role-play (see Table 5-7).

Table 5 shows the total number of turns of discursive moves per role-play, divided into the two groups turns of discussion management activities and thematic turns (see Table 2).

Table 5: Turns of discussion management activities and thematic turns in absolute numbers and percentages of each role-play

Role-play	1	2	3	4	5	total	mean	SD
number of turns	220	255	347	224	295	1341	268.2	47.70
turns of discussion management activities	86 39.09%	83 32.55%	85 24.5%	57 25.45%	123 41.69%	434	86.8 32.36%	21.06 6.59
thematic turns	134 60.91%	172 67.45%	262 75.5%	167 74.55%	172 58.31%	907	181.4 67.64%	42.73 6.95

In total, we found 1341 discursive moves in five role-plays. The number of turns of discursive moves per role-play varied between 220 and 347 turns per role-plays. This makes an average number of 268.2 turns per role-play. 434 turns contained discussion management activities. This was an average of 86.8 turns or 32.36% per role-play. 907 turns belonged to thematic turns, which was 181.4 turns or 67.64% per role-play in average.

The higher percentage of turns of discussion management activities in role-plays 1 and 5 is correlated with a higher number of off-topic moves (see also Table 6). In the first role-play, this amount of "off-topic"-moves appears together with the fact that rules and strategies had to be explained during the role-play by the teacher who did not participate in the discussion. In role-

play 5, the teacher did not occupy an official role as moderator. Here, it could be observed that there were several small discussions within the audience to clarify the topic and terms. The teacher supported this clarification and therefore contributed to the amount of off-topic moves.

The turns of discussion management activities included the categories *off-topic*, *directive* and *various*. Table 6 shows the distribution of these categories per role-play.

Table 6: Turns of discussion management activities in absolute numbers and percentages of each role-play

Role-play	1	2	3	4	5	total	mean	SD
turns of discussion management activities	86	83	85	57	123	434	86.8	21.06
off-topic	45 52.33%	42 50.60%	43 50.59%	26 45.61%	67 54.47%	223	44.6 51.38%	13.09 2.93
directive	30 34.88%	34 40.96%	38 44.71%	27 47.37%	34 27.64%	163	32.6 37.56%	3.77 7.11
various	11 12.79%	7 8.43%	4 4.71%	4 7.02%	22 17.89%	48	9.6 11.06%	6.71 4.67

Off-topic turns occurred most frequently with a mean of 51.38% (SD = 2.93) followed by the directive turns with a mean of 37.56% (SD = 7.11) and the various with a mean of 11.06% (SD = 4.67). For all categories role-play 4 and 5 contain the highest and lowest values respectively.

The thematic turns included the categories *proposition*, *co-construction*, *consent*, *denial* and *conclusion*. Table 7 shows the distribution of these categories per role-play.

Table 7: Thematic turns in absolute numbers and percentages of each role-play

Role-play	1	2	3	4	5	total	mean	SD
thematic turns	134	172	262	167	172	907	181.4	42.73
proposition	28 20.9%	37 21.51%	48 19.28%	21 12.57%	26 15.12%	160	32 17.64%	9.53 3.47
co-construction	77 57.46%	65 37.79%	120 45.8%	73 43.71%	86 50%	421	84.2 46.42%	19.14 6.56
consent	5 3.73%	22 12.79%	30 11.45%	22 13.17%	23 13.37%	102	20.4 11.25%	8.26 3.65
denial	16 11.94%	24 13.95%	30 11.45%	41 24.55%	26 15.12%	137	27.4 15.1%	8.19 4.76
conclusion	8 5.97%	24 13.95%	34 12.98%	10 5.99%	11 6.4%	87	17.4 9.59%	10.03 3.61

Looking at the single numbers at Table 7, one can see, that with 5.97% up to 13.95% and a mean of 9.59% (SD = 3.61), the discursive move “conclusion” is the least used, compared to 37.79% up to 57.46% and a mean of 46.42% (SD = 6.56) for the co-construction as the most used.

Table 7 shows that propositions are between 12.57% and 21.51% with a mean of 17.64% (SD = 3.47). Compared to the conclusions already mentioned above, this result implies that not every proposition ends in a conclusion. Whereas only one quarter of the propositions ends in a conclusion in role-play 1, in the role-plays 2 and 3 around two thirds of propositions end in conclusions. However, this pattern does not repeat in role-plays 4 and 5.

Within the argumentations, there are equal or less moves of consent than of denials. The moves of consent are between 3.73% and 13.37% with a mean of 11.25% (SD = 3.65) compared to the denials with a range from 11.45% to 24.55% and a mean of 15.1% (SD = 4.76).

In contrast to role-play 1 and 4, the number of consent and denial were similar within the role-plays 2, 3 and 5. In role-play 1, there were three times more turns of denial than turns of content and in role-play 4 twice as much. A reason for these variations could not be found in the data.

The amount of co-construction with a mean of 46.42% (SD = 6.56) shows that during almost the half of all turns, argumentations were developed.

4.2. Results of complexity levels

With regard to the research sub-question b, Table 8 shows results of the complexity levels.

Table 8: Complexity levels in absolute numbers and percentages

Role-play	1	2	3	4	5	total	mean	SD
Number of turns	132	167	257	164	170	890	178	41.80
Level 1	50 37,9 %	37 22,2 %	75 29,2 %	43 26,2 %	38 22,4 %	243	48,6 27,6 %	13.98 5.78
Level 2	50 37,9 %	71 42,5 %	104 40,5 %	79 48,2 %	85 50 %	389	77,8 43,8 %	17.65 4.59
Level 3	29 38,3 %	52 31,1 %	69 26,8 %	39 23,8 %	42 24,7 %	231	46,2 28,9 %	13.56 5.32
Level 4	3 4 %	6 3,6 %	6 2,3 %	3 1,8 %	5 2,9 %	23	4,6 2,9 %	1.36 0.81
Level 5	0 0 %	1 1,7 %	3 1,2 %	0 0 %	0 0 %	4	0,8 1,45 %	1.17 0.73

The counting of the categories shows that complexity levels 4 and 5 were hardly reached. After all, 28.9% of all moves reach level 3. Most of the moves (43.8%) correspond to level 2, the lowest complexity level is represented with an average of 27.6% moves.

If we look at the value distributions between role-play 1 and role-play 5, we see that the percentage of moves on level 2 is the most common and is continuously increasing.

On the other hand, a continuous decrease of complexity level 3 can be observed from role-play 1 to role-play 4. But afterwards, it increase from role-play 4 to role-play 5. There are less linear variations for complexity level 1.

In total, the variation over all 5 role-plays is small. The maximum variation can be found in level 1 with 15.7 %, followed by level 2 with 12.1 % and level 3 with 14.8 %. As the amount of moves in level 4 and 5 are already a few, also the variance is small. On level 4 it starts from 1.8% and ends in 4% in role-play 1. On level 5, the range is between 0% in role-play 1, 4 and 5 to 1.2 % respectively 3 moves in role-play 3 and 1.7 % respectively 1 move in role-play 2.

Concluding, level 2 as the level with single facts has the most moves. As the complexity is asking for more connections between arguments with every next level, the amount of moves in absolute numbers and percentage is decreasing.

4.3. Association between discursive moves and complexity levels

Two coding systems were developed independently of each other for this study. Since both evaluate the structure of an argumentation from different perspectives, it is now interesting to know whether there is an association between the empirical data derived with the two systems.

Table 9 shows the distributions of turns in terms of observed frequency and expected frequency combining the two coding systems employed in this study. It must be acknowledged that the mentioned number of complexity levels is not equal with the one of Table 5. The reason is that one level of complexity can contain one or more discursive moves. Consequently, one complexity level can be counted more than one time.

Table 9: Combination of turns with codings of discursive moves and complexity levels, showed in absolute numbers or observed frequency and expected frequency

Com- plexity levels	Discursive moves									
	proposition		co-construction		consent		denial		conclusion	
	o.f.*	e.f.**	o.f.*	e.f.**	o.f.*	e.f.**	o.f.*	e.f.**	o.f.*	e.f.**
1	14	44	114	115	67	28	28	37	25	24
2	67	70	197	184	26	44	72	59	33	38
3	72	42	98	109	7	26	31	35	27	23
4	5	4	11	11	2	3	5	4	1	2
5	2	1	1	2	0	0	0	1	1	0

* observed frequency

**expected frequency (rounded to whole numbers)

It could be shown that almost all combinations of discursive moves and complexity levels were used.

The combination of co-construction from the discursive moves and complexity level 2 of the complexity levels was most frequently observed with an amount of 197 turns. It was also more than the expected frequency of 184 turns when there would be no association between the two dimensions at all.

The second most common was the combination of co-construction and complexity level 1 with 114 turns and an expected frequency of 115 turns. The observed and the expected frequency are almost the same.

The third most common was the combination of co-construction and complexity level 3 with 98 turns and an expected frequency of 109 turns. This combination was less frequently observed than expected.

A Pearson's Chi-squared test was done with all categories of discursive moves, but only the complexity levels 1-3, since levels for 4 and 5 contained too few observations for a reasonable statistical statement. It showed that the null hypothesis can be rejected. One could consider investigating that there is an association between discursive moves and complexity levels ($\chi^2 = 128.37$ (df = 8, $p \leq 0.001$)).

5 CONCLUSION

The analysis employed in this study provides a first overview on the structure of argumentations regarding discursive moves and complexity levels in role-plays in civic education.

The model to analyse discursive moves through an adapted inventory is helpful to recognize how students are discussing topics and reacting on arguments in role-plays addressing civic issues. The complexity levels showed the complexity on a qualitative and quantitative level for the content related turns.

It could also be shown with the Pearson's Chi-squared test that there could be an association between the discursive moves and the first three complexity levels.

With regard to the distribution of discursive moves, it was observed that more propositions were made than conclusions (see Table 7). Three possible explanations could be found in the data. First, students had to repeat their proposition since the other students did not listen or the propositions themselves were not understandable. Therefore, the propositions counted twice as every presentation of a proposition was one turn. Second, one proposition did not end in a conclusion, can be found in the circumstance, that new propositions were put in that were developed. And third, the argumentation continued without going back to the initiating process because of organisational reasons (e.g. change of discussing students) or different kinds of inputs from the teacher or other students concerning knowledge.

With regard to the distribution of complexity levels, the results showed that level 4 and 5 were rarely reached. This finding corresponds with the findings of a study conducted by Gronostay & Manzel (2013, p. 210). In that study, they included a model of five complexity levels, the fifth being comparable to the model used here. Similarly, moves on level 5 were rarely found.

The explorative mixed-methods study shows that the ability of elaborating arguments and connecting them in more complex ways was not significantly developed over the five role-plays in the investigated class. There are three possible explanations for this, firstly because of the discussion format, secondly because every role-play was thematically new and thirdly because of a lack of explicit argumentation training.

The format of the fishbowl discussion demanded a controversial discussion with opposing assigned positions, in which the undecided position was to be convinced by the supporters or opponents of the key question. The fact that this was implemented by the students is also reflected in the finding that there were more or equal numbers of denials than of consents.

This is consistent with other studies, which also state that in such a discussion format, students are not encouraged to accept opposing arguments and integrate them into their argumentation nor to question or even revise their views (Felton, Garcia-Mila & Gilabert, 2009; Felton, Garcia-Mila, Villaroel & Gilabert, 2015; Gronostay, 2016). Furthermore, less time is given to the counterpart to express himself, which leads to shorter and accordingly less elaborated statements with higher complexity (Felton et al., 2015; Gronostay, 2017).

It has been shown that students moved to higher complexity levels in their arguments after several lessons to the same topic (Brückmann & Bernholt, 2013, p. 93). In this study, however, every role-play had another topic, so it was not possible to deepen knowledge of one specific topic over several lessons.

After "an explicit teaching of argumentation" (Zohar & Nemet, 2002, p. 57), the complexity of the arguments as well as the number of justifications of an argumentation could be increased (Zohar & Nemet, 2002; Gronostay, 2017; Osborne, Erduran & Simon, 2004, p. 1015). Such a strategy teaching was missing in this case study. Similarly, Spiegel (2006, p. 73-74) emphasises the need for argumentation training prior to the content-driven role-play. Additionally, role-plays should be followed by a reflection on the manner of the arguments. Accordingly, the focus here is on the reasoning itself and no longer on the content. This also applies to role-plays in civic education. Learners must be taught how to argue before role-playing. After the role-play, it is necessary to analyse and reflect on the arguments made and to place them in the context of the knowledge conveyed beforehand. This corresponds to a clear argumentation exercise (Gronostay, 2014, p. 40) and not an uncontrolled "learning by doing" (Krelle, 2011, p. 132).

In contrast to German didactics, civic education has the task of imparting knowledge and making it applicable in various contexts. Accordingly, learning to argue should be linked to the subject (Heller & Morek, 2015, p. 18). Zohar & Nemet (2002, p. 57) were able to conclude from their study that explicit argumentation training not only had an impact on performance in argumentation, but also on knowledge in the corresponding field of biology. Taking this condition into account, role-playing as an activity-based approach in civic education continues to be a potentially successful teaching method in order to prepare learners for their role as active participants in negotiation processes and decisions in civil society.

The explorative study carried out here is based on a limited sample in a selected setting. The different role-plays were introduced thematically only briefly and were based on the students' existing knowledge. The topics were very heterogeneous. With regard to the ability to argue, no explicit argumentation training took place. Therefore, the results cannot be generalized. However, as the derivation and development of the models are based on models from different subject areas and for mainly oral situations, they can be transferred for other oral classroom situations. The findings in this paper mainly focus on a particular class in vocational school and the description of structural elements of argumentation. Furthermore, it is examined whether a

development of structural elements throughout the five role-plays emerged. The pattern found in this study does not support this assumption. Future studies could investigate whether a more detailed, thematic elaboration and explicit argumentation training before the role-play or a combination of both lead to more complex argumentations. In addition, the following could be examined if similar results will appear with other classes in different educational contexts. Additionally, it must be taken into account that only the performance of the whole class itself was analysed by the methods chosen. Whether individual learners made progress should also be a goal of further analyses.

Therefore, it is important that further studies also examine the preparation and evaluation of a role-play in civic education, on the one hand with regards of the practice of argumentation and explicit teaching how to argue and on the other hand to the improvement and consolidation of knowledge. These approaches should be added to the role-play evaluated in this study. It must also be examined whether another discussion format, such as a consensus-based discussion, promotes the quality of student argumentation in terms of its structure. Based on this study, it can be examined whether such modifications then applied are successful in promoting argumentation in civic education.

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