EU Grant Agreement number: 770045

Project acronym: DIALLS

Project title: DIalogue and Argumentation for cultural Literacy Learning in Schools

Work Package: 5

Title of deliverable: D5.3 Cross-comparative analysis of students' dialogue and argumentation skills

Due date of deliverable: 30th March 2021

Actual submission date: 21st May 2021

Author(s): Merce Garcia-Mila, Ana Remesal, Andrea Miralda, Jose Luna, Nuria Castells, Sandra Gilabert

Organization name of lead beneficiary for this deliverable: UB- University of Barcelona

Type: Report

Version 1

	Dissemination Level	
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
Co	Confidential, only for members of the consortium (including the Commission Services)	

Table of contents

Tables

1. Introduction

One of the goals of the DIALLS Project is to promote the development of cultural literacy through the use of dialogue and argumentation in teaching. This goal includes an analysis of how structured interactions guided by the Cultural Literacy Learning Programme promote effective intercultural dialogue and mutual understanding as students co-construct meanings with their peers living in Europe and beyond - in the case of Israel (see Deliverable 5.2). However, the pandemic struck Europe in the Spring of 2020 and had a significant impact on the collection of classroom data. Originally, lessons 3 (Key session 1 / KS1), 8 (Key session 2 / KS2) and 15 (Key Session 3 / KS3) were to be collected, that is data from the beginning of the DIALLS programme implementation, mid-point and the final lesson. But school closures meant that no Lesson 15 sessions were recorded. Additionally, the second data collection point (Key session 2) was extensively affected in most partner countries (see Figure 9). This has resulted in a very uneven dataset.

In deliverable 5.2 (Report on dialogue and argumentation qualitative analysis) we were able to use this opportunity to dive more deeply into the data that we had. However, we cannot ignore the impact on D5.3. This deliverable was designed to primarily capture cross-comparisons with focus on developments from lesson 3 to lesson 15. Due to the lack of any data for lesson 15 and only partial data for lesson 8, we present our data analysis and findings as only partial observations that are interesting and potentially informative and that give us cause to extend our DIALLS programme beyond the life of the project. Complementing the qualitative data presented in deliverable 5.2, deliverable 5.3 provides the quantitative analysis of the cross-comparison between sessions 3, and 8 of the CLLP (Cultural Literacy Learning Programme) applied in all participant classrooms from the different countries. The aim is to capture whether and how the argumentation dialogue, based on the aforementioned cultural literacy activities and materials (WP2 & WP3), relates to raising awareness of cultural identities and differences, and encourages the assessment, discussion and renegotiation of cultural values. Both in the case of teacher-student interactions and peer-to-peer interactions, our main measurements will focus on:

- the expression and understanding of different points of view
- the expression and understanding of cultural values underlying a viewpoint
- the ability to take into account and address different values and backgrounds

Likewise, we will be able to identify *significant effects* between the activities held, on the one hand, and the manifestation of dialogue and argumentation skills at a classroom or group level on the other hand.

In Table 1 (see Deliverable 5.2, page. 11 for more details) we can observe the Cultural Literacy dispositions of Empathy, Tolerance, and Inclusion in DIALLS dialogical framework.

Table 1

Cultural literacy dispositions in a dialogical framework

	Empathy	Tolerance	Inclusion
Dialogical attitudes	Effort to understand the values, the viewpoints, and the information underlying a specific claim	Active listening, caring sensitivity, and genuine openness about others' viewpoints, without judging them as right or wrong	Creating opportunities for more individuals to openly participate in knowledge construction through discourse
Impact on communication	Deep understanding	Requirement for empathetic (deep) understanding	Requirement for tolerance and empathetic (deep) understanding
Speaker's attitude	Other-orientedness	Openness to other-orientedness	Allowing other-orientedness
Dialogical manifestation	Third level dialogicity (interacting with another's viewpoint and the underlying values)	Second-level dialogicity (active listening)	First level dialogicity (inviting and eliciting others' viewpoints)

The present report builds on Deliverable 5.1 and 5.2 and provides the analysis of Task 5.3 of DIALLS project: Cross-comparative analysis of dialogue and argumentation skills (Leader: P7. Participant partners: P2, P5, P6, P7, P8). The goals of Task 5.3 are the statistical analyses of the transcribed and coded classroom dialogue and argumentation data gathered in WP3. The assumption leading the analysis is that cultural literacy develops through dialogue and argumentation, hence any manifestation of proficient dialogue and argumentation skills would also imply a proficient level of cultural literacy among youth. The complexity and volume of data to be analysed requires the collaboration of multiple partners.

The cross-comparative analysis between Key session 1 (session 3) and Key session 2 (session 8) of the CLLP applied in all participant classrooms from the various countries will focus on identifying how cultural literacy is manifested according to whether the dialogue activities are held in a classroom in Cyprus, Germany, Spain, Portugal, U.K., Lithuania, and Israel. Therefore, Country will be the first contextual variable. In addition to country, we included in the design five additional variables, to infer from the general school information, the characteristics of the students' groups in their natural environments in terms of classroom gender balance, ethnicity diversity, as well as the socio-economic status of the school district for each one of the participant schools, and whether these are urban or rural schools, or public or private. These contextual variables were not only not comparable across countries but also, they were not controlled experimentally in each classroom. As mentioned, the information was provided from the school, at a school level rather than at a classroom level. Given that this information was provided by the school, we must take into account that all lessons that came from that school presented the same characteristics in terms of these contextual variables.

Section 2.2 offers a description of the sample in terms of these five contextual variables: Socioeconomic Status (SES), Ethnicity Diversity, School Titularity (Public-Private), School Environment (Urban-Rural), and Gender Balance. For the sake of data protection, schools did not provide information for each participating classroom, but the information was provided at School level. Also, not all countries provided them (see Section 2.2).

Beyond these contextual variables the design includes two independent variables: Repeated Sessions and Educational Level (see below). Therefore, we work with two hypotheses: repeated sessions and educational levels, whereas the rest of variables will be used to explore the behaviour of the dependent variables in specific contexts (see Section 2.2).

Derivable 5.3 is structured into the following four main sections: Method, Presentation of the Analysis performed, Results, and Conclusions.

2. METHOD

This methodological section describes the unit of analysis definition, the sample analysed, and the definition and operationalization of independent and dependent variables for 5.3 quantitative statistical analysis

2.1 Unit of analysis

For the statistical analysis we will consider the lesson as the unit of analysis. That is, the video and audio recording of the session devoted to a wordless text (film or book) and guided by the lesson plan specifically designed for that material. Lessons were organized according to whole class session, small group session and teacher group sessions. Our analysis focuses on discursive interactions between teachers and students. In some cases, depending on whether the lesson is organized in small groups, the focus is on the interaction between the students themselves.

According to Vygotsky (1978), learning is a social process. It is an activity by means of which the child assimilates the social modes of activity and interaction. The 'argue to learn' perspective departs from the socio-constructivist principle (Vygotsky, 1978) of Socratic argumentative dialogue providing an ideal context for knowledge construction. For Vygotsky, what counts most is the student's learning potential. That is, what students can learn in interaction with more knowledgeable others, compared to learning on their own.

Given that learning takes place in **the discursive interaction** of the three corners of the interactive triangle (Mercer & Coll, 1994, see Figure 1), the interaction implies both agents (teacher and student) are connected by content through language, so they can co-construct shared knowledge. According to this educational principle, our analysis will focus on lesson turns (taken as utterances), uttered by teachers and students when the activity is organized either as a whole class, as a teacher with a small group or as students' small groups. Given that we focus on the interaction, we will not distinguish whether the utterances are produced by the teacher or by the students.

Figure 1

Interactive Triangle
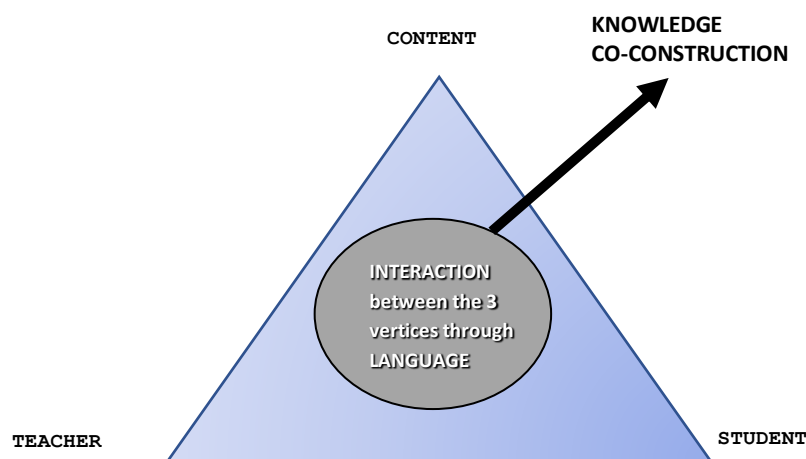
Within each lesson, the turns (taken as utterances), were coded according to the 5.2 coding scheme for each dialogic category (see Section 3.3 below and Deliverable 5.2 for more details). The coding unit is the turn (mostly taken as a line in the dialogue transcription); however, turns can express more than one dialogical move (Macagno & Bigi, 2017). To this purpose, the principle of code predominance is essential, which is used to decide how to code a turn when two or more distinct turns are expressed. This principle is based on the fact that a speaker is presumed to uptake the interlocutor's move and continue the dialogue that has been *proposed* thus far (Ducrot, 1972). Hence, the more dialogical code prevails over the less dialogical.

Frequencies for each category of codes were calculated for each lesson according to country, session, and educational level. Also, given the high differences in these frequencies (see Table 4 and Figure 11), in order to make sense of the numbers, we transformed them into proportions - as proportions of each discourse category for the dependent variable (see Section 2.3.3) as a percentage of all coded turns.

2.2 Description of the sample

The sample is described according to six contextual variables: Country, School titularity, School Environment, SES, Ethnicity and Gender. Data were analysed for each country but not statistically cross-compared across countries. These contextual variables capture the diversity of the sample in European educational contexts.

The sample is formed by 154 lessons from the seven participant countries in WP3 and WP5. Figure 2 presents the Distribution of Lessons for the seven participant countries.

2.2.1. Country

The variable Country consists in the seven countries participating in data collection for Deliverable 5.3 analysis: Cyprus, Germany, Spain, Portugal, UK, Lithuania and Israel (see Figure 2).

Figure 2

Percentage Distribution of Total Lessons according to Country
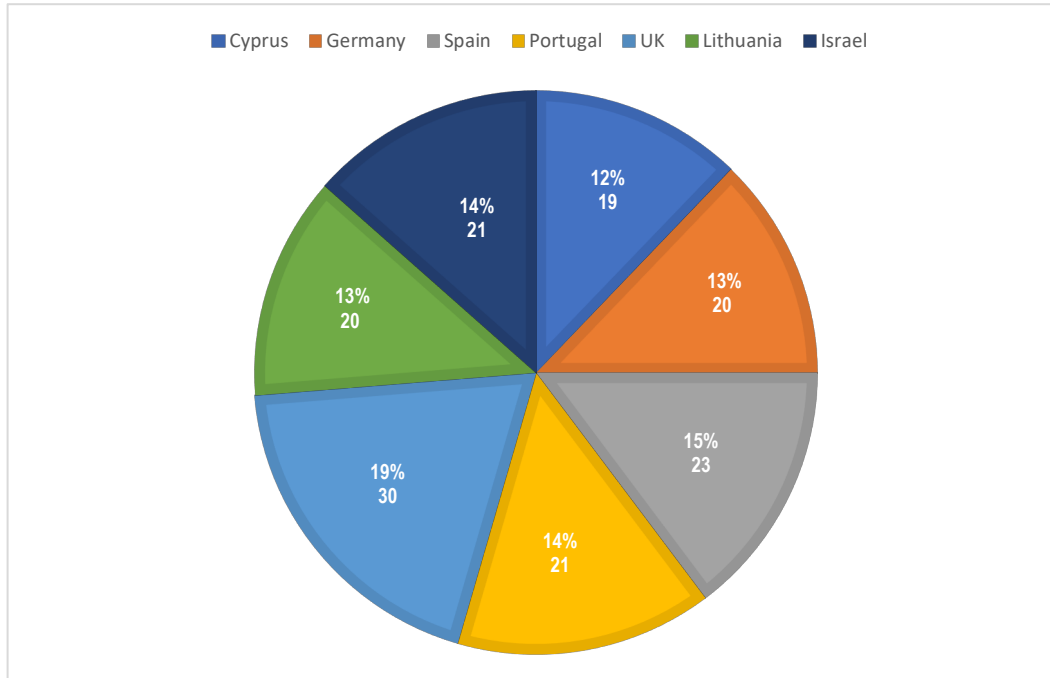
The general distribution of lessons across countries was quite homogenous in general, however, we highlight the higher proportion of UK in contrast with the rest of countries, almost 20% for UK versus approximately 13% for the rest (see Figure 2). In spite of this, country representation can be considered balanced.

2.2.2 School titularity

School titularity was removed from the analysis because only five lessons out of 154 that were implemented in public schools (see Figure 3).

Figure 3

Distribution of Lessons according to School Titularity by Country
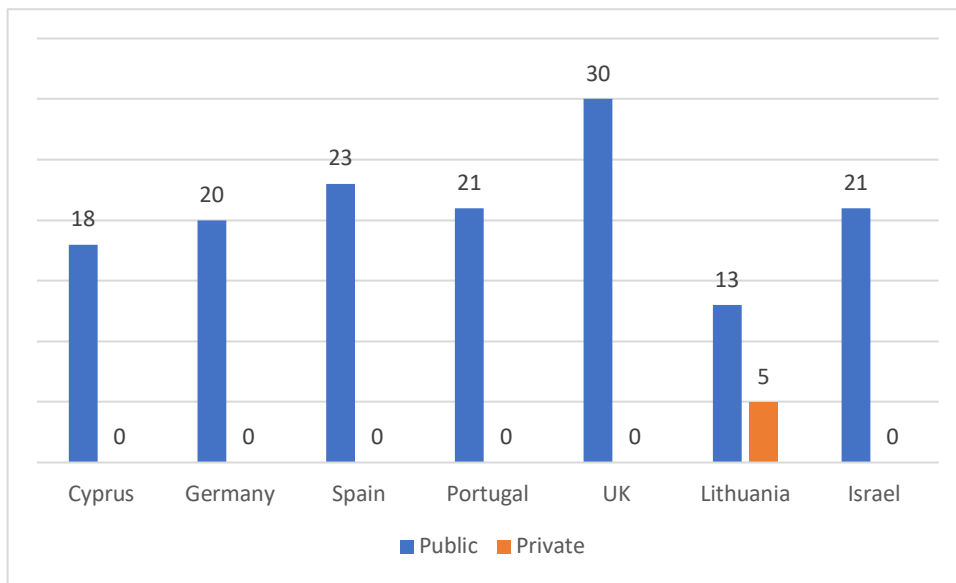
2.2.3. School Environment according to urban or rural context

The distribution of lessons according to school environment was unbalanced. As we can see in Figure 4, almost half of the countries did not include rural schools in their sample (Germany, Portugal and Israel) in contrast with Cyprus where most of its sample came from rural schools. U.K. and Lithuania showed a balanced sample in terms of school environment, and a third of Spanish sample belonged to rural schools.

Figure 4

Distribution of Lessons according to School Environment (Urban-Rural)
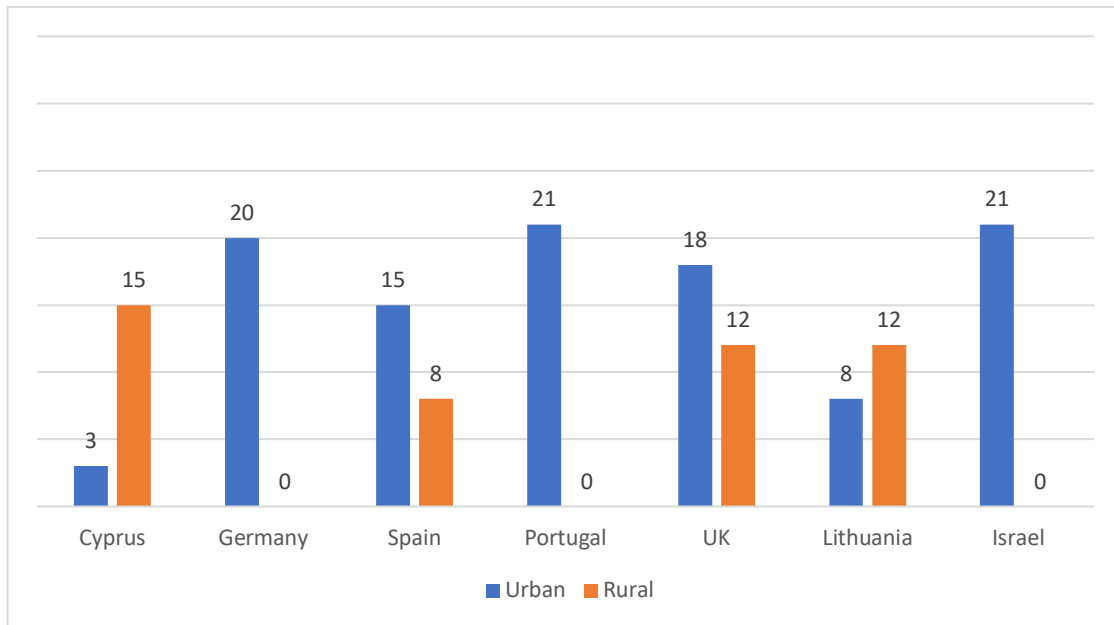
2.2.4. Degree of Socioeconomic Status (SES)

This variable was operationalized by means of the proportion of students receiving education subsidies, where possible, or general socioeconomic indicators at the district level otherwise. It was operationalized in 3 levels. It got assigned a value of 1: Low social inequality - if the proportion of students getting subsidised lunch or some kind of scholarship was lower than 5%; a value of 2: Medium social inequality - if the proportion was between 5% and 15%, and a value of 3: High social inequality - if the proportion was higher than 15% (see Figure 5).

Regarding the SES variable, we observe in Figure 5 that there was a slightly higher percentage of low SES schools (52%) compared to medium SES (31%) and high SES (11%).

Figure 5

Distribution of Lessons according to SES [a]

[a] no SES data were reported by Portugal and Israel
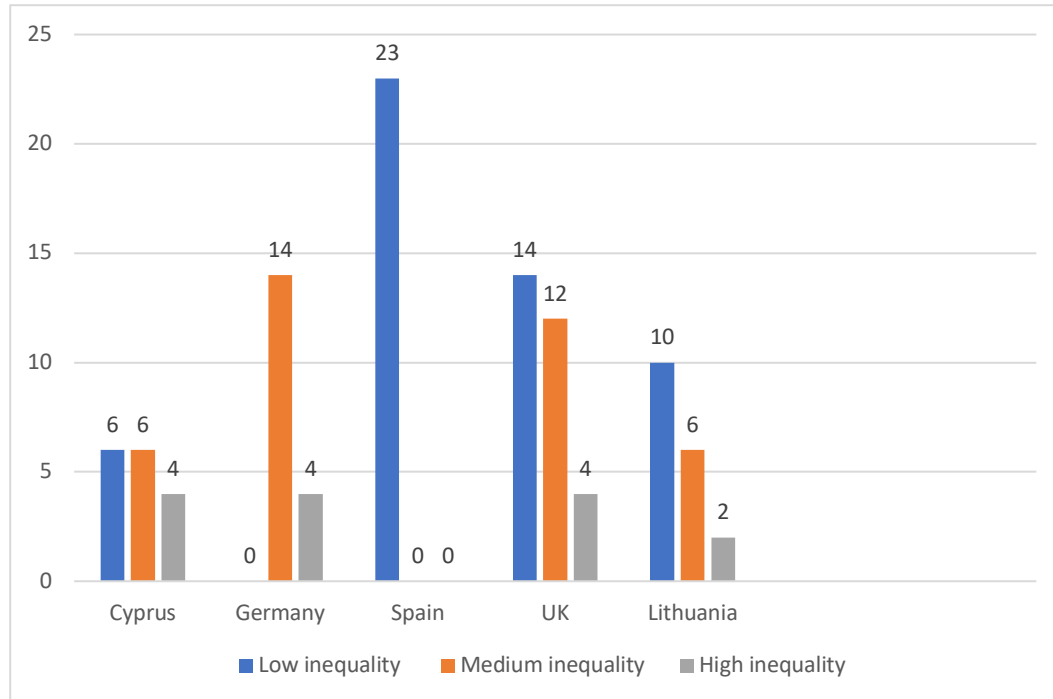
2.2.5 Degree of ethnicity diversity

In line with the previous Section, this contextual variable was operationalized into 3 levels: Low, Medium and High Ethnicity Diversity. It was measured by the degree of ethnic diversity as measured by country specific parameters in the school. It was assigned a value of 1: Low ethnicity diversity (if the proportion was lower than 5%), a value of 2: Medium ethnicity diversity (if the proportion was between 5% and 15%), and a value of 3: High ethnicity diversity (if the proportion was higher than 15%).

Similarly to the SES, data for Ethnicity diversity are incomplete. Only the schools for 53 classrooms provided these data, and they were distributed as 47% with low ethnicity diversity, 34% of medium and 19% of high ethnicity diversity. Portugal, Lithuania and Israel did not provide these data (see Figure 6).

Figure 6

Distribution of Lessons according to Ethnicity Diversity level [a]

[a] no data for ethnicity diversity were reported by Portugal, Lithuania, and Israel
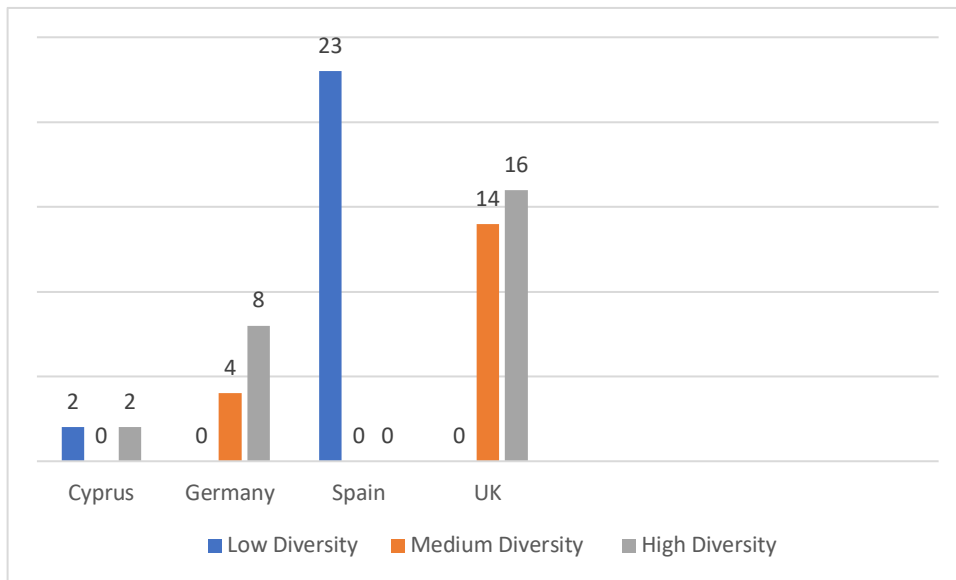
2.2.6. Gender distribution

As Ethnicity diversity and SES, Gender distribution was operationalized into 3 levels: 1) Homogenously distributed: Equal in proportion with a difference lower than the ratio 60/40; 2) Higher % of Female students: with a difference higher than the ratio 60/40; and 2) Higher % of Male students: with a difference higher than the ratio 60/40.

The equally distributed gender category showed the highest proportion with 83.7%, followed by the category male higher than female, with 11.5%, and 4.8% of the schools with female proportion higher than male. For five percent of the classrooms, schools did not report data (See Figure 7).

Figure 7

Distribution of Lessons according to Gender Balance
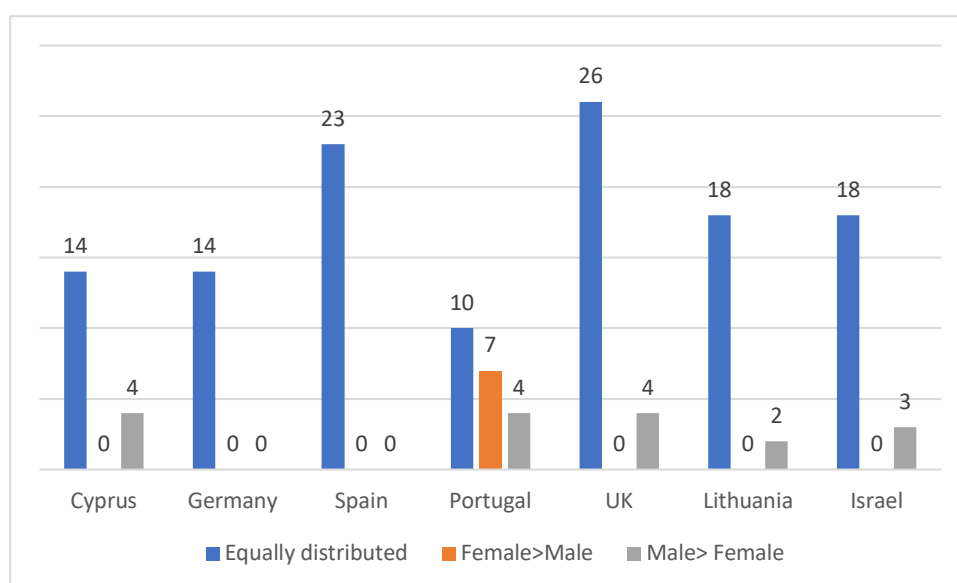
2.3. Definition and operationalization of the variables

2.3.1 Independent variables

As mentioned above, the study design includes two independent variables: Repeated Sessions (Session from now on) and Educational Level.

2.3.1.1. Session

As mentioned above, the project had planned three key point sessions: Key point 1, Key point 2, and key point 3, as sessions 3, 8 and 15, respectively (see timeline project example below), but schools lockdown caused by the Covid-19 pandemic meant that data gathering for Key point 3 (Lesson 15) could not be recorded. The first data collection was in Session 3 (Key lesson 1) and the second one, in Session 8 (Key lesson 2) of the CLLP. It must be highlighted that the independent variables were not experimentally controlled for during the implementation of the CLLP. That is, a theoretically based program was designed but each country adapted it to their own needs and characteristics. In Figure 8, we can observe the Project Timeline, with the eight implemented sessions, the two sessions recorded for data collection are highlighted (Key lesson 1 and Key lesson 2). All countries implemented a minimum of 18 hours of professional development sessions interspersed along the sessions (see Deliverable 3.3). Figure 8 shows the example of the Spain timeline.

Figure 8

Project Timeline
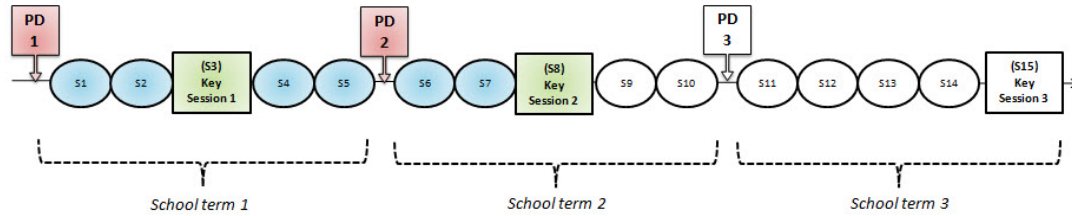
As shown in Figure 9, the number of lessons corresponding to Key lesson 1 was higher than those for Key lesson 2, with a total number of lessons for both sessions of 44, quite low for the sessions comparison. Therefore, the statistical analysis of the effect of session will be limited, with its potential effects difficult to observe. Four of the seven countries: Cyprus, Germany, Lithuania and Israel had 3/19, 4/20, 1/20 and 2/21 classroom sessions for both sessions, respectively, in contrast with Spain, Portugal and the UK, that had almost all sessions repeated with the same classroom for Key lesson 1 and Key lesson 2 (see Figure 9).

Figure 9

Distribution of Lessons according to Session by Country[a]

[a]The 44 total with both sessions are included in the 102 from Key lesson 1 and 52 from Key lesson 2.
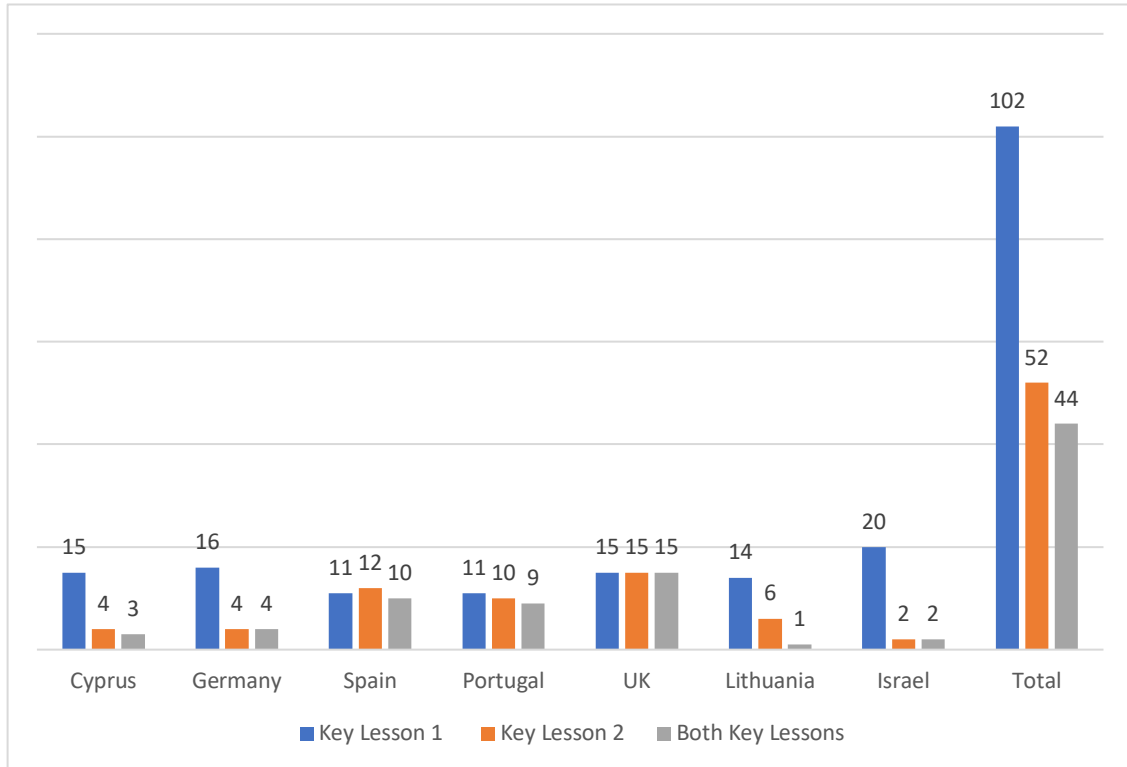
2.3.1.2 Educational level

There are three educational levels participating in the data collection: Pre-primary (5-6 years old), Primary (8-9 years old) and Secondary (14-15 years old). The distribution of frequencies for each educational level and country are presented in Figure 10.

Similarly, to the homogenous presence of classroom-lesson representing each country, the presence of educational levels in the general sample is also homogenous (approx. one third of each level). However, this distribution gets a little unbalanced when we look at this representation according to countries (see Figure 10). For instance, Cyprus has no presence of secondary school level, while Germany has a 60%.

Figure 10

Distribution of Lessons according to Educational Level by Country
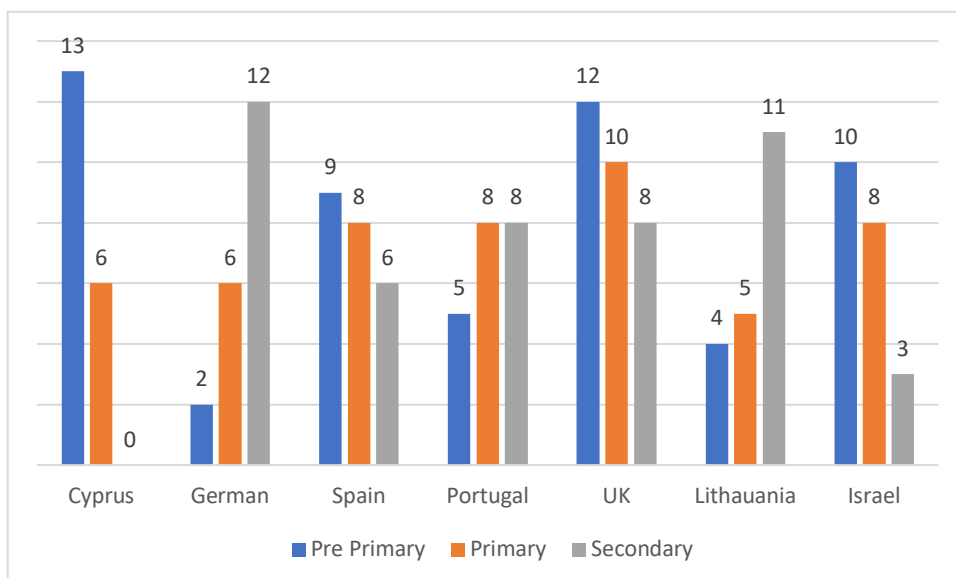
2.3.2. Description of the Dependent Variables (DV) and Hypotheses)

The dependent variable measures the Cultural literacy dispositions in a dialogical framework. This dependent variable was operationalized by the coding scheme developed in Del. 5.2 (see Table 1 and Table 3 in Deliverable 5.2 for examples). The resulting coded categories were: 1. Managerial, 2. Stating, 3. Accepting/Discarding, 4. Expanding, 5. Inviting, 6. Meta-dialogical, 7. Reasoning, and 8. Meta-dialogical-Reasoning. Additionally, the Relevance of an utterance was coded in parallel to the Dialogicity categories. Frequencies for each category in each lesson classroom discourse were calculated (see Table 2). The dimensions and the categories of this coding scheme are summarized below and described in detail in the codebook (see Appendix and Deliverable 5.2). As complementary tables, Tables A1 and A2 in the Appendix present the distribution of the mean number of turns for each type of class organization and the distribution of total mean number of turns and coded turns according to country, respectively.

Table 2

The dialogic empathy coding scheme

Dialogicity		Relevance
Low-dialogical	*High-dialogical*	
1. Managerial (**MA**)	4. Expanding (**EX**)	Irrelevant (**-**): when the move is off-task/off-topic or it does not refer to a previously stated contribution by another speaker
2. Stating (**ST**)	5. Inviting (**IN**)	
3. Accepting / Discarding (**AC/DC**)	6. Metadialogical (**MD**)	
	7. Reasoning (**RE**)	Relevant (**+**): when the move directly refers to a previously stated contribution by another speaker, or to the current state of dialogue in the case of 'meta-dialogical'
	8. Metadialogical reasoning (**MD-RE**)	

2.3.2.1. Low dialogical categories

Managerial (MA)

A fundamental distinction in classroom discourse analysis is between "epistemic talk" (Christodoulou & Osborne, 2014), namely a dialogue aimed at the achievement of the learning outcomes, and other types of talk identifiable in both teacher-student and student-student interaction, which are often characterised as "procedural" and "task talk" (Sarangi, 1998). Our Managerial (MA) category refers to the turns that fall into both the procedural and task talk type, distinguishing the turns that are used to establish the task (or norms for the task). In particular, MA turns includes both the turns referring to activity coordination, and the turns referring to turn-taking coordination.

Stating (ST)

This coding category refers to "representations," namely the conveyance of information, viewpoints, and value judgments on a state of affair or another viewpoint (Labov & Fanshel, 1977). This code includes any act of stating or asserting that a state of facts or ideas is true or false *without defending such assertion*. A ST move is defined based on the dialogical effect, not on its grammatical form. Therefore, this move can be performed also through sentences that are not assertive. For example, interrogative sentences can be used for different purposes, not only for asking questions, and a classical case is represented by rhetorical questions ("isn't it the

most…”), which do not convey requests of information, but rather claims. Similarly, proposals expressed in the interrogative form (“what about…”) do not request information, but first express something, and only secondly do they explicitly elicit what assertions and proposals normally do – a reaction that can be of agreement, disagreement, or acknowledgment.

Accepting/Discarding (AD)

Any act of accepting, acknowledging (AC), challenging or rejecting (DC) an opinion or a state of affair put forward by another speaker, without providing further reasons and without addressing potentially problematic background values, presuppositions or linguistic terminology, is considered an AC/DC code. It can range from a simple expression of a positive or negative reaction (e.g., “yeah,” “aha,” “you are right,” “correct” / “no,” “not true,” “I disagree,” etc.) to a more elaborated sign of agreement with another person’s perspective or opinion, either through restating it or reformulating it, but without justifying such agreement. This code includes any addition of information that remains at a textual level without the intent of making the others understand or improve their understanding of a previous move and without advancing a new idea.

2.3.2.2. High-dialogical categories

Expanding (EX)

This category refers to any effort of extending or emphasizing one’s own or another’s individual or shared perception about the issue at hand. It can take several forms, such as: giving an example, adding details, extending a thought, expressing doubt about someone’s ideas, clarifying something that was ambiguous, etc. Examples of such elaboration are the following (see also Hennessy et al., 2016): (a) Contributions to the dialogue that build on, give examples, add to, reformulate or clarify one’s own or other’s contributions; (b) Contributions that add something either in terms of content or in the way ideas are expressed. The repetition of one’s own or other’s ideas is not Expanding (it would be an irrelevant Stating).

Inviting (IN)

This category includes any discourse attempt to invite others to provide (further) reasoning and/or elaboration either on their own or on others’ contribution. The first type of attempt is expected to occur in both teachers’ and students’ discourse, while the second is normally expected in classrooms to be performed by teachers, as it is an expression of their discursive or dialogical agency. In small-group discussions, Inviting (IN) turns can emerge in the following stereotypical circumstances: (a) when a student invites other students to express their

viewpoint on a certain topic, either by repeating a teacher's invitation or by genuinely "reaching out" to the other's point of view; (b) when a student invites other students to advance their own viewpoint on a certain interpretation, either by asking simply a request for confirmation, agreement or disagreement, or by inviting in a more elaborated way others' ideas – opening up the space of debate among the group.

Metadialogical (MD)

Metadialogical actions "describe the behaviour of the speaker when he is doing something else besides 'taking his turn'," not moving the conversation further, but rather making a further contribution possible, relevant, and coherent (Labov and Fanshel, 1977). Meta-dialogical means talking about another move, turn, or discussion, in order to focus on a specific detail, which can be linguistic (prototypical case) or related to the subject matter (further focusing). A first case of the Metadialogical category refers to any verbal effort to explicitly make a connection between the current state of the dialogue (and/or the way it is understood) and its supposed/expected goal related to the activity in course. We call this *pragmatic metadialogical* type. A second case concerns the language itself and can be directed either to the interlocutor's linguistic uses, or the speaker's. This type of *linguistic metadialogical* turns can be: (a) requests of meaning explanation ("what does *x* mean?"); (b) requests of confirmation of understanding ("is my report/interpretation of your viewpoint correct?"); (c) statements of lack of understanding ("I do not understand *x*;" "For me, *x* is *y*"); or (d) explanations of meaning ("*x* means *y*").

Reasoning (RE)

This category refers to a class of conversational actions characterized by the disputable nature of the subject matter (Labov and Fanshel 1977), and includes arguments or counterarguments (where the doubt or potential dissent is taken for granted in the need of providing a justification). This code refers to any expression of a more or less justified idea about an issue at hand, which turns dialogue forward. It includes the following cases (see also Hennessy et al., 2016): (a) explicitly acknowledging a shift of position *by providing a justification* (otherwise it would be Stating); (b) challenging other's arguments, beliefs or assumptions *by providing reasons* (otherwise it would be Accepting/Discarding); (c) *synthesising or bringing together ideas*, or generalising – when it is for supporting a specific perspective; or (d) *making reasoning explicit* by using explanations, justifications, argumentation (providing an argument or a counterargument), analogies, or evidence, or formulating justified hypotheses.

*Metadialogical-reasoning (*MD_RE*)*

This type of move captures a unique combination of two types of turns, Meta-dialogical and Reasoning, and represents the highest level of potential dialogicity. It refers to challenges to viewpoints or arguments based on the meaning of the viewpoint or the argument.

2.3.2.3. Coding relevance

The degree of Relevance (low or high) is a distinct dimension of a move, which refers to how related a move is with the rest of the dialogue. In case of low-dialogical turns (Stating, Managerial, Accepting/Discarding), relevance captures the degree to which such turns are related to the topic under discussion or to the task/activity at hand. High-dialogical turns (Inviting, Expanding, Reasoning and Metadialogical) are classified as highly relevant when their dialogical transactivity is manifested, namely when they refer to the other's move. In both cases, the "reasoning by exclusion" rule applies, namely: if it is not irrelevant or lowly relevant, then it is highly relevant. The passage from a textual to a dialogical level (see also Macagno 2019) is decided following this rationale:

- Expanding. If a move expands the viewpoint proposed by the *same* speaker (expands his or her own move) without considering the other turns that have occurred in the meanwhile, then it is Expanding with a low relevance (EX-). So, the criterion of relevance is: is the speaker considering what the others said after his or her contribution?

- Inviting. The level of relevance is low (IN-) when it is an invitation for someone to say what (s)he thinks, without a clear manifestation of the speaker's interest in better understanding the other's opinion or relation with the rest of the discourse. High relevance codes (IN+) usually refer to a previously stated contribution which needs to be further explained, clarified, justified, etc.

- Reasoning. It is relevant (+) by default unless completely unrelated to the rest of the discourse, as it includes the possibility of a doubt (another's mind). If an opinion is expressed without a reason, it is Stating.

- Meta-dialogical. It is relevant when it addresses the previous move. When the MD move refers to the dialogue process or activity itself without any connection with the turns performed previously, then it is irrelevant (-). When a MD move refers to the dialogue

process without the intention of a genuine reflection on the dialogue goals, then it is irrelevant (-).

Given that the percentage of not relevant was very low (5%), it was not included for statistical analysis (see table 3).

Table 3

Descriptive statistics of Relevance

	Mean	Std. Deviation	not relevant
Coded Turns per session	352	193	
Relevant	336	188	95.4%
Not Relevant	16	190	4.5%

2.3.2.4. Class organization, total dialogical turns, and percentage of coded dialogical turns

Another parameter that yielded implementation differences across countries was the distribution of activities according to the organization of the groups. Whether the activity was a whole class activity (WC), a small group activity (SM) or a small group activity guided by the teacher (TG). The distribution of dialogical turns by the type of class organization activities can be seen in Figure 11 and Table 4.

Table 4.

Means Distribution of the Number of Turns per Session for Each Type of Class organization according to Country per Session

	Cyprus	Germany	Spain	Portugal	UK	Lithuania	Israel
WC coded turns	279	124	225	431	285	51	191
SM coded turns	52	219	72	257	166	165	120
TG coded turns	11	5	57	64	29	1	78

Figure 11

Distribution of the number of turns for each type of class organization per session
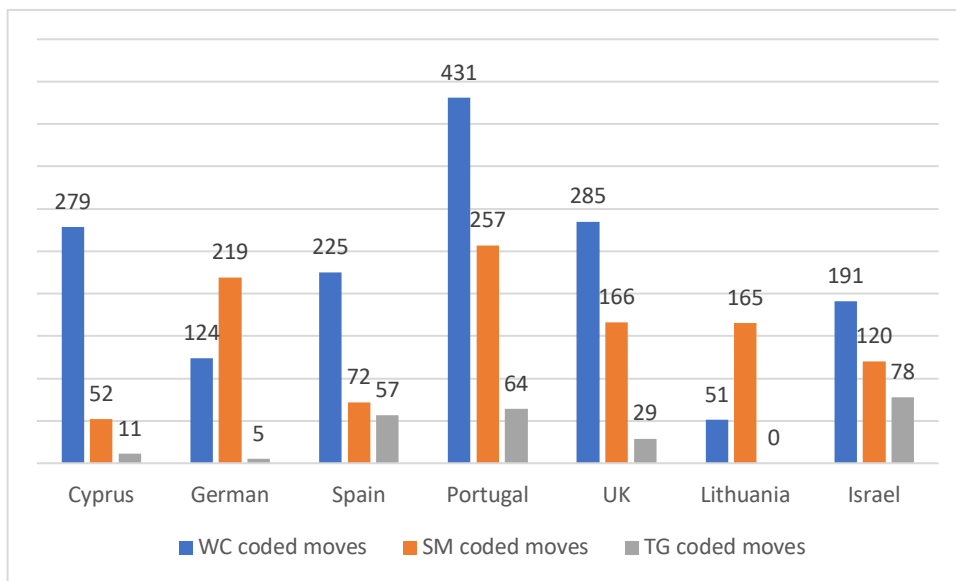
Furthermore, the number of coded turns varied across the three independent variables (Country, Educational level, and Session) and were not homogenously distributed. See Table 5 for distribution of total and coded turns for each country and Table 6 to consult statistical analysis for testing the Distribution.

Table 5

Distribution of Total Turns and Coded Turns according to Country per Session

Means (SD)	Cyprus	Germany	Spain	Portugal	UK	Lithuania	Israel
Total Turns	484 (150)	350 (180)	382 (135)	754 (283)	488 (178)	227 (188)	393 (191)
Coded Turns	429 (140)	229 (111)	344 (122)	616 (231)	360 (124)	174 (146)	289 (132)
% Coded	88,6	65,4	90,1	81,7	73,8	76,7	73,5

Table 6.

Kruskal-Wallis Statistics Comparing Number of Turns and % Coded Turns according to Country

	Number of Turns	% Coded
Chi^2 Value	52.7	.001
p value	60.8	.001

Figures 12 shows the distribution and percentage of total turns and coded turns according to country. Not all turns were coded, because some turns were not related to the topic of discussion. Therefore, we took the coded turns as a significant referent, over which to calculate the percentage of turns of each indicator and get the new corrected variable in percentages. That is, for example, for the indicator of Managerial, we computed the variable Percentage Managerial = number of managerial/total coded turns *100.

Figure 12

Number of Turns and % of Coded Turns according to Country.
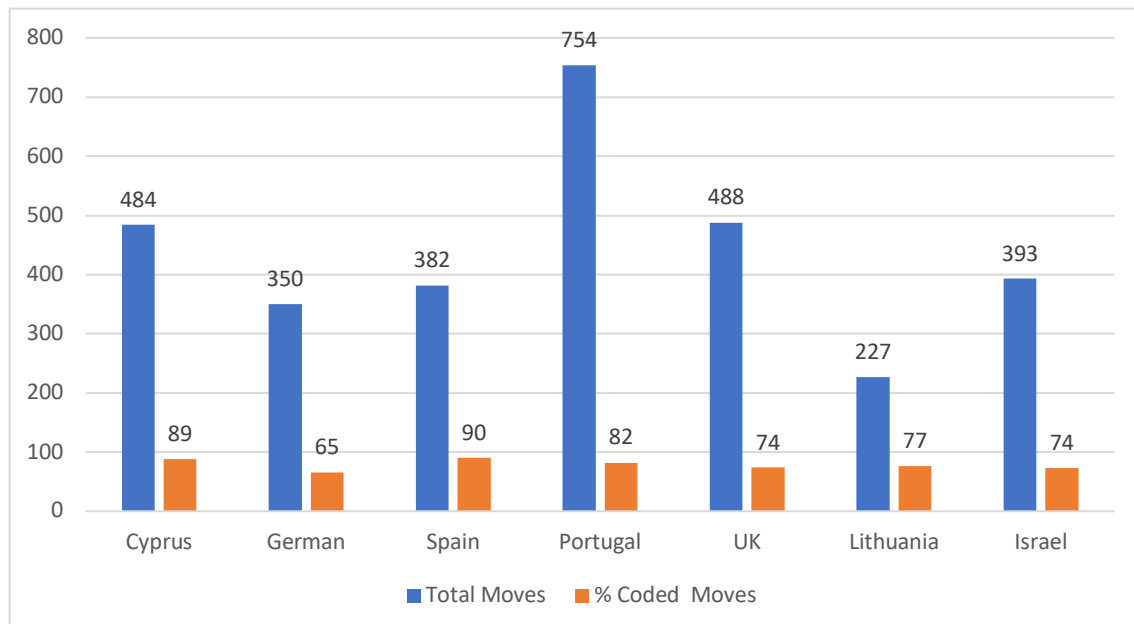
2.3.2.5. Hypotheses

The hypotheses for the statistical analysis of the variables Session and Educational level will be confirmatory, that is, we will contrast the following hypotheses for these two independent variables.

Hypothesis 1. Session: We expect to find a significant effect of the implementation of the classroom DIALLS materials and its prompts, on the different categories of the dependent variable. We expect to find a differential effect. That is, we expect to find a decrease in the proportion of low dialogical turns and an increase in the proportion of high dialogical turns.

Hypothesis 2: Educational level: We expect to find an increasing trend in the proportion of high dialogical turns along with the increasing educational levels: Pre-primary, Primary and Secondary Education.

3. PRESENTATION OF THE ANALYSIS PERFORMED

Results are structured in two sections. First, we performed bivariate analyses comparing each outcome (MA, ST, AD, EX, IN, MD, RE, MD_RE) by the two independent variables (Session and Educational level). Given that the data were not normally distributed, we performed nonparametric tests. Kruskal-Wallis test was applied when the variable was between subjects and had more than two levels (i.e. Educational level); and we applied Wilcoxon paired sample test for within subjects variables (i.e. Repeated Sessions), to compare the outcomes according to session for those classrooms with both Key lesson 1 and Key lesson 2. As we can see in Figure 9, the sample for this comparison is n=44. That is the number of classes that completed both Key lessons (1 and 2).

After performing bivariate analyses, we applied a generalized multivariable mixed-effects regression models (GLMM) to assess differences in outcomes according to the two independent variables. With multivariable regression, all effects are estimated at once and, therefore, they are unbiased by potential confusion, without loss of sample (i.e. all observations are used to obtain effect estimates, even if the two sessions are not available for all classrooms).

Moreover, GLMM allows taking into account the hierarchical structure of our data (two grouping level data) through random effects: sessions are within classrooms; and classrooms are within countries. Negative binomial GLMM were fitted for each outcome, including log (coded turns) as offset. So, the model parameters are interpretable as overall effects for all

classrooms and countries in terms of proportion ratios in their exponential scale; so that exp (parameter) is the proportion ratio for outcome versus the reference level.

The outcomes are structured in two main sections. Section 4.1 presents data for the Bivariate Analysis, with results for each of the eight dialogical categories (MA, ST, AD, EX, IN, MD, RE, MD_RE). All the dialogical categories are analysed in terms of the independent variables. In Section 4.2 we present the outcomes of the multivariable regression analysis also for each dialogical category.

4. RESULTS

4.1 Bivariate analysis

The results of the bivariate analysis are presented according to the two independent variables: Session and Educational level. Also, the outcomes for these variables are described for each country, to explore how the data behave.

4.1.1. Bivariate by session

The comparison of the proportion of each discourse category over coded turns according to sessions (Hypothesis 1) statistically performed using the Wilcoxon test showed an effect of repeated sessions on two discourse categories (MA, Wilcoxon=289, *p<.015,* and RE, Wilcoxon=703, *p<.001).* In Tables 7 we observe the medians obtained by the GLMM model with medians indicating a significant decrease in MA and a significant increase in RE, from Key lesson 1 to Key lesson 2. That is, how the percentage of each discourse category changed from Key lesson1 to Key lesson 2. All the dialogical turns slightly increase in Key lesson 2, except for Managerial category.

Table 7

Distribution of Wilcoxon Statistics Paired Sample Test according to Session for the Whole Sample.

	MA	ST	AD	EX	IN	MD	RE	MD_RE
Z Wilcoxon	-2.41	-1.16	-1.09	-0.73	-0.42	-0.604	-2.25	-1.48
p value	.025	.243	.273	.465	.674	.546	.024	.136

In addition, comparison between Key lesson 1 and 2 for each dialogical category are presented in Figures 14 to 21, for each country.

Table 8 shows differences in the use of each discourse category according to session. We can observe that all discourse categories, except for EX *(p<.008)* are used differently by the different countries in Key lesson 1 In contrast, this homogeneity in the use of EX disappears in Key lesson 2. We can say that in Key lesson 2, all categories are used differently according to country (see Table 8). Table 9 shows the medians obtained in the bivariate analysis for Key lesson 1 and Key lesson 2.

Table 8

Distribution of medians of proportions according to session

	Key Lesson 1 (N=44)	Key lesson 2 (N=44)
Managerial (proportion), Median [P25; P75]	0.20 [0.13;0.32]	0.17 [0.12;0.23]
Stating (proportion), Median [P25; P75]	0.24 [0.18;0.32]	0.26 [0.21;0.33]
Accepting/Discarding (proportion), Median [P25; P75]	0.12 [0.09;0.17]	0.13 [0.08;0.22]
Expanding (proportion), Median [P25; P75]	0.06 [0.04;0.10]	0.06 [0.05;0.11]
Inviting (proportion), Median [P25; P75]	0.17 [0.13;0.25]	0.17 [0.11;0.27]
Meta-dialogical (proportion), Median [P25; P75]	0.03 [0.01;0.07]	0.03 [0.02;0.06]
Reasoning (proportion), Median [P25; P75]	0.06 [0.03;0.09]	0.07 [0.05;0.10]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]	0.00 [0.00;0.00]

Table 9

Statistical Test for Each Discourse Category Use in each session (N=44)

	Key lesson 1 *p*-value	Key lesson 2 *p*-value
Managerial (proportion), Median [P25; P75]	<0.001	<0.001
Stating (proportion), Median [P25; P75]	<0.001	0.018
Accepting/Discarding (proportion), Median [P25; P75]	<0.001	0.004
Expanding (proportion), Median [P25; P75]	<0,08	0.001
Inviting (proportion), Median [P25; P75]	<0.001	<0.001
Meta-dialogical (proportion), Median [P25; P75]	<0.001	0.01
Reasoning (proportion), Median [P25; P75]	<0.001	<0.001
Metadialogical-reasoning (proportion), Median [P25; P75]	<0.001	<0.001

Table 10

Comparison of each Discourse category use according to Country for both sessions (Kruskal-Wallis Test

	%MA	%ST	%AD	%EX	%IN	%MD	%RE	%MD_RE
Chi^2	57.60	89.2	81.1	15.2	56,2	68.9	73.4	48.8
df	6	6	6	6	6	6	6	6
Asymp. Sig.	.000	.021	.000	.019	.000	.000	.000	.000

To sum up, we observe in Table 9 and in Figure 13 that when the discourse categories are compared according to session, the category Managerial (a low dialogical category) decreases with sessions and the category Reasoning (a high dialogical category) increases across sessions.

This bivariate analysis (Kruskal-Wallis) compares whether there are differences in the use of the different discourse categories across countries. As illustrated in Fig. 21, the Kruskal Wallis statistical test shows that the use of each category varies according to the Country, when both sessions are pooled together (Table 10 and Fig. 21) and for each session separately (see Table 11).

Table 11

Statistical Test for Each Discourse Category Use for Each Session (N=44)

	Key lesson 1 p-value	Key lesson 2 p-value
Managerial (proportion), Median [P25; P75]	<0.001	<0.001
Stating (proportion), Median [P25; P75]	<0.001	0.018
Accepting/Discarding (proportion), Median [P25; P75]	<0.001	0.004
Expanding (proportion), Median [P25; P75]	<0.08	0.001
Inviting (proportion), Median [P25; P75]	<0.001	<0.001
Meta-dialogical (proportion), Median [P25; P75]	<0.001	0.01
Reasoning (proportion), Median [P25; P75]	<0.001	<0.001
Metadialogical-reas (proportion), Median [P25; P75]	<0.001	<0.001

Also, Figures 14, 15, 16, 17, 18, 19 and 20 represent the use of each category according to session for Cyprus, Germany, Spain, Portugal, U.K., Lithuania, and Israel, respectively.

Figure 13

Distribution of Mean Percentages of each Discourse Category for all Countries and According to Session
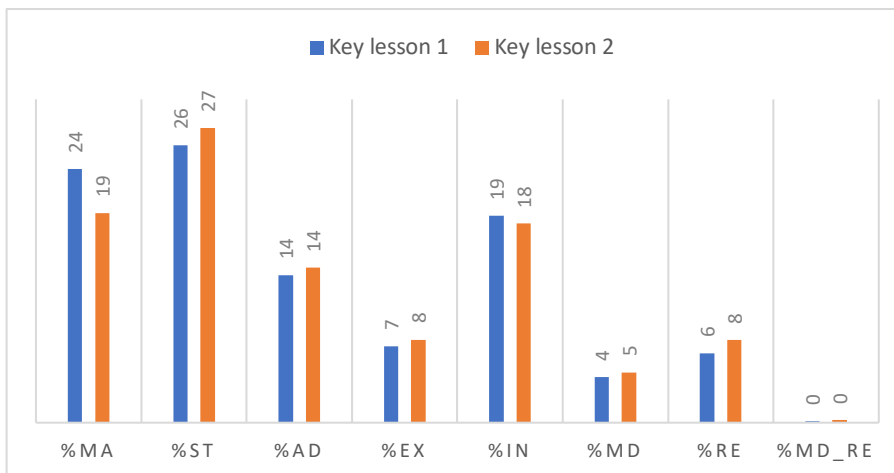
Bivariate for each specific country

In order to explore how the discourse behaved in each country we illustrate the distribution of each discourse category for each country (Cyprus, Germany, Spain, Portugal, U.K., Lithuania, and Israel), according to sessions, in Figures 14, 15, 16, 17, 18, 19 and 20, respectively. In addition, in Figure 21, we can observe the comparison across countries for both sessions pooled together.

Figure 14

Distribution of Mean Percentages of each Discourse Category according to Session for Cyprus (n=3)
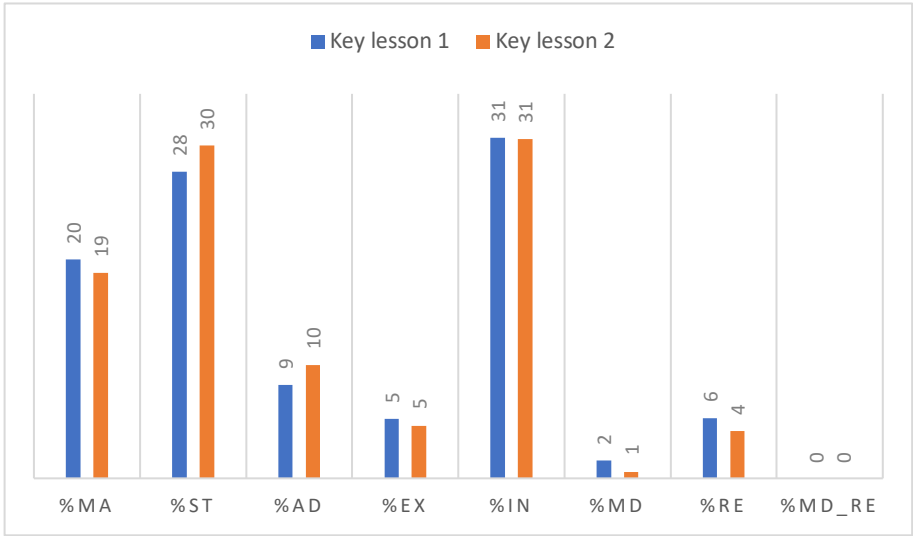
Tables A3 and A10 show the medians for proportions of each discourse category for Cyprus, for Key lesson 1 and Key lesson 2, respectively.

Figure 15

Distribution of Mean Percentages of each Discourse Category according to Session for Germany (n=4)
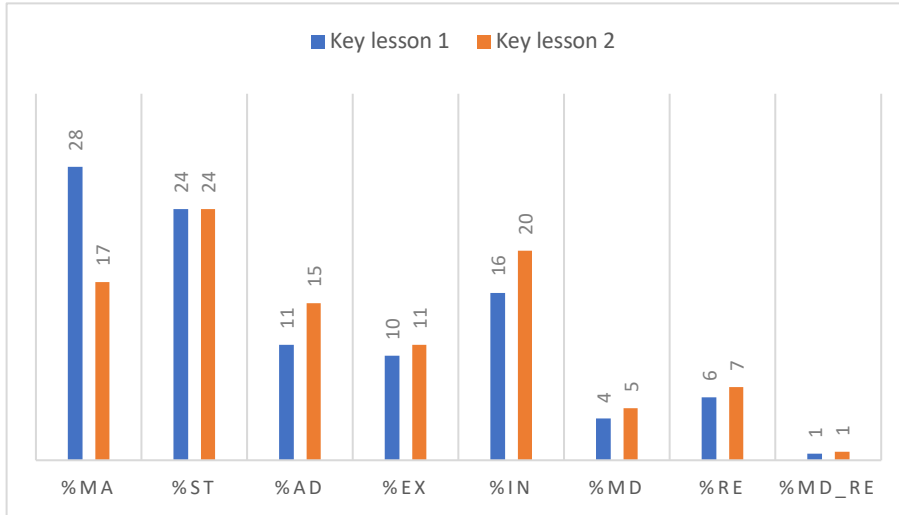
Tables A4 and A11 show the medians for proportions of each discourse category for Germany, for Key lesson 1 and Key lesson 2, respectively.

Figure 16

Distribution of Mean Percentages of each Discourse Category according to Session for Spain (n=10)
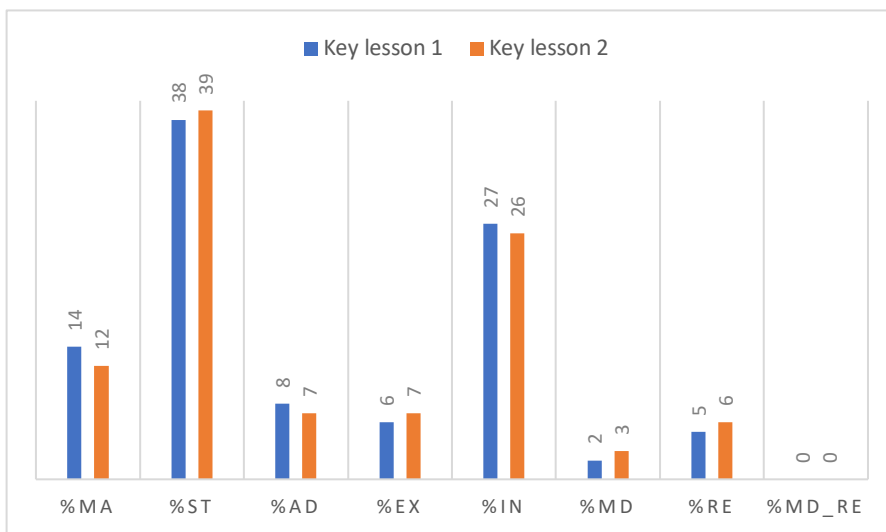
Tables A5 and A12 show the medians for proportions of each discourse category for Spain, for Key lesson 1 and Key lesson 2, respectively.

Figure 17

Distribution of Mean Percentages of each Discourse Category according to Session for Portugal (n=9)
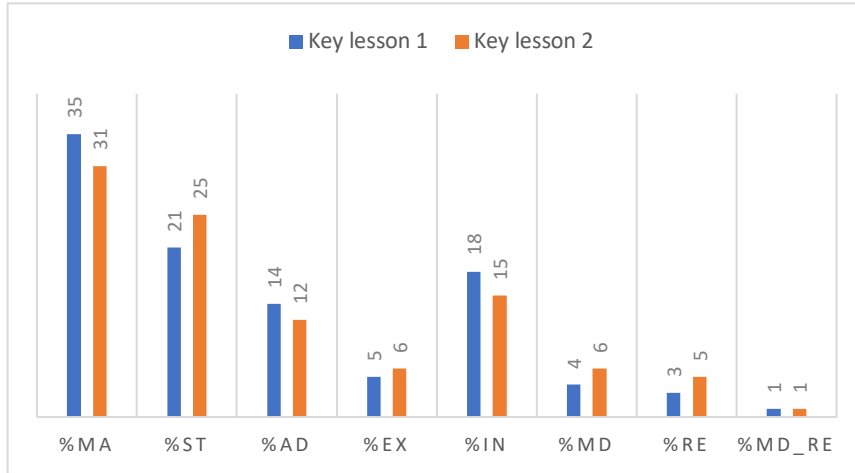
Tables A9 and A13 show the medians for proportions of each discourse category for Portugal, for Key lesson 1 and Key lesson 2, respectively.

Figure 18

*Distribution of Mean Percentages of each Discourse Category according to Session for U.K.
(n=15)*
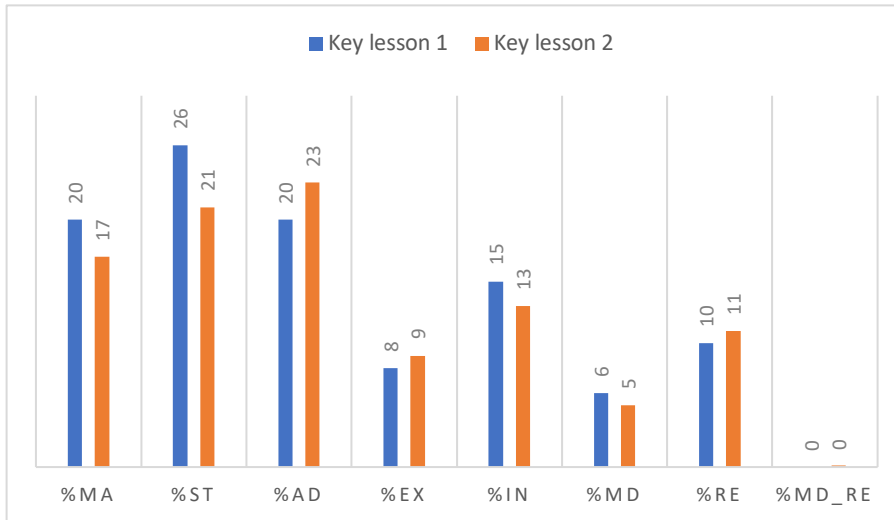
Tables A6 and A14 show the medians for proportions of each discourse category for U.K., for
Key lesson 1 and Key lesson 2, respectively.

Figure 19

*Distribution of Mean Percentages of each Discourse Category according to Session for
Lithuania (n=1)*
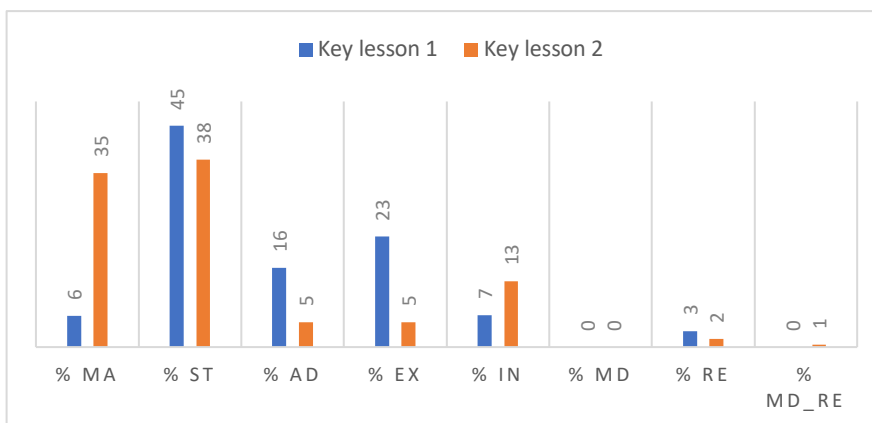
Tables A7 and A16 show the medians for proportions of each discourse category for Lithuania,
for Key lesson 1 and Key lesson 2, respectively.

Figure 20

Distribution of Mean Percentages of each Discourse Category according to Session for Israel (n=2)
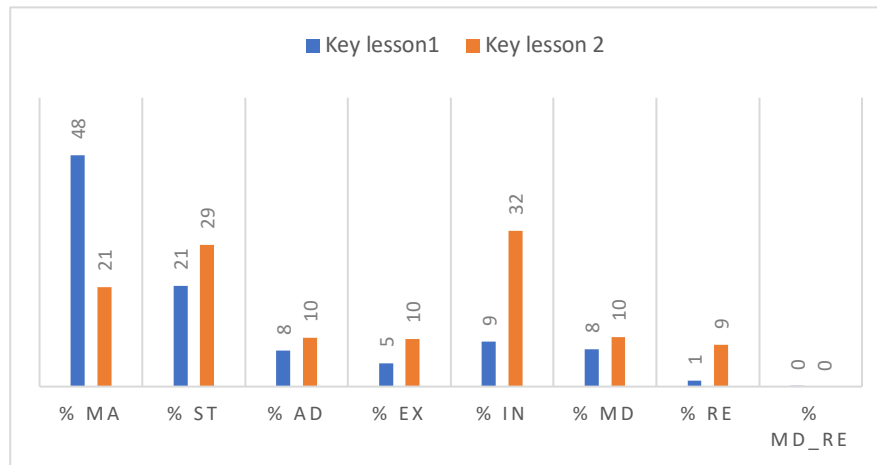
Tables A8 and A15 show the medians for proportions of each discourse category for Israel, for Key lesson 1 and Key lesson 2, respectively.

Also, Tables A16, A17, A18, A19, A20, A21, A22, and A23 in the Appendix show the means distribution (and sd) of each discourse category MA, ST, AD, EX, IN, MD, RE, and MD-RE, respectively.

Figure 21

Distribution of Mean Percentages of each Discourse Category according to Country for Both Sessions Pooled
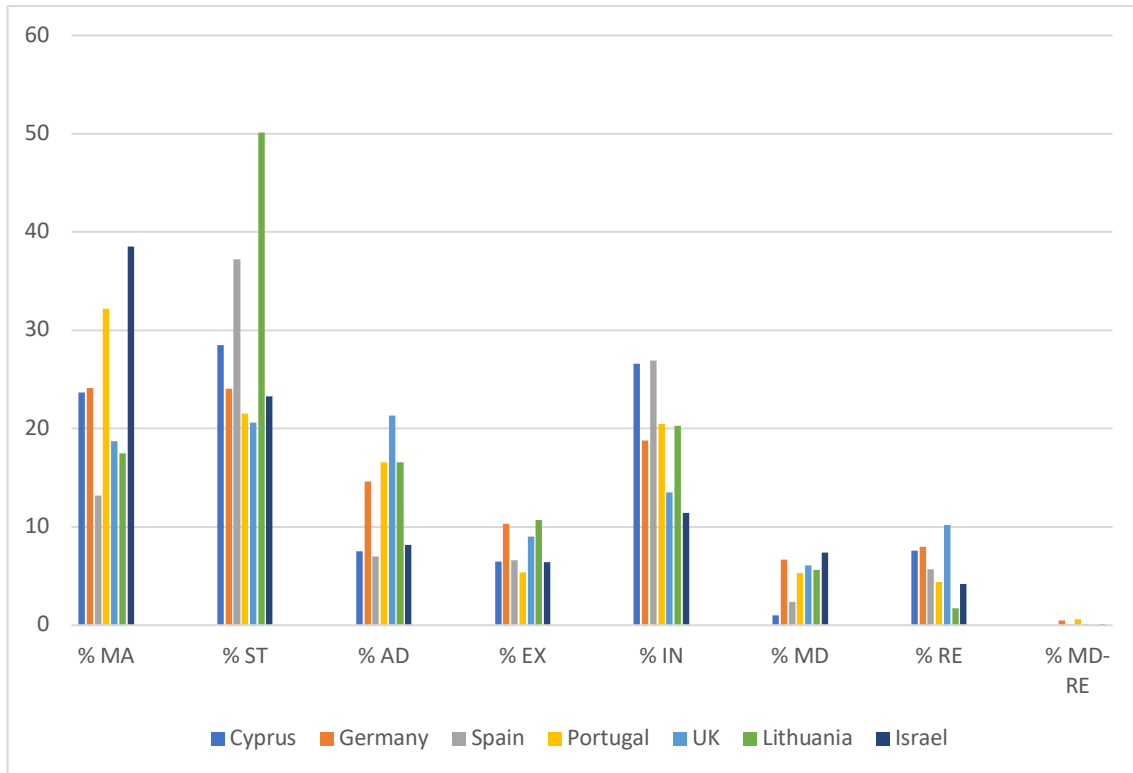
4.1.3. Bivariate by educational level

Figure 22 illustrates some trends regarding changes across Educational Levels. In Table 12 (for Key lesson 1) and Table 13 (for Key lesson 2) we can see the Medians distribution according to educational level and the statistical results for the Spearman Test for trends. For AD, we see an increase in Primary Education; for EX, we observe that the higher the level, the higher the %, similar to MD; while for IN, the trend is the opposite. See the Distribution of Mean Percentages according to educational level for Cyprus, Germany, Spain, Portugal, U.K., Lithuania and Israel, in Figures 22, 23, 24, 25, 26, 27, and 28, respectively.

Table 12

Distribution of Medians for Proportions According to Ed. Level in Key lesson 1

	Pre-Primary (N=17)	Primary (N=20)	Secondary (N=17)	Spearman Test for Trend *p-value*
Managerial (proportion), Median [P25; P75]	0.27 [0.19;0.32]	0.27 [0.18;0.37]	0.18 [0.14;0.25]	0.060
Stating (proportion), Median [P25; P75]	0.28 [0.23;0.31]	0.23 [0.14;0.30]	0.34 [0.21;0.44]	0.347
Accepting/Discarding (proportion), Median [P25; P75]	0.08 [0.05;0.11]	0.12 [0.07;0.15]	0.13 [0.11;0.20]	<0.001
Expanding (proportion), Median [P25; P75]	0.04 [0.02;0.06]	0.06 [0.04;0.10]	0.10 [0.07;0.13]	<0.001
Inviting (proportion), Median [P25; P75]	0.24 [0.16;0.30]	0.15 [0.10;0.19]	0.14 [0.12;0.19]	<0.001
Meta-dialogical (proportion), Median [P25; P75]	0.02 [0.00;0.06]	0.03 [0.02;0.06]	0.03 [0.01;0.07]	0.078
Reasoning (proportion), Median [P25; P75]	0.05 [0.01;0.07]	0.08 [0.04;0.11]	0.04 [0.02;0.06]	0.739
MD-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]	0.00 [0.00;0.00]	0.00 [0.00;0.00]	0.114

Table 13

Distribution of Medians for Proportions According to Ed. Level in Key lesson 2

	Pre-Primary (N=17)	Primary (N=20)	Secondary (N=17)	Spearman Test for Trend *p-value*
Managerial (proportion), Median [P25; P75]	0.12 [0.07;0.21]	0.16 [0.12;0.21]	0.24 [0.21;0.39]	<0.001
Stating (proportion), Median [P25; P75]	0.30 [0.26;0.31]	0.32 [0.20;0.38]	0.21 [0.18;0.36]	0.070
Accepting/Discarding (proportion), Median [P25; P75]	0.12 [0.07;0.20]	0.13 [0.09;0.20]	0.12 [0.08;0.17]	0.504
Expanding (proportion), Median [P25; P75]	0.06 [0.04;0.10]	0.06 [0.04;0.09]	0.06 [0.05;0.11]	0.889
Inviting (proportion), Median [P25; P75]	0.28 [0.16;0.35]	0.19 [0.14;0.28]	0.10 [0.08;0.15]	<0.001
Meta-dialogical (proportion), Median [P25; P75]	0.02 [0.00;0.04]	0.03 [0.01;0.06]	0.04 [0.03;0.06]	0.006
Reasoning (proportion), Median [P25; P75]	0.06 [0.04;0.08]	0.07 [0.05;0.10]	0.06 [0.03;0.09]	0.813
MD-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]	0.00 [0.00;0.00]	0.00 [0.00;0.01]	0.048

Figure 22

Distribution of Mean Percentages of the Whole Sample across Educational Levels
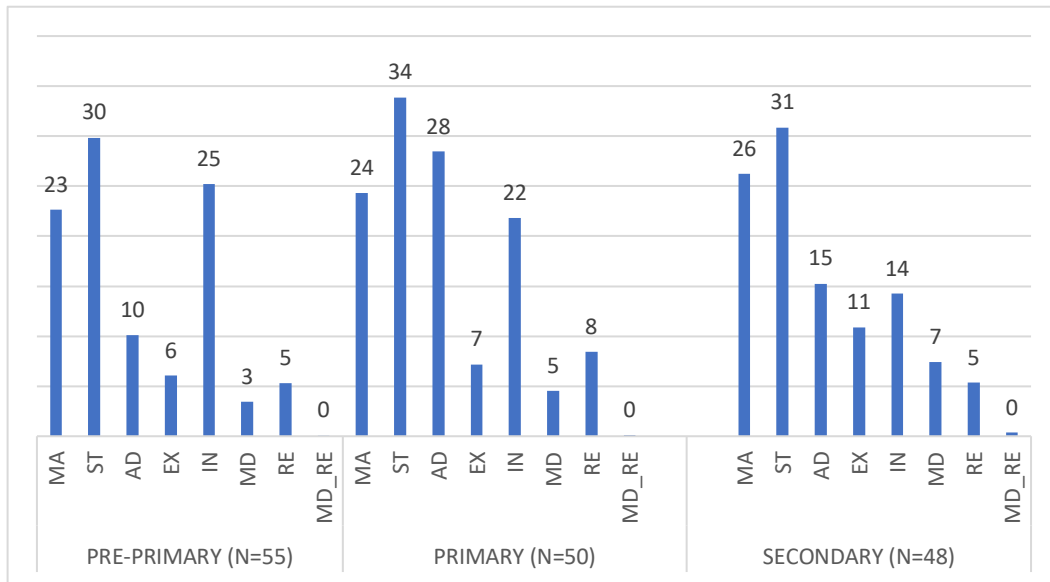
Figure 23

Distribution of Mean Percentages according to Educational Level for Cyprus
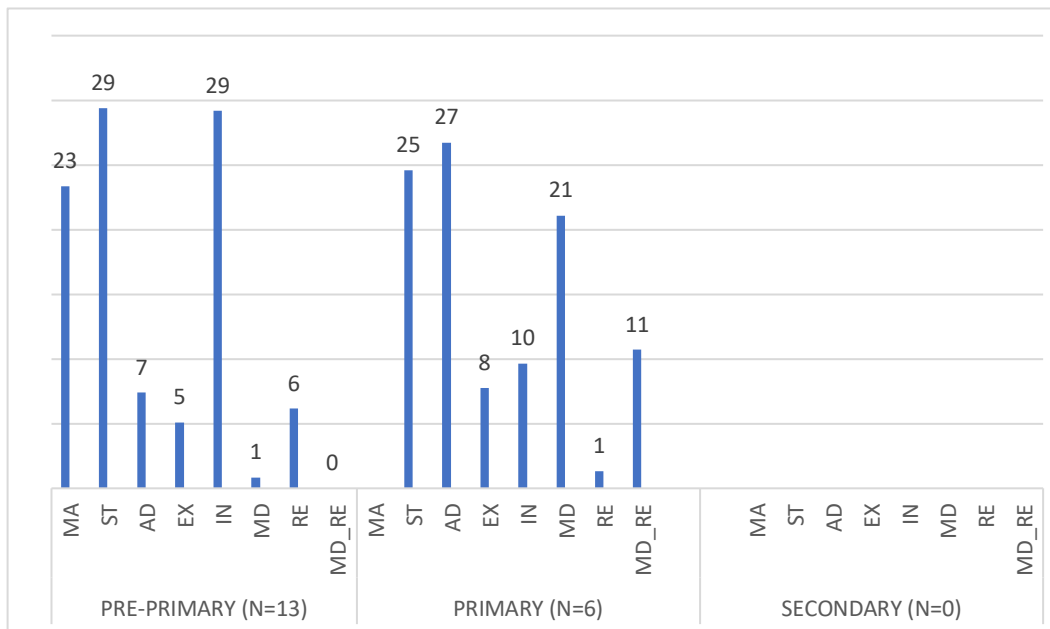
Figure 24

Distribution of Mean Percentages according to Educational Level for Germany
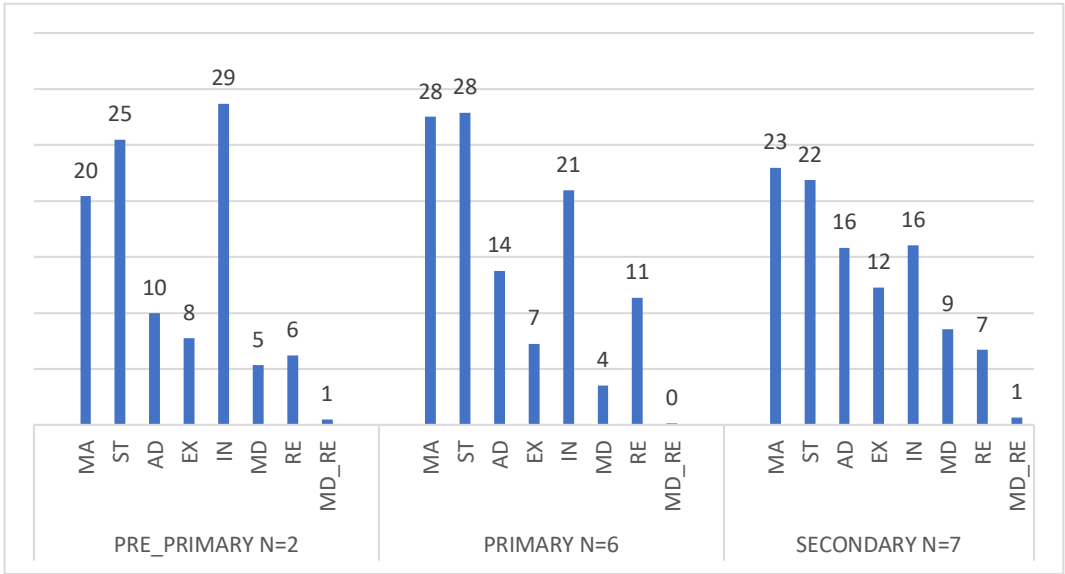
Figure 25

Distribution of Mean Percentages according to Educational Level for Spain
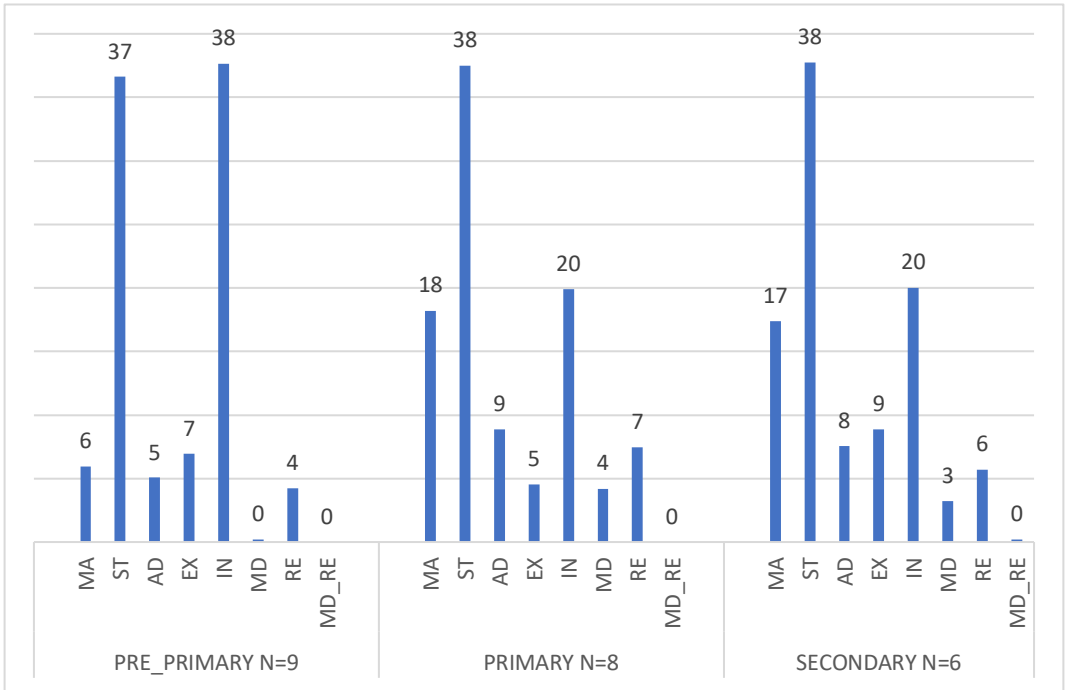
Figure 26

Distribution of Mean Percentages according to Educational Level for Portugal
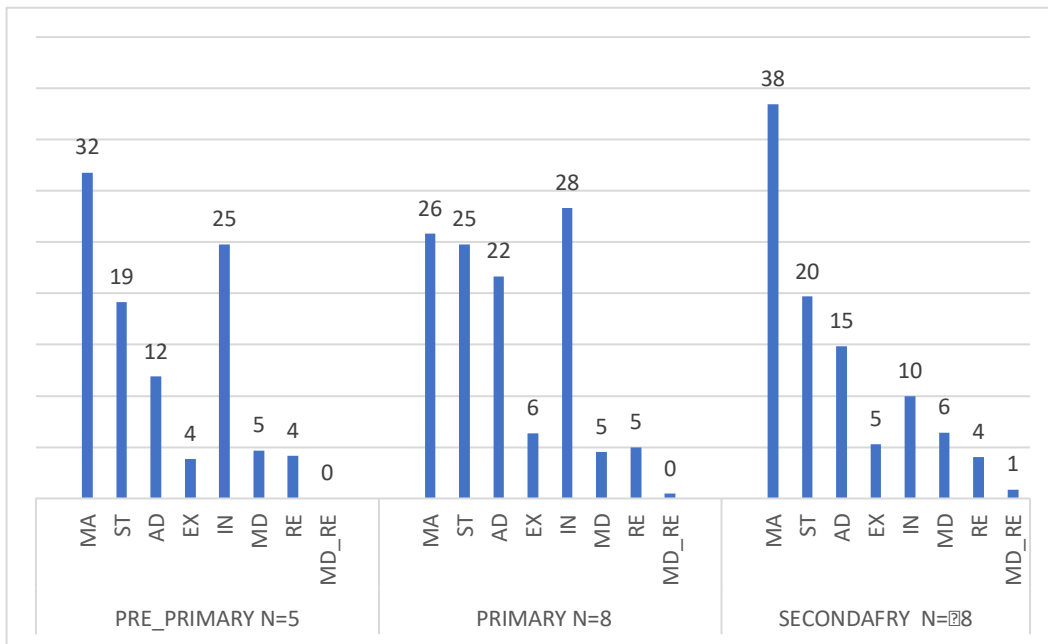
Figure 27

Distribution of Mean Percentages according to Educational Level for U.K.
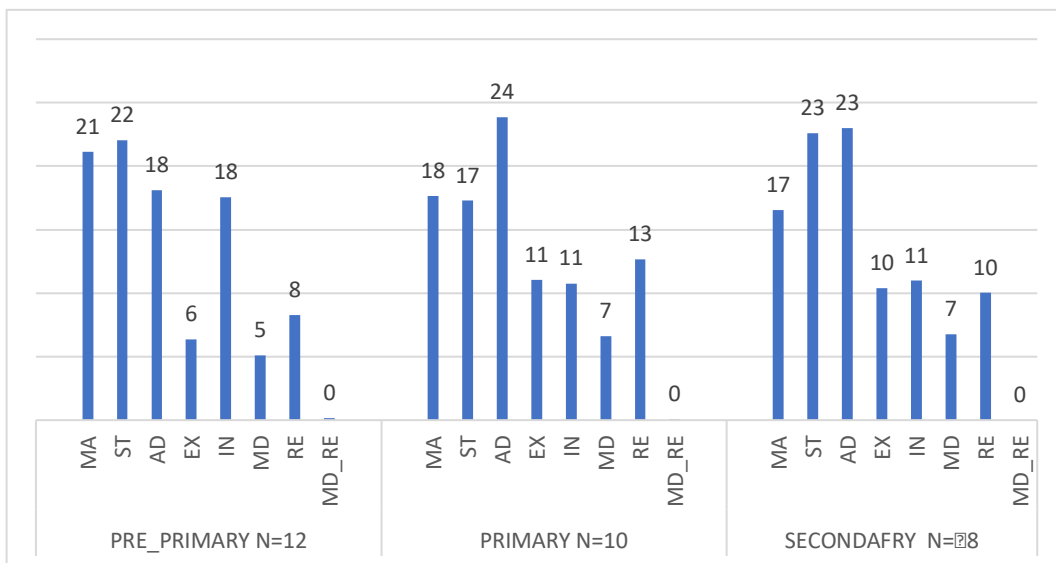
Figure 28

Distribution of Mean Percentages according to Educational Level for Lithuania
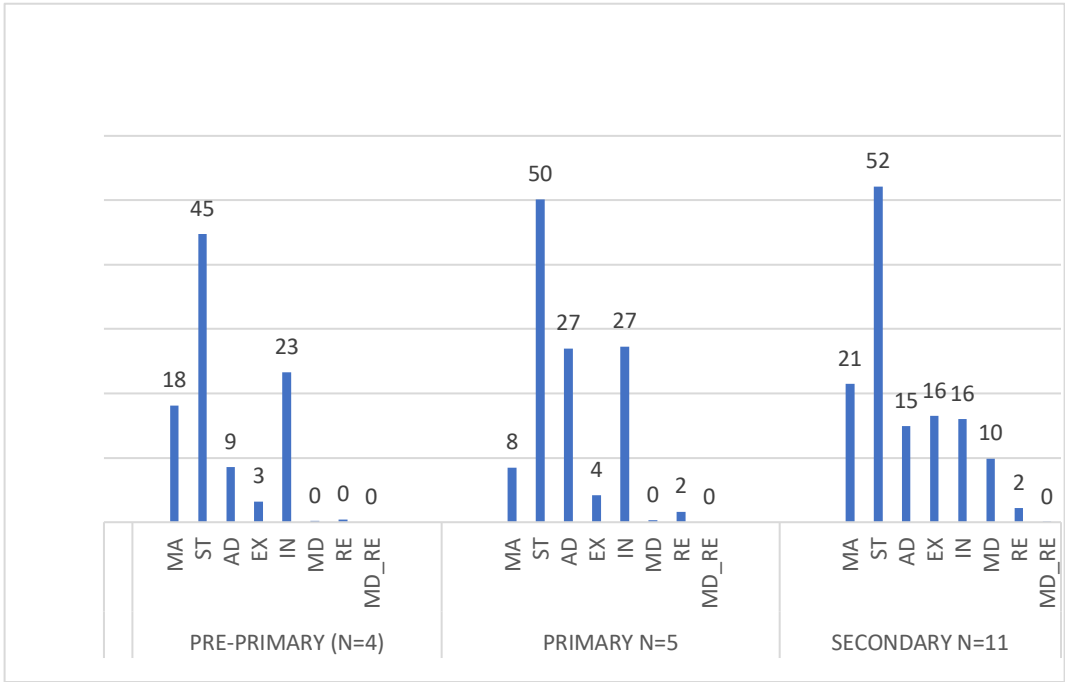
Figure 29

Distribution of Mean Percentages according to Educational Level for Israel
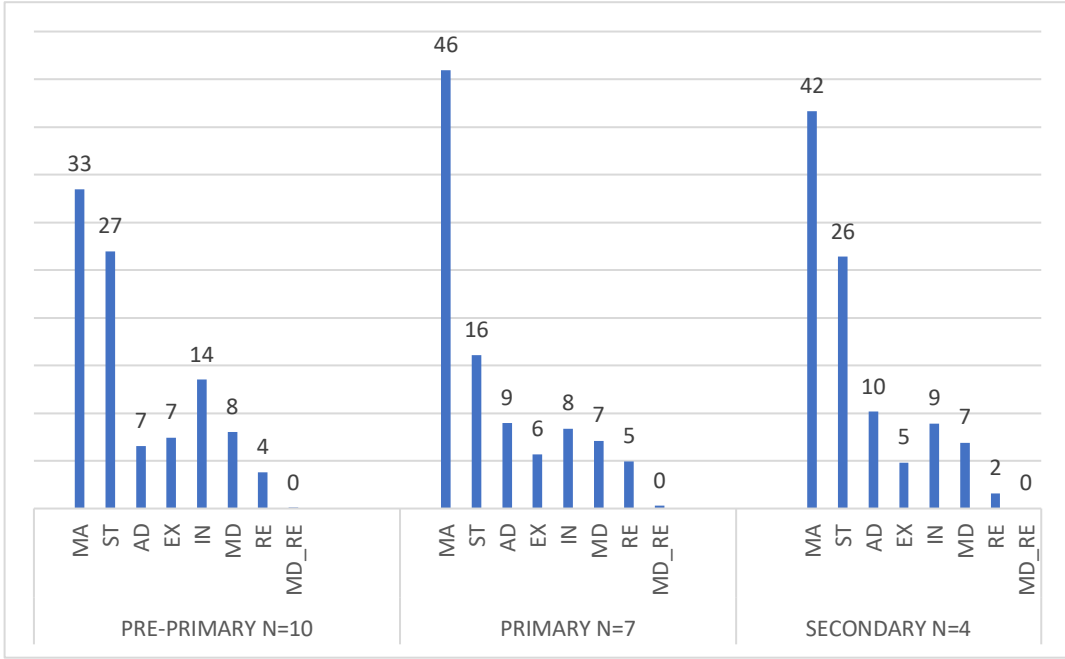
Table 14

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for both sessions

	%MA	%ST	%AD	%EX	%IN	% MD	%RE	%MD_RE
Chi^2	.209	2.01	11.58	17.70	31.44	9.75	6.84	6.38
df	2	2	2	2	2	2	2	2
Asymp. Sig.	.901	.366	.003	.000	.000	.008	.033	.041

When we apply the Kruskal-Wallis test to compare the use of each discourse category according to the Educational level, in order to analyse its impact on the proportion of each discourse category for the whole sample, we observe that the Kruskal-Wallis tests highlighted significant differences (see Table 14)*.* For AD (Kruskal Wallis (df=2) = 11.583, *p< .003)*, for EX (Kruskal Wallis (df =2) = 17.703, *p< .001)*, for IN (Kruskal Wallis (df =2) = 3.446, *p< .001); for MD* (Kruskal Wallis (df =2) = 9.752, *p<.008); for RE (*Kruskal Wallis (df =2) = 6.849, *p<.033)* and finally for MD_RE *(*Kruskal Wallis (df =2) = 8.375, *p< .041).* Some categories do not show any significant trend (MA and ST). Although in some cases (EX, MD and MD_RE), the means comparisons show significant trends of increase across educational levels, in other cases such as IN, it decreases, and finally, there is another significant trend of increase form pre-primary to primary but that decreases in secondary (AD, and RE).

In Tables 15, 16, 17, 18, 19, 20 and 21, we present the Kruskal-Wallis statistics to test the effect of Educational level for each specific country (Cyprus, Germany, Spain, Portugal, U.K., Lithuania, and Israel, respectively). Also, Tables A24, A25 and A26 in the Appendix present the mean (SD) distributions for each discourse category according to pre-primary, primary and secondary education, respectively.

Table 15

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for Cyprus

	%MD	%ST	%AD	%EX	%IN	%MD	%RE	%MD_RE
Chi^2	0.031	2.492	0.031	4.069	4.812	1.04	2.777	0
df	1	1	1	1	1	1	1	1
Asymp. Sig.	0.861	0.114	0.861	0.044	0.028	0.308	0.096	1

Table 16

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for Germany

	MD	ST	AD	EX	IN	MD	RE	MD_RE
Chi^2	0.857	1.286	2.659	2.381	7.721	6.21	2.743	2.097
df	2	2	2	2	2	2	2	2
Asymp. Sig.	0.651	0.526	0.265	0.304	0.021	0.045	0.254	0.35

Table 17

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for Spain

	MD	ST	AD	EX	IN	MD	RE	MD_RE
Chi^2	15.267	0.296	5.628	5.799	15.255	12.359	4.861	9.296
df	2	2	2	2	2	2	2	2
Asymp. Sig.	0	0.862	0.06	0.055	0	0.002	0.088	0.01

Table 18

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for Portugal

	MD	ST	AD	EX	IN	MD	RE	MD_RE
Chi^2	3.905	1.736	1.191	2.413	7.972	1.193	0.593	2.339
df	2	2	2	2	2	2	2	2
Asymp. Sig.	0.142	0.42	0.551	0.299	0.019	0.551	0.743	0.31

Table 19

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for U.K.

	MD	ST	AD	EX	IN	MD	RE	MD_RE
Chi^2	3.786	5.237	4.663	9.053	7.812	1.784	5.892	2.369
df	2	2	2	2	2	2	2	2
Asymp. Sig.	0.151	0.073	0.097	0.011	0.02	0.41	0.053	0.306

Table 20

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for Lithuania

	MD	ST	AD	EX	IN	MD	RE	MD_RE
Chi^2	2.966	0.95	0.13	6.494	4.968	3.563	5.03	0.818
df	2	2	2	2	2	2	2	2
Asymp. Sig.	0.227	0.622	0.937	0.039	0.083	0.168	0.081	0.664

Table 21

Kruskal-Wallis Comparison of Each Discourse Category Use by Educational Levels for Israel

	MD	ST	AD	EX	IN	MD	RE	MD_RE
Chi^2	2.716	7.386	3.311	0.003	3.935	0.382	3.018	1.007
df	2	2	2	2	2	2	2	2
Asymp. Sig.	0.257	0.025	0.191	0.998	0.14	0.826	0.221	0.604

In spite of the small sample size, we observe some statistical trends. For Cyprus, %EX increases significantly and %IN decreases; for Germany, %IN increases and %MD increases; for Spain, %MA increases, %IN decreases, and %MD and %MD-RE increase; for Portugal, %IN decreases, for U.K. %EX and %MD-RE increase but %IN decreases; for Lithuania, %EX increases; and finally, for Israel, %ST decreases from pre-primary, but increases from primary to secondary. As we can observe, changes are quite heterogenous.

In addition to the two independent variables (Session and Educational level), we performed a bivariate analysis of the contextual variable: School Environment (Urban-Rural).

4.1.4. *Bivariate by School Environment (rural/urban)*

In the following Table 22 shows the means and SD of the distribution of each category according to whether the school was urban or rural, while Tables 22 and 23, show the corresponding medians for Key lesson 1 and Key lesson 2, respectively.

Regarding the distribution of discourse categories according to school Environment we observe some statistical trends (see Figure 30). According to Table 22, the mean for MA is higher for Urban schools while ST, EX, IN, MD and MD- ST are lower for urban schools (see Tables 23 and 24, with Mann Whitney Statistics for Urban Rural comparison for Key Lesson 1 and Key lesson 2, respectively).

Table 22

Means (SD) Distribution for each Discourse Category according to School Environment (Urban-Rural) for both sessions

	Urban Rural	N	Mean	SD
%MA	Urban	99	25.75	14.75
	Rural	44	18.53	13.95
%ST	Urban	99	27.40	11.98
	Rural	44	33.46	17.09
%AD	Urban	99	13.36	11.77
	Rural	44	12.29	10.51
% EX	Urban	99	6.54	4.72
	Rural	44	9.95	11.81
% IN	Urban	99	17.41	8.94
	Rural	44	22.75	10.39
%MD	Urban	99	4.82	4.11
	Rural	44	4.59	15.40
%RE	Urban	99	5.11	383
	Rural	44	7.01	5.52
%MD-RE	Urban	99	.29	.69
	Rural	44	.01	.07

Table 23

Median Proportions according to School Environment (Urban-Rural) for the Whole Sample in Key
lesson 1

	Urban (N=63)	Rural (N=30)	Mann Whitney *p-value*
Managerial (proportion), Median [P25; P75]	0.27 [0.18;0.37]	0.20 [0.09;0.27]	0.006
Stating (proportion), Median [P25; P75]	0.25 [0.21;0.34]	0.31 [0.24;0.44]	0.036
Accepting/Discarding (proportion), Median [P25; P75]	0.11 [0.07;0.15]	0.10 [0.06;0.13]	0.490
Expanding (proportion), Median [P25; P75]	0.05 [0.03;0.09]	0.06 [0.05;0.11]	0.007
Inviting (proportion), Median [P25; P75]	0.16 [0.12;0.23]	0.20 [0.14;0.30]	0.034
Meta-dialogical (proportion), Median [P25; P75]	0.04 [0.01;0.08]	0.01 [0.00;0.03]	0.018
Reasoning (proportion), Median [P25; P75]	0.04 [0.03;0.08]	0.05 [0.03;0.09]	0.375
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]	0.00 [0.00;0.00]	0.012

Table 24

Median Proportions according to School Environment (Urban-Rural) for the Whole Sample in
Key lesson 2

	Urban (N=36)	Rural (N=15)	Mann Whitney *p-value*
Managerial (proportion), Median [P25; P75]	0.17 [0.12;0.24]	0.14 [0.11;0.22]	0.166
Stating (proportion), Median [P25; P75]	0.27 [0.21;0.36]	0.30 [0.23;0.36]	0.432
Accepting/Discarding (proportion), Median [P25; P75]	0.13 [0.09;0.19]	0.08 [0.07;0.21]	0.352
Expanding (proportion), Median [P25; P75]	0.06 [0.05;0.10]	0.06 [0.04;0.13]	0.710
Inviting (proportion), Median [P25; P75]	0.17 [0.10;0.26]	0.27 [0.12;0.34]	0.160
Meta-dialogical (proportion), Median [P25; P75]	0.04 [0.02;0.07]	0.01 [0.00;0.03]	0.008
Reasoning (proportion), Median [P25; P75]	0.07 [0.06;0.09]	0.05 [0.03;0.11]	0.702
Metadialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.01]	0.00 [0.00;0.00]	0.047

Figure 30

Comparison of Each Discourse Category according to School Environment (Urban-Rural)
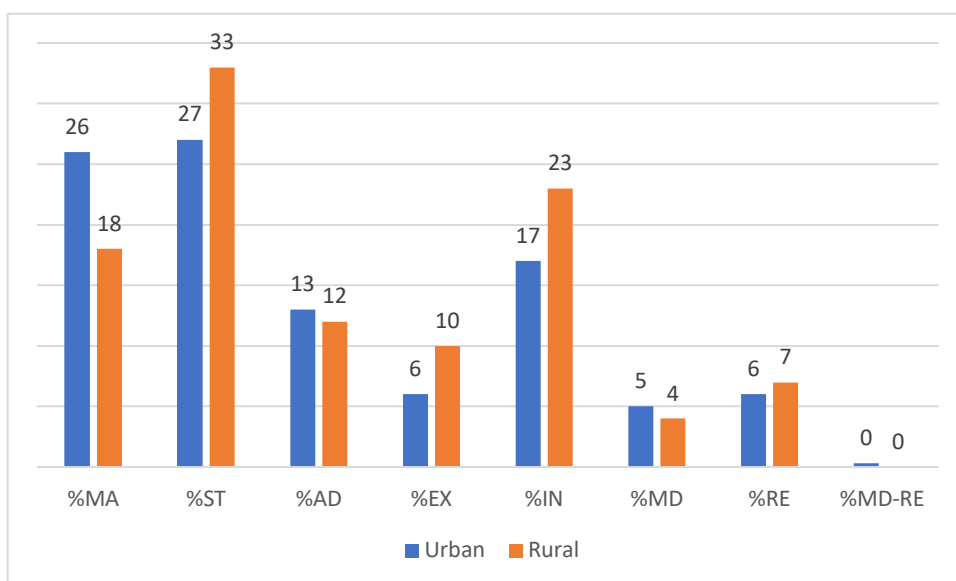
Table 25

Mann Whitney Statistics for Urban versus Rural contrast

	MA	ST	AD	EX	IN	MD	RE	MD-RE
U Mann-Whitney	1494	1646.	1943.	1646.	1548.	1300.	2003	1633.
Asymp. Sig. (2-tailed)	.003	.020	.304	.020	.006	.000	.444	.001

As we can see in Table 25, the statistical analysis shows significant differences regarding the dialogical category turns. Specifically, we observed that %MA, %MD and %MD-RE are higher for urban, while %ST, %EX and %IN are higher for rural schools

4.1.5. *Complementary bivariate analysis: High and low dialogicity discourse categories*

In what follows we present a new categorization of the dependent variable according to whether the discourse categories are low dialogical or high dialogical.

As mentioned in Section 2.3.2 and Table 2, the 8 discourse categories of the dependent variable are organized into Low dialogical categories (MA, ST, AD) and High dialogical categories (EX, IN, MD, RE and MD-RE). Hence, in order to test whether there is a change in the dialogicity across the sessions, we grouped them into Low and High dialogicity level, and statistically analysed the effect of Session. The variable was the percentage of the number of the two categories: Low and High over the total of coded turns.

We performed a paired simple Wilcoxon test analysis on the total sample. Table 26 shows the Distribution of the % of Low and High discourse categories according to Session, and Table 27 the statistical results for this comparison. Figure 31 shows the distribution of percentages of Low and High categories for the whole sample, while Figs. 32, 33, 34, 35, 36, 37 and 38 show the distribution of percentages for each particular country, respectively. We observe a marginally significant decrease in %Low (Z=-1.844, *p*=.065), (see Table 27), and a slight increase in the % High level (non-significant).

Table 26

Mean Percentages of Low and High Dialogical Categories for the Whole Sample

	Key lesson 1	Key lesson 2
% Low	63.2	60.1
% High	37.3	38.6

Table 27

Wilcoxon Test of mean % Comparison between Key lesson 1 and Key lesson 2 for % Low and %
of High Dialogicity Categories for the Whole Sample

	%low Key lesson 2 - %low Key lesson 1	%high Key lesson 2 - %high Key lesson2
Z	-1.844 [a]	-1.144[a]
Asymp. Sig. (2-tailed)	.065	.253

Figure 31

Distribution of % Low and % of High Dialogicity Categories according to Session for the Whole
Sample
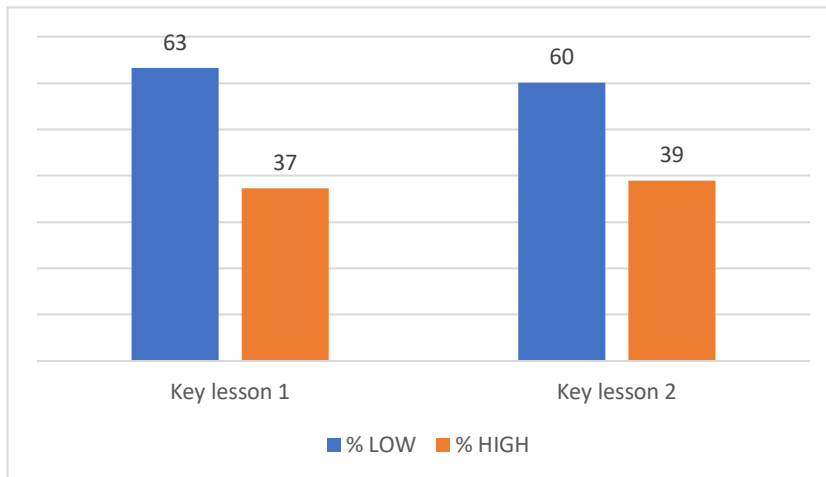
Figure 32

Distribution of % Low and % of High Dialogicity Categories according to Session for Cyprus (n=3)
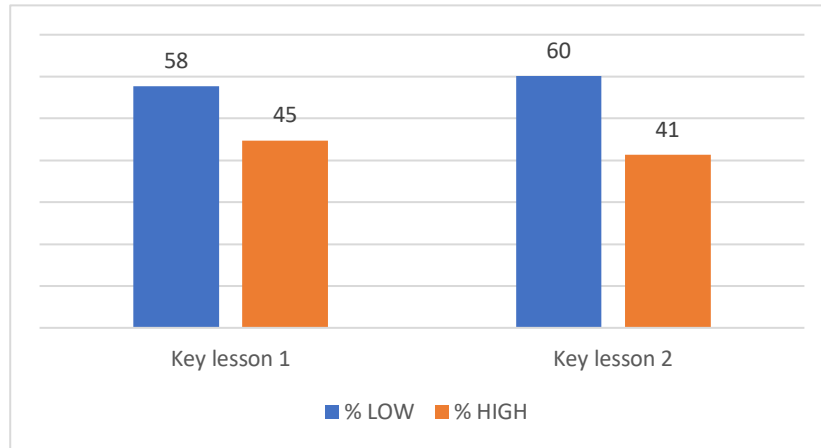
Figure 33

Distribution of % Low and % of High Dialogicity Categories according to Session for Germany (n=4)
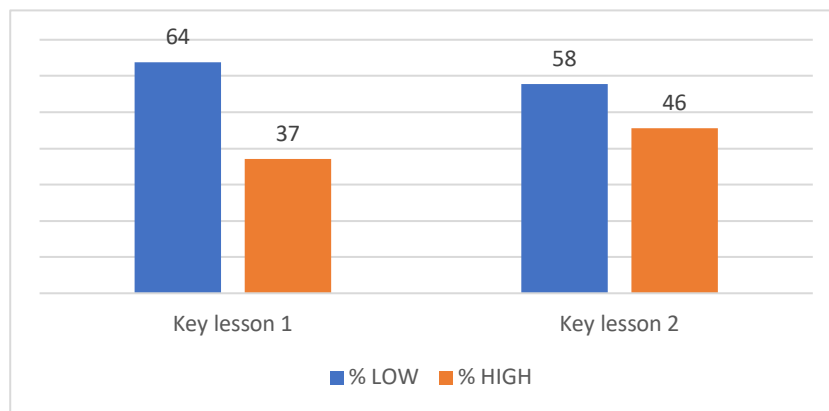
Figure 34

Distribution of % Low and % of High Dialogicity Categories according to Session for Spain (n=10)
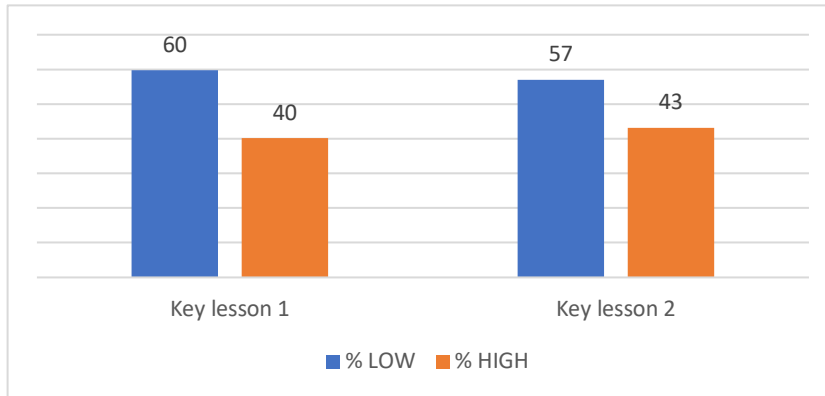
Figure 35

Distribution of % Low and % of High Dialogicity Categories according to Session for Portugal (n=9)
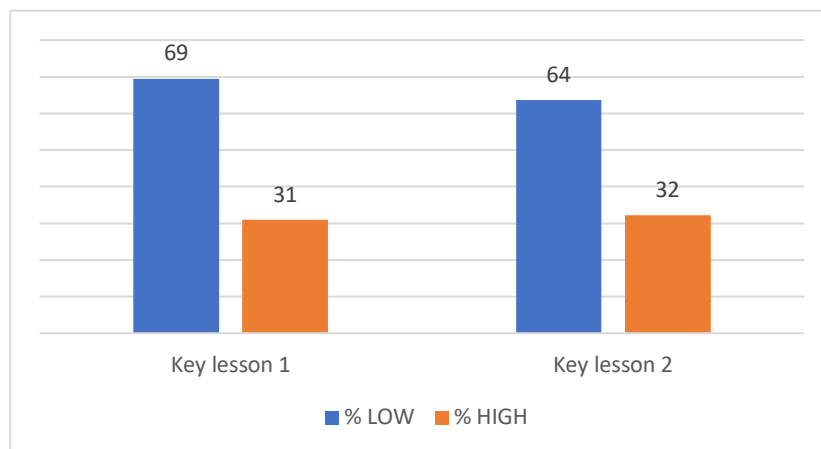
Figure 36

Distribution of % Low and % of High Dialogicity Categories according to Session for UK (n=15)
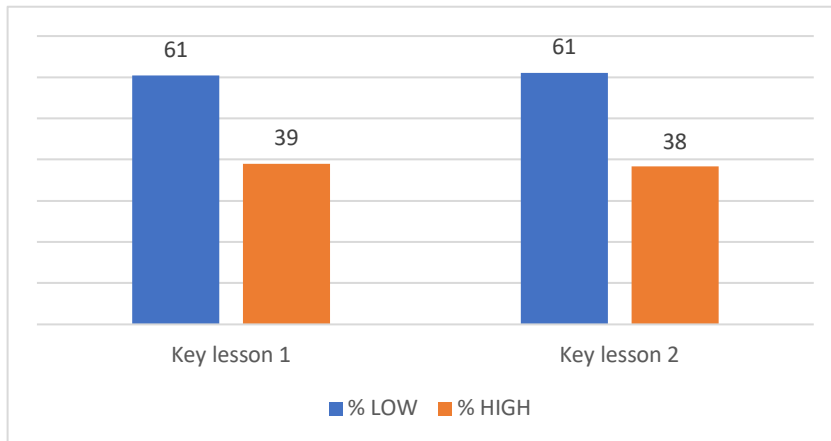
Figure 37

Distribution of % Low and % of High Dialogicity Categories according to Session for Lithuania (n=1)
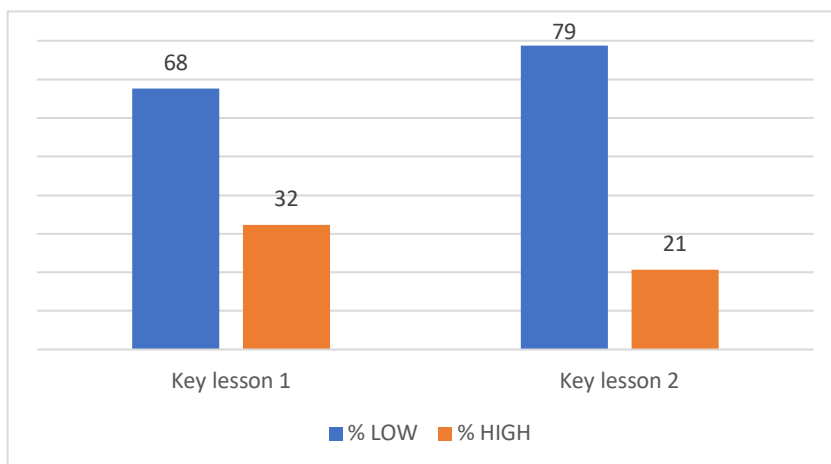
Figure 38

Distribution of % Low and % of High Dialogicity Categories according to Session for Israel (n=2)
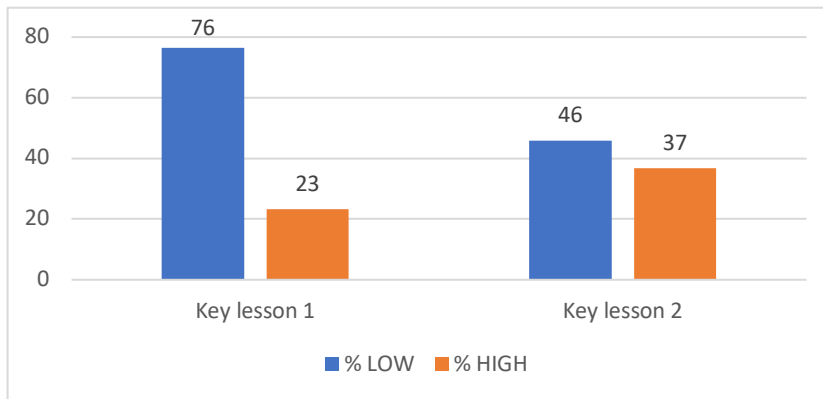
In addition, we complemented this analysis with a comparison of a new variable named "Score" as a single variable to indicate with a high score a high dialogicity, and with a low score, a low dialogicity. This score was computed by assigning a value of 1 to the discourse category %MA, a value of 2 to the discourse category %ST, a value of 3 to the discourse category %AD, a value of 4 to the discourse category %EX, a value of 5 to the discourse category %IN, a value of 6 to the discourse category %MD, a value of 7 to the discourse category %RE, and finally a value of 8 to the discourse category %MD_RE, likewise obtaining a single score. Although the discursive categories are not validated as a ratio scale, they can be considered an ordinal scale. We think this new variable brings clarity and simplicity to the analysis.

The general score was statistically compared across sessions. Table 28 shows the Mean Distribution of Score across Sessions and Table 29 shows the statistical results. There we observe a significant effect confirming the hypothesis about session as a complementary analysis of the previous Bivariate analyses with a Wilcoxon parameter of -2.632, *p=*.008. In contrast, we do not observe any significant effect of Educational level on the General Score with a Kruskal Wallis Chi^2 (df=2) of .537, and a *p-value* of *0.7.*

Table 28

Distribution of the Variable Score by Sessions

	Mean	SD
Score Key lesson 1	311	42
Score Key lesson 2	324	39

Figure 39

Mean Distribution of Score across Sessions

Table 29

Wilcoxon Statistics for Score by Session

	Score Key lesson 1 and Key lesson 2
Z	-2.01
Asymp. Sig. (2-tailed)	.04

Table 30 and Figure 40 show the data distribution of Score according to Educational level. Also, Table 31 show the statistical results.

Table 30

Distribution of the Variable Score by Educational Level

	Mean	SD
Pre-Primary	314.87	41.29
Primary	318.10	72.714
Secondary	327.61	130.01
Total	319.91	86.89

Figure 40

Score by Educational Level
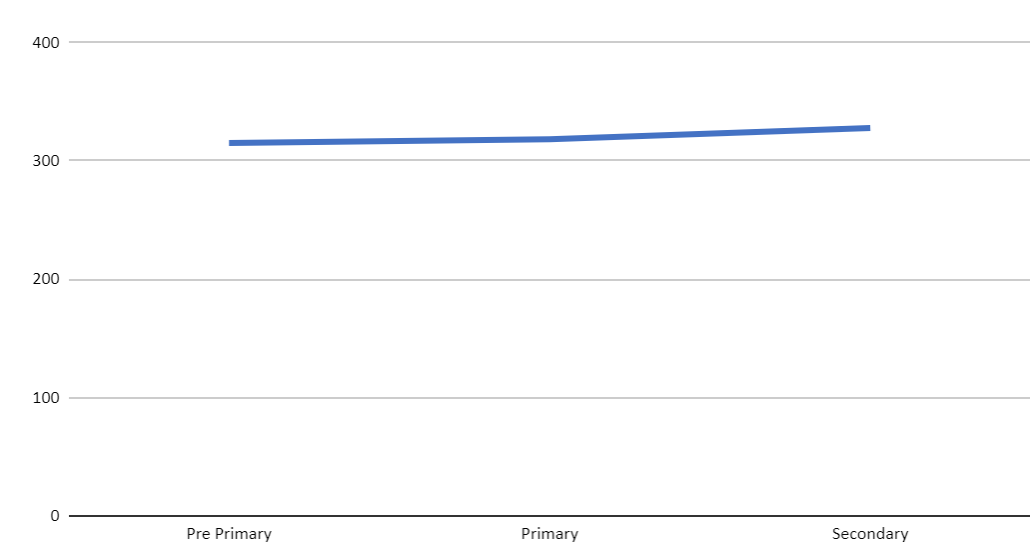
Table 31

Kruskal Wallis Statistics Comparing Score by Educational Level

	Mean Score
Chi^2	.53
df	2
Asymp. Sig.	.764

4.2. Multivariable Analysis

The multivariable analysis provides an integrative analysis with all variables included in the statistical test. The corresponding result of the multivariable analysis complements the previous Bivariate Analysis.

Following the fitted generalized linear multivariable model for each outcome is shown. Random effects associated with Country and Lesson were only considered for the intercept; random effects were not considered for other factors, such as Session, as it was not possible to obtain parameter estimates. Additionally, school titularity (with only five private schools in Lithuania) was removed from all models in order to gain robustness in parameter estimates.

Tables 32, 33, 34, 35, 36, 37, 38 and 39 show the results of the Negative Binomial Mixed-effects Model for each one of the Discourse categories

4.2.1. Managerial

Adjusted for independent and contextual factors, the proportion ratio (95% CI) of MA at Key lesson 2 vs. Key lesson 1 was 0.85 (0.73; 0.98), meaning a reduction of a 15% (2%; 27%) from Key lesson 1 to Key lesson 2. Model shows higher MA proportion as higher educational level. Thus, Primary and Secondary schools show proportion ratios (PR) of 1.08 (0.88; 1.32) and 1.12 (0.89; 1.41) versus Pre-primary schools, respectively (see Table 32).

Table 32

Results of the Negative Binomial Mixed-effects Model for MA

Parameter	Estimate	SE	*p*-value
Intercept	-1.832	0.230	<0.001
Session = Key lesson 1 (Key lesson 2 is the reference)	-0.164	0.074	0.028
Educational level = Primary (Pre-primary is the reference)	0.077	0.103	0.452
Educational level = Secondary (Pre-primary is the reference)	0.114	0.117	0.330

4.2.2. Stating

As we can see in Table 33, adjusted for contextual factors, for the proportion ratio of ST at Key lesson 2 vs Key lesson 1: PR (95% CI) = 1.02 (0.91;1.15) we observe a non-significant increment in ST from Key lesson 1 to Key lesson 2: 1.02 (0.91; 1.15).

Table 33

Results of the Negative Binomial Mixed-effects Model for ST

Parameter	Estimate	SE	*p-value*
(Intercept)	-1.144	0.214	<0.001
sessionS8	0.023	0.059	0.697
edlevelPrimary	-0.063	0.068	0.354
edlevelSecondary	0.004	0.077	0.961

4.2.3. Accepting/Discarding

Table 34 shows AD adjusted for contextual factors. The model shows non-significant increment from Key lesson 1 to Key lesson 2: 1.07 (0.93; 1.23). Significant higher proportions were observed for Primary and Secondary schools versus Pre-primary schools: 1.64 (1.33; 2.01) and 1.65 (1.30; 2.09), respectively.

Table 34

Results of the Negative Binomial Mixed-effects Model for AD

Parameter	Estimate	SE	*p-value*
(Intercept)	-2.922	0.205	<0.001
Session S8	0.069	0.07	0.323
edlevelPrimary	0.492	0.106	<0.001
edlevelSecondary	0.499	0.121	<0.001

4.2.4. Expansion

A non-significant increase in EX was observed from Key lesson 1 to Key lesson 2: 1.06 (0.87; 1.31). Model also shows a significant trend of higher EX proportion as higher Educational level. Thus PR for Primary and Secondary schools were 1.28 (0.98; 1.68) and 1.85 (1.39; 2.47) versus Pre-primary schools, respectively (see Table 35).

Table 35

Results of the Negative Binomial Mixed-effects Model for EX

Parameter	Estimate	SE	*p-value*
(Intercept)	-3.198	0.182	<0.001
Session S8	0.061	0.105	0.562
edlevelPrimary	0.25	0.138	0.071
edlevelSecondary	0.615	0.147	<0.001

4.2.5. Inviting

As in EX, Table 36 shows a non-significant increase in IN observed from Key lesson 1 to Key lesson 2: 1.09 (0.94; 1.27). Once more, the model shows a significant trend by educational levels but now we observed lower IN proportion as higher Educational level: 0.73 (0.61; 0.89) for Primary school and 0.57 (0.46; 0.71) for Secondary schools versus Pre-primary schools.

Table 36

Results of the Negative Binomial Mixed-effects Model for IN

Parameter	Estimate	SE	*p-value*
(Intercept)	-1.298	0.215	<0.001
sessionS8	0.086	0.078	0.27
edlevelPrimary	-0.309	0.097	0.001
edlevelSecondary	-0.562	0.109	<0.001

4.2.6. Metadialogical

A very slight and non-significant increment in MD was observed from Key lesson 1 to Key lesson 2: 1.01 (0.76; 1.36). We also observed higher MD proportion for secondary schools versus pre-primary schools 3.31 (1.87; 5.86). Although the effect estimated has very little accuracy (i.e. wide confidence interval) and should be interpreted with caution (see Table 37).

Table 37

Results of the Negative Binomial Mixed-effects Model for MD

Parameter	Estimate	SE	*p-value*
(Intercept)	-2.94	0.888	<0.001
sessionS8	0.014	0.148	0.922
edlevelPrimary	0.368	0.251	0.142
edlevelSecondary	1.197	0.291	<0.001

4.2.7. Reasoning

Table 38

Results of the Negative Binomial Mixed-effects Model for RE

Parameter	Estimate	SE	*p-value*
(Intercept)	-2.993	0.337	<0.001
sessionS8	0.117	0.097	0.229
edlevelPrimary	0.495	0.11	<0.001
edlevelSecondary	0.124	0.134	0.357

A non-significant increase in RE was observed from Key lesson 1 to Key lesson 2: 1.12 (0.93; 1.36). A significant increase was observed for primary schools versus Pre-primary schools. 1.64 (1.32; 2.04), but it was not observed for Secondary schools. 1.13 (0.87; 1.47) (see Table 38).

4.2.8. Metadialogical-reasoning

A very slight and non-significant increment in MD-RE was observed from Key lesson 1 to Key lesson 2: 1.01 (0.61; 1.69), see Table 39 for *p* value.

Table 39

Results of the Negative Binomial Mixed-effects Model for MD-RE

Parameter	Estimate	SE	*p-value*
(Intercept)	-8.515	1.698	<0.001
sessionS8	0.014	0.26	0.956
edlevelPrimary	-0.517	0.584	0.376
edlevelSecondary	0.394	0.613	0.52

4.3.2. Correlational Analysis

The final analysis performed on the data was a non-parametric correlational analysis (Spearman's Rho) to check which of the categories more often coincided with one another. Table 40 presents the *Rho* Spearman correlations and their statistical significance.

We observe that out of the possible 28 different correlations only 21 were significant. The seven non-significant ones were MA with AD *[Rho* (N=154) =-124. *p*=.124]; MA with RE [*Rho* (N=154)

=-0.07. *p*=.398]; ST with EX [*Rho* (N=154) =-125. *p*=.121]; AD with MD_RE [*Rho* (N=154) =-.084. *p*=.299]; EX with MD_RE [*Rho* (N=154) =-0.058. *p*=.474]; IN with RE [*Rho* (N=154) =-.093. *p*=.245]; and RE with MD_RE [*Rho* (N=154) =-.049. *p*=.545].

Out of the seven non-related pairs, four corresponded to high-high dialogicity categories (MA with AD, EX with MD_RE, IN with RE, and RE with MD_RE; One to low-low (MA with AD) and two to high-low dialogicity ST with EX and AD with MD_RE (see Table 40). The most correlated categories are the medium dialogicity ones, while the least related is the highest category (MD_RE).

Table 40

Correlation Analysis Between Discourse Categories

		%MA	%ST	%AD	%EX	%IN	%MD	%RE	%MD_RE
%MA	Corr. Coeff	1.000	-.422	-.124	-.352	-.385	.224	-0.70	.247
	Sig. (2-tailed)		.000	.124	.000	.000	.005	.389	.002
%ST	Corr. Coeff		1.000	-.346	-.125	.363	-.560	-.458	-.342
	Sig. (2-tailed)			.000	.121	.000	.000	.000	.000
%AD	Corr. Coeff			1.000	.218	-.207	.254	.315	.084
	Sig. (2-tailed)				.006	.010	.001	.000	.299
%EX	Corr. Coeff				1.000	-.257	.222	.222	.058
	Sig. (2-tailed)					.001	.006	.006	.474
%IN	Corr. Coeff					1.000	-.4999	-.093	-.199
	Sig. (2-tailed)						.000	.250	.013
%MD	Corr. Coeff						1.000	.338	.310
	Sig. (2-tailed)							.000	.000
%RE	Corr. Coeff							1.000	.049
	Sig. (2-tailed)								.545
%MDRE	Corr. Coeff								1.000
	Sig. (2-tailed)								

5. CONCLUSIONS

The Conclusions Section begins with some comments about the sample representativeness. Regarding the variables of the study, the general distribution of lessons across countries was quite homogenous, the UK had a slightly higher proportion of data in contrast with the rest of countries. Also, the three educational levels were well represented (approx. one third of each level). In contrast, the distribution of classroom lessons according to educational level across countries is more heterogeneous. For instance, Cyprus has no presence of secondary school level, while Germany has 60% (12/20). It is important to highlight the variable of repeated session was less equally distributed. As mentioned in the Introduction, the Covid-19 pandemic meant that data gathering for Key point 3 (Lesson 15) could not be recorded, and also, it caused that classroom lessons for both Key lesson 1 and Key lesson 2 were unevenly distributed across countries and educational levels. Despite this, the effect of repeated sessions was significant, confirming our hypothesis (see Tables 14, 29 and 31).

The number of lessons corresponding to Key lesson 1 was higher than those for Key lesson 2. It is worth mentioning that the number of lessons for both sessions was 44, quite low for the sessions comparisons. For instance, for 4 out of the seven countries, only one fourth of the total sessions corresponded to both sessions. Therefore, the statistical analysis of the effect of session will be limited, with its potential effects difficult to observe.

In what follows, we present some conclusions for the results of the dialogical categories. Remember, as mentioned, the statistical analysis for the variables session and educational level is addressed to contrast hypothesis 1 and 2, respectively. For the rest of variables, the analysis will be exploratory. The hypotheses were:

> Hypothesis 1: Repeated Sessions (Key lesson 1 versus Key lesson 2): We expect to find a significant effect of the implementation of the classroom DIALLS materials and its prompts on the different categories of the dependent variable. We expect to find a differential effect. That is, we expect to find a decrease in the % of the low dialogical categories and an increase in the high dialogical categories.

> Hypothesis 2: Educational level (Pre-primary, Primary and Secondary Education): We expect to find an increasing trend along with the increasing educational levels. The higher the Educational level, the higher the Dialogicity.

The statistical results for the Wilcoxon analysis comparing the parameters in Key lesson 1 with Key lesson 2 yield some differences. For instance, %MA is lower in Key lesson 2 compared to Key lesson 1, while %RE is higher in Key lesson 2 (see Table 14). We observe an impact of repeated sessions with a decrease in the low dialogical level category such as MA, with an increase in the % of a high-level category such as RE.

In a complementary manner, when we look at the integrative results provided by the Multivariable Analysis, we observe several outstanding trends for each discourse category:

For Managerial turns:

> Results show a reduction of a 15% (from Key lesson 1 to Key lesson 2). This result is in line with our first Hypothesis. Also, regarding the educational level hypothesis (Hypothesis 2), the model shows higher Managerial proportion as higher educational level. The trend seems clear since Primary classrooms see an increase of 8% compared to pre-primary classrooms, and secondary 12%, although the small size of the sample did not allow us to reach statistical significance.

For Stating turns:

> Non-significant effects were found for this category for neither hypothesis.

For Accepting/Discarding turns:

> The model shows non-significant increment from Key lesson 1 to Key lesson 2. Significantly higher proportions were observed for Primary and Secondary schools *versus* Pre-primary schools.

For Expanding turns:

> A non-significant increase in expanding was observed from Key lesson 1 to Key lesson 2. Nevertheless, the model shows a significant trend of higher EX proportion with higher Educational level.

For Inviting turns:

> A non-significant increase in IN was observed from Key lesson 1 to Key lesson 2. In contrast, once more, the model shows a significant trend by Educational level but now we observed lower IN proportion as higher Educational level for Primary school and for Secondary schools *versus* Pre-primary schools.

For Meta-dialogical turns:

A very slight and non-significant increment in MD was observed from Key lesson 1 to Key lesson 2 (0.76; 1.36). We also observed a higher MD proportion for Secondary schools *versus* Pre-primary schools although the estimated effect exhibits a wide confidence interval and should thus be interpreted with caution.

For Reasoning turns:

A non-significant increase in RE was observed from Key lesson 1 to Key lesson 2. In contrast, referring to the Educational level, a significant increase was observed for Primary schools *versus* Pre-primary schools. 1.64 (1.32; 2.04) but it was not observed for Secondary schools. 1.13 (0.87; 1.47).

For Metadialogical-reasoning turns:

A very slight and non-significant increment in MD_RE proportion was observed from Key lesson 1 to Key lesson 2.

Table 41

Summary of Trends from the Multivariable Analysis

	Sessions	Ed. Level	Country
MA	decrease*	increase	*
ST			*
AD	increase	increase*	*
EX	increase	increase*	*
IN	increase	decreae*	*
MD	increase	increase*	*
RE	increase	increase*	*
MD-RE	increase		*
*Significant at 0.05			

Accordingly, the analysis for the new and simplified variable called "score" complements the above conclusions. The analysis of this simple score as a single parameter for the dependent variable for dialogicity yielded a significant effect confirming the hypothesis about the beneficial effect of session showing an increase in the dialogicity. That is, they are beneficial when it comes to the implementation of cultural literacy dispositions by young people during DIALLS lessons.

With reference to the exploratory variable Country, we observed that countries used all categories differently. All Country comparisons yielded significant differences in the use of each discourse categories. As we can see in Figure 21, MA was mostly used by Israel, ST by Lithuania, and AD by the UK. EX was more homogenously distributed, although the distribution was significant, Cyprus and Spain were the countries with the highest use of IN, the highest percentage of MD was for Israel, and RE was for the UK, while for the last category, MD_RE, Portugal's proportion was higher. This difference should be explained by uncontrolled explanatory factors such as differential professional developments strengthening diverse dialogical strategies, or differences in coding of some of the countries that did not participate in the reliability calculation, rather than cultural differences. That is why we categorized the variable Country as exploratory.

To sum up, we can conclude that our statistical data support the success of the implementation of the DIALLS cultural programme, across all countries and across the three educational levels, showing trends that could have been more significant with a longer data collection, as initially planned (15 sessions implementation).

5.1 Further Research

Connecting the present statistical results with the qualitative ones reported in Del. 5.2, it becomes highly relevant to analyse how the dialogical benefits observed in our data, from the implementation of the lesson plans and the program were related to each lesson plan, and discussion materials (see Deliverable 5.2). This report shows how high dialogicity as the mediating concept for grasping tolerance, empathy, and inclusion (see Sections 2 and 3) emerges from the presence of highly dialogical turns used during students' participation in whole class discussion activities, i.e., Reasoning and Inviting. This was observed in Pre-primary students' discussions of the short film Ant (Key point Lesson 1), during which children had to question each other about the characters' behaviour. Also, the most complex dialogical attitude, trying to understand the relationship between the use of words and concepts, was manifested during whole-class discussions stimulated by the film Baboon on the Moon (Key point Lesson 2). In these activities, the highly dialogical turns belonging to the Metadialogical type (i.e., students reflecting on the activity, dialogue or language used within) were used. A deep analysis connecting each one of the dialogical strategies with the specific materials would be worth doing in order to identify which material works best and in what Educational levels.

Our statistical results support the qualitative analysis provided in Deliverable 5.2. We reported how in face-to-face interactions in the classrooms of the 8-9-year-olds manifested dialogical qualities by the frequency of students' Expanding and Reasoning turns and the expression of agreements, which together outline clear instances of productive dialogical co-construction. This was evident in both Key point Lessons 1 (Papa's Boy) and 2 (Baboon on the Moon). It is also worth highlighting that the small size of the sample did not make it possible to reach statistical significance for some of the trends. We added Table 41, as a summary of trends from multivariable analysis to identify which effects were statistically significant, which were not, and which varied but were not significant.

DIALLS face-to-face interactions for the 8-9-year-old children were also highly dialogical as manifested by the frequency of students' Expanding and Reasoning turns and the expression of agreements, which together outline clear instances of productive dialogical co-construction. This was evident in both Key point Lessons 1 (Papa's Boy) and 2 (Baboon on the Moon). Moreover, although most class activities were held in a whole-class format, small-group discussions were also present. These latter discussions were also characterised by Acknowledging, Expanding, and Reasoning turns, through which children respectfully listened to each other and developed their ideas together. In some cases, the highest type of dialogical

move, i.e. Metadialogical reasoning, was also present during these activities, showing a particularly advanced level of dialogical empathy even at this very young age.

Finally, and again supporting the qualitative analysis provided in Deliverable 5.2, we statistically showed show how the 14-15 years old group was highly dialogical. Students performed Reasoning, Expanding, and Metadialogical turns (for both Key point Lessons (Eccentric City and Baboon on the Moon). Also, an extended use of Inviting turns shows the genuine interest in engaging with each other's thinking, without the need of teacher's mediation. The findings regarding the dialogicity level of this age-group students vary significantly from class to class but also within the same class and during the same lesson. In some cases, students show understanding of the concepts of tolerance, empathy and inclusion, but they cannot engage dialogically with each other.

Last but not least, given the differences encountered across the countries, it becomes essential to make a detailed analysis of the Professional Development applied by each country, identifying their strengths and weaknesses as potential causes of the differences in dialogicity between countries. Also, the differences found according to educational level should be interpreted, too, in terms of the diversity in the implementation of the Professional Development in each educational level, by different Educational Level teachers. This would help us differentiate between outcomes produced by the educational level itself or by the Professional Development as implemented. Although our conclusion is clear about the beneficial effect of the cultural literacy programme, this analysis would enable us to identify the specific classroom guidelines to develop cultural literacy in order to apply them in classrooms over Europe.

5. REFERENCES

Christodoulou, A., & Osborne, J. (2014). The Science Classroom as a Site of Epistemic

Talk: A Case Study of a Teacher's Attempts to Teach Science Based on Argument. *Journal of Research in Science Teaching* 51 (10): 1275–1300. https://doi.org/10.1002/tea.21166

Ducrot, O. (1972). *Dire et Ne Pas Dire*. Paris, France: Hermann.

Labov, W., & v Fanshel, D. (1977). *Therapeutic Discourse: Psychotherapy as Conversation*. New York, NY: Academic Press.

Macagno, F., and Bigi, S. (2017). Analyzing the Pragmatic Structure of Dialogues. *Discourse Studies* 19 (2): 148–68. https://doi.org/10.1177/1461445617691702.

Mercer, N. & Coll, C. (1994). *Teaching, learning, and interaction*. Madrid: Fundación Infancia y Aprendizaje.

Vygotsky, L. S. (1978). *Mind and society.* Cambridge, MA., Harvard University Press.

6. APPENDIX

DEPENDENT VARIABLES

Appendix 1 Table A1

Distribution of the mean number of turns for each type of class organization

	Cyprus	German	Spain	Portugal	UK	Lithuania	Israel
WC coded turns	279	124	225	431	285	51	191
SM coded turns	52	219	72	257	166	165	120
TG coded turns	11	5	57	64	29	1	78

Appendix 2 Table A2

Distribution of total mean number of turns and coded turns according to country

Means (SD)	Cyprus	German	Spain	Portugal	UK	Lithuania	Israel
Total Turns	484 (150)	350 (180)	382 (135)	754 (283)	488 (178)	227 (188)	393 (191)
Coded Turns	429 (140)	229 (111)	344 (122)	616 (231)	360 (124)	174 (146)	289 (132)
% Coded	88.6	65.4	90.1	81.7	73.8	76.7	73.5

By Country

Appendix 3 Table A3

Distribution of Medians for Proportions (and statistical Bivariate results analysis) for 1 Cyprus

	Cyprus (N=15)
MA (proportion), Median [P25; P75]	0.27 [0.21;0.30]
ST (proportion), Median [P25; P75]	0.29 [0.24;0.31]
AD (proportion), Median [P25; P75]	0.06 [0.05;0.09]
EX (proportion), Median [P25; P75]	0.05 [0.05;0.07]
IN (proportion), Median [P25; P75]	0.28 [0.22;0.30]
MD (proportion), Median [P25; P75]	0.00 [0.00;0.02]
RE (proportion), Median [P25; P75]	0.07 [0.05;0.10]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 4 Table A4

Distribution of Medians for Proportions (and statistical Bivariate results analysis) for
Key lesson 1 *for Germany*

	Germany (N=16)
MA (proportion), Median [P25; P75]	0.23 [0.21;0.31]
ST (proportion), Median [P25; P75]	0.21 [0.19;0.25]
AD (proportion), Median [P25; P75]	0.14 [0.12;0.17]
EX (proportion), Median [P25; P75]	0.11 [0.05;0.14]
IN (proportion), Median [P25; P75]	0.17 [0.14;0.23]
MD (proportion), Median [P25; P75]	0.06 [0.03;0.07]
RE (proportion), Median [P25; P75]	0.07 [0.05;0.10]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.01]

Appendix 5 Table A5

Distribution of Medians for Proportions for Key lesson 1 *for Spain*

	Spain (N=11)
MA (proportion), Median [P25; P75]	0.08 [0.07;0.17]
ST (proportion), Median [P25; P75]	0.36 [0.35;0.38]
AD (proportion), Median [P25; P75]	0.08 [0.04;0.11]
EX (proportion), Median [P25; P75]	0.05 [0.04;0.06]
IN (proportion), Median [P25; P75]	0.21 [0.19;0.37]
MD (proportion), Median [P25; P75]	0.01 [0.00;0.02]
RE (proportion), Median [P25; P75]	0.04 [0.03;0.06]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 6 Table A6

Distribution of Medians for Proportions for Key lesson 1 *for U.K.*

	UK (N=15)
MA (proportion), Median [P25; P75]	0.20 [0.16;0.25]
ST (proportion), Median [P25; P75]	0.20 [0.14;0.25]
AD (proportion), Median [P25; P75]	0.18 [0.15;0.23]
EX (proportion), Median [P25; P75]	0.07 [0.05;0.12]
IN (proportion), Median [P25; P75]	0.14 [0.10;0.18]
MD (proportion), Median [P25; P75]	0.06 [0.03;0.09]
RE (proportion), Median [P25; P75]	0.09 [0.07;0.12]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 7 Table A7

Distribution of Medians for for Key lesson 1 *for Lithuania*

	Lithuania (N=14)
MA (proportion), Median [P25; P75]	0.07 [0.03;0.17]
ST (proportion), Median [P25; P75]	0.47 [0.43;0.60]
AD (proportion), Median [P25; P75]	0.11 [0.07;0.15]
EX (proportion), Median [P25; P75]	0.09 [0.05;0.12]
IN (proportion), Median [P25; P75]	0.17 [0.13;0.25]
MD (proportion), Median [P25; P75]	0.00 [0.00;0.01]
RE (proportion), Median [P25; P75]	0.02 [0.01;0.03]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 8 Table A8

Distribution of Medians for Proportions for Key lesson 1 *for Israel*

	Israel (N=18)
MA (proportion), Median [P25; P75]	0.37 [0.32;0.53]
ST (proportion), Median [P25; P75]	0.24 [0.21;0.28]
AD (proportion), Median [P25; P75]	0.08 [0.05;0.11]
EX (proportion), Median [P25; P75]	0.03 [0.02;0.06]
IN (proportion), Median [P25; P75]	0.09 [0.07;0.13]
MD (proportion), Median [P25; P75]	0.06 [0.05;0.10]
RE (proportion), Median [P25; P75]	0.03 [0.01;0.07]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 9 Table A9

Distribution of Medians for Proportions for Key lesson 1 *for Portugal*

	Portugal (N=11)
MA (proportion), Median [P25; P75]	0.36 [0.23;0.40]
ST (proportion), Median [P25; P75]	0.23 [0.16;0.26]
AD (proportion), Median [P25; P75]	0.14 [0.09;0.20]
EX (proportion), Median [P25; P75]	0.06 [0.03;0.07]
IN (proportion), Median [P25; P75]	0.16 [0.13;0.24]
MD (proportion), Median [P25; P75]	0.02 [0.01;0.07]
RE (proportion), Median [P25; P75]	0.04 [0.02;0.05]
MD-RE (proportion), Median [P25; P75]	0.00 [0.00;0.01]

Distribution Key lesson 2

Appendix 10 Table A10

Distribution of Medians for Proportions (and statistical Bivariate results analysis) for Key lesson 2 for Cyprus

	Cyprus (N=4)
Managerial (proportion), Median [P25; P75]	0.16 [0.13;0.21]
Stating (proportion), Median [P25; P75]	0.31 [0.30;0.31]
Accepting/Discarding (proportion), Median [P25; P75]	0.10 [0.06;0.13]
Expanding (proportion), Median [P25; P75]	0.06 [0.03;0.09]
Inviting (proportion), Median [P25; P75]	0.33 [0.29;0.36]
Meta-dialogical (proportion), Median [P25; P75]	0.00 [0.00;0.01]
Reasoning (proportion), Median [P25; P75]	0.05 [0.03;0.06]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 11 Table A11

Distribution of Medians for Proportions for Key lesson 2 for Germany

	Germany (N=4)
Managerial (proportion), Median [P25; P75]	0.21 [0.17;0.21]
Stating (proportion), Median [P25; P75]	0.25 [0.19;0.30]
Accepting/Discarding (proportion), Median [P25; P75]	0.12 [0.12;0.16]
anding (proportion), Median [P25; P75]	0.14 [0.11;0.14]
Inviting (proportion), Median [P25; P75]	0.25 [0.19;0.28]
Meta-dialogical (proportion), Median [P25; P75]	0.05 [0.03;0.06]
Reasoning (proportion), Median [P25; P75]	0.05 [0.03;0.06]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 12 Table A12

Distribution of Medians for Proportions) for Key lesson 2 for Spain

	Spain (N=12)
Managerial (proportion), Median [P25; P75]	0.14 [0.06;0.17]
Stating (proportion), Median [P25; P75]	0.37 [0.33;0.42]
Accepting/Discarding (proportion), Median [P25; P75]	0.06 [0.03;0.07]
Expanding (proportion), Median [P25; P75]	0.06 [0.04;0.11]
Inviting (proportion), Median [P25; P75]	0.25 [0.19;0.28]
Meta-dialogical (proportion), Median [P25; P75]	0.02 [0.00;0.05]
Reasoning (proportion), Median [P25; P75]	0.06 [0.05;0.07]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 13 Table A13

Distribution of Medians for Proportions for Key lesson 2 for Portugal

	Portugal (N=10)
Managerial (proportion), Median [P25; P75]	0.28 [0.18;0.41]
Stating (proportion), Median [P25; P75]	0.22 [0.17;0.31]
Accepting/Discarding (proportion), Median [P25; P75]	0.14 [0.12;0.18]
Expanding (proportion), Median [P25; P75]	0.06 [0.05;0.06]
Inviting (proportion), Median [P25; P75]	0.14 [0.05;0.20]
Meta-dialogical (proportion), Median [P25; P75]	0.03 [0.02;0.10]
Reasoning (proportion), Median [P25; P75]	0.06 [0.04;0.07]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.01]

Appendix 14 Table A14

Distribution of Medians for Proportions for Key lesson 2 for U.K.

	UK (N=15)
Managerial (proportion), Median [P25; P75]	0.15 [0.12;0.22]
Stating (proportion), Median [P25; P75]	0.21 [0.19;0.25]
Accepting/Discarding (proportion), Median [P25; P75]	0.23 [0.20;0.26]
Expanding (proportion), Median [P25; P75]	0.10 [0.06;0.12]
Inviting (proportion), Median [P25; P75]	0.11 [0.08;0.15]
Meta-dialogical (proportion), Median [P25; P75]	0.04 [0.02;0.07]
Reasoning (proportion), Median [P25; P75]	0.10 [0.09;0.14]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 15 Table A15

Distribution of Medians for Proportions   (an stat for Key lesson 2 for Israel

	Israel (N=3)
Managerial (proportion), Median [P25; P75]	0.29 [0.21;0.34]
Stating (proportion), Median [P25; P75]	0.29 [0.24;0.29]
Accepting/Discarding (proportion), Median [P25; P75]	0.13 [0.10;0.13]
Expanding (proportion), Median [P25; P75]	0.05 [0.05;0.10]
Inviting (proportion), Median [P25; P75]	0.15 [0.14;0.17]
Meta-dialogical (proportion), Median [P25; P75]	0.08 [0.07;0.12]
Reasoning (proportion), Median [P25; P75]	0.07 [0.05;0.09]
Meta-dialogical-reasoning (proportion), Median [P25; P75]	0.00 [0.00;0.00]

Appendix 17 Table A17

Distribution of Mean Percentages and SD for ST

		Mean %	SD
ST	Cyprus	28.54	6.99
	Germany	24.04	9.66
	Spain	37.22	5.70
	Portugal	21.50	9.48
	UK	20.59	6.06
	Lithuania	50,1426	17.92
	Israel	23.05	.86
	Total	28.84	13.69

Appendix 18 Table A18

Distribution of Mean Percentages and SD for ACDC

		Mean %	SD
AD	Cyprus	7.51	3.51
	Germany	14.61	4.48
	Spain	7.04	3.63
	Portugal	16.49	13.83
	UK	21.32	6.63
	Lithuania	16.64	24.47
	Israel	7.96	3.62
	Total	13.54	12.05

Appendix 19 Table A19

Distribution of Mean Percentages and SD for EX

		Mean %	SD
EX	Cyprus	6.52	4.22
	Germany	10.30	5.61
	Spain	6.60	3.91
	Portugal	5.35	2.20
	UK	8.99	4.58
	Lithuania	10.74	17.24
	Israel	6.41	6.61
	Total	7.89	7.70

Appendix 20 Table A20

Distribution of Mean Percentages and SD for IN

		Mean %	SD
IN	Cyprus	26.62	7.51
	Germany	18.78	6.54
	Spain	26.88	9.68
	Portugal	20.46	23.54
	UK	13.53	6.49
	Lithuania	20.32	8.85
	Israel	11.03	5.43
	Total	19.36	12.30

Appendix 21 Table A21

Distribution of Mean Percentages and SD for MD

		Mean %	SD
MD	Cyprus	0.99	1.42
	Germany	6.78	6.80
	Spain	2.37	2.81
	Portugal	5.27	4.93
	UK	6.05	4.49
	Lithuania	5.55	22.63
	Israel	7.52	3.99
	Total	4.98	9.21

Appendix 22 Table A22

Distribution of Mean Percentages and SD for RE

		Mean %	SD
RE	Cyprus	5.29	7.59
	Germany	8.04	5.25
	Spain	5.74	2.85
	Portugal	4.44	2.36
	UK	10.19	4.11¡
	Lithuania	1.70	1.61
	Israel	3.87	3.12
	Total	6.19	4.59

Appendix 23 Table A23

Distribution of Mean Percentages and SD for MD-RE

		Mean %	Sd
MD	Cyprus	0	0
	Germany	0.48	0.86
	Spain	0.05	0.16
	Portugal	0.57	0.70
	UK	0.07	0.19
	Lithuania	0.034	0.12
	Israel	0.14	0.40
	Total	0.18	0.48

Appendix 24 Table A24

Means (SD) Distribution for each Discourse Category According to Pre-primary (N=55)

	Mean	SD
MA	23	12
ST	30	14
AD	10	7
EX	6	5
IN	25	12
MD	3	4
RE	5	4
MD_RE	0	0

Appendix 25 Table A25

Means (SD) Distribution for each Discourse Category According to Primary (N=5O)

	Mean	SD
MA	24	14
ST	34	53
AD	28	100
EX	7	5
IN	22	28
MD	5	4
RE	8	6
MD_RE	0	0

Appendix 26 Table A26

Means (SD) Distribution for each Discourse Category According to Secondary (N=48)

	Mean	Std. Deviation
MA	26	19
ST	31	18
AD	15	10
EX	11	11
IN	14	6
MD	7	15
RE	5	4
MD_RE	0	1