The rotation of seats in the classroom and the students' learning

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Abstract: This paper describes research done on two groups of Spanish language courses at a technical-oriented university. The aim of the research was to demonstrate the influence of a controlled rotation of seats on fluency and interaction during a thematic dialogue in a conversation class. The rotation of seats in a classroom is considered one of the aspects of cooperative learning. The rotation of seats is a classroom technique is a technique that gives teachers great power and influence to affect students' classroom performance as well as their final exam results. The investigation consisted in a comparison of final conversation exam results in a class where students were asked to follow a certain seating arrangement (an experimental group) and in a group in which they were allowed to sit as they chose to (a traditional group). The result was that students from the experimental group achieved better results in the final exam. Statistical theory and methods of hypothesis testing were used for the analysis of quantitative data.

Key words: assigned seating arrangement, language testing, language assessment, second language acquisition, seating position in the classroom

Introduction

Cooperative learning is an approach in the field of education that aims at helping students to learn from each other and perform activities during the class with other classmates while also enjoying learning more. According to Slavin (1990) cooperative learning is not just "structuring positive interdependence" among students in a group. As Olsen points out, in cooperative learning students learn "how to work as a part of a team and have others depending on you".

An assigned seating arrangement, or in other words a controlled rotation of seats, can be viewed as one of the cooperative learning approach classroom techniques. With assigned seating arrangements, the teacher can influence and decide where students will be seated in the classroom as well as with whom they will do communicative and other activities. Thus the teacher can increase their learning benefits. Undoubtedly, this classroom technique improves the second language communicative skills. Researchers who investigated the role of the assigned seating arrangement, such as Juhary (2012), conclude that this teaching method is viewed positively by students.

1 Aims

1.1 Methods

The objective of this paper is to examine the benefits of the assigned seating arrangement used by two language teachers in second language courses at the University of Life Sciences in Prague as well as describe an experiment that was carried out in two groups of A2 Spanish language courses. The aim of the experiment was to demonstrate the influence of the controlled rotation of seats on fluency and interaction during a thematic dialogue in a conversation class. The level A2 was chosen for the monitoring for being the most heterogeneous level with respect to the knowledge of the language. Monitoring had to be performed during four semesters because the number of students at this level is not very high. In the first group, which will be called a traditional group, students were allowed to sit where they wanted for every lesson (i.e. choosing for themselves their neighbour and thus a conversation partner). In the other group, which will be called an experimental group, students had to follow a certain seating arrangement. The seating plan was prepared in advance by a teacher in such a way that students had a different seat. This means that for every class, they had a different conversation partner with whom they performed various communicative activities. In the traditional group, there were 76 students, and in the experimental group, there were 66 students. The aim in both groups was to prepare students for the final exam that was to be taken in pairs.

At the end of each semester, students took a conversation exam. After four semesters had passed, a total of 142 dialogues were performed in conversation exams. Students were assessed during the exam by teachers' filling out the following report. Each report contained the name and surname of the student on it as well as the name and surname of the conversation partner and the topic of the exam dialogue. Each category in Tab. 1 was assessed by allotting points according to students' performance on the exam.

Although fluency and interaction were the most important aspects of assessment, the grammar and vocabulary used, as well the adequacy of the dialogue were also taken into account. As far as grammar was concerned, a score was given according to the use of tenses. However, the correct usage of articles, prepositions and pronouns was also considered. Vocabulary was assessed as "minimal" if students used only verb "ser" (to be) and "tener" (to have) and if they limited themselves to words learned for the topic. A higher score was obtained if they resorted to many more terms from the coursebook. The maximum score was obtained if they also applied vocabulary from additional materials used during the semester. In the assessment of fluency, a minimum score was given if students limited themselves just to monosyllables. As for the interaction, it was considered whether the student resorted just to answering questions (score "very passive"), responded to

Tab. 1

				Points
Grammar 0–30	**Only the Present Tense**	**Only the Past Tense**	**Mix of Tenses**	
Vocabulary 0–30	**Minimum**	**Textbook**	**Additional Materials**	
Fluency 0–20	**Very short sentences**	**Short sentences**	**Complete and complex sentences**	
Interaction 0–15	**Very passive**	**Passive**	**Active**	
Adequacy 0–5	**Minimum**	**Partial**	**Complete**	
	Total			

questions and repeated responses from their interlocutor adapting them to reality (score "passive") or attempted to introduce the topic, improvise questions and answers as well as make comments that developed the topic and added information (score "active"). Dialogues had to meet certain criteria. According to compliance with these criteria, adequacy was assessed.

The statistical theory of hypothesis testing and also contingency tables were used for the analysis of quantitative data.

The contingency tables show results of grammar in the group with a rotation of seats (Tab. 2) and in the group without a rotation of seats (Tab. 3). 97% of students from the traditional group used only the present tense, while in the experimental group 50% of students used only the present tense, 38% used the past tense and 12% used both tenses.

The following contingency table shows the results of the vocabulary assessment. It is quite clear that students from the experimental group have amassed a wider vocabulary, because 64% of them were able to use not only vocabulary learnt from the textbook but also from additional materials that had been prepared for each lesson. Students had to download them from the Moodle application, print them out and take them to class. Whereas in the traditional group the highest number of students (39%) were able to use only minimum vocabulary.

The contingency table for fluency (Tab. 4) shows a similar tendency in results to those of grammar and vocabulary. Again, as in in the two previous contingency tables, the results reveal that up to 65% of students in the experimental groups

Tab. 2

	Description of Columns			
Description of Rows	**Gram A**	**Gram B**	**Gram C**	**Total**
With rotation				
Number—Grammar	33	25	8	66
Number—Grammar 2	50%	38%	12%	100%
Without rotation				
Number—Grammar	74	2		76
Number—Grammar 2	97%	3%	0%	100%
Total—Grammar	**107**	**27**	**8**	**142**
Total—Grammar 2	**75%**	**19%**	**6%**	**100%**

Tab. 3

	Description of Columns			
Description of Rows	**Voc A**	**Voc B**	**Voc C**	**Total**
With rotation				
Number—Voc	14	10	42	66
Number—Voc2	21%	15%	64%	100%
Without rotation				
Number—Voc	30	19	27	76
Number—Voc2	39%	25%	36%	100%
Total—Voc	**44**	**29**	**69**	**142**
Total—Voc2	**31%**	**20%**	**49%**	**100%**

were able to use complete and complex sentences, whereas in the traditional group the percentage was only 21% and 49% of students used only short sentences.

Not surprisingly, the contingency table for interaction (Tab. 5) confirms the same tendency in results. In the experimental group up to 47% of students actively interacted with their conversation partner, while in the traditional group only 22%. In the traditional group, the highest number of students (39%) was able to interact in a very passive way.

Having gathered the above-mentioned results, the following step was to find out using the F-test and the t-test if students from the group with a seating arrangement have the same results in a final conversation exam on a 1–100 point marking scale as students that were allowed to sit as they chose to.

The zero and alternative hypothesis was established as follows:

Tab. 4

	Description of Columns			
Description of Rows	**Fluency A**	**Fluency B**	**Fluency C**	**Total**
With rotation				
Number—Fluency	10	13	43	66
Number—Fluency2	15%	20%	65%	100,00%
Without rotation				
Number—Fluency	23	37	16	76
Number—Fluency2	30%	49%	21%	100,00%
Total—Fluency	**33**	**50**	**59**	**142**
Total—Fluency2	**23%**	**35%**	**42%**	**100,00%**

Tab. 5

	Description of Columns			
Description of Rows	**Inter A**	**Inter B**	**Inter C**	**Total**
With rotation				
Number—Interaction	12	23	31	66
Number—Interaction2	18%	35%	47%	100,00%
Without rotation				
Number—Interaction	30	29	17	76
Number—Interaction2	39%	38%	22%	100,00%
Total—Interaction	**42**	**52**	**48**	**142**
Total—Interaction2	**30%**	**37%**	**34%**	**100,00%**

The 0 hypothesis: there is no difference in final exam results between the experimental and traditional group.

The alternative hypothesis: yes, there is a difference in results between the two groups.

Besides, the aim was to investigate how the rotation of seats influences results in fluency and interaction part of the thematic dialogue.

The Tab. 6 shows results of the F-test.

By doing the two-sample F-test for variance it was investigated whether variance values of the average score equal in population of the experimental and the traditional group. The Variable 1 is the experimental group (average score is 61.5% and Variable 2 (the average score is 46.8%) is the traditional group. After the two-sample F-test for variance was done it was found out that the P-value is lower than 0.05. It means that population variances are not equal. For this reason, a two-sample t-test assuming unequal variances was carried out.

Tab. 6

Two sample F-test for variance		
	Variable 1	*Variable 2*
Mean	61,53030303	46,77631579
Variance	144,7759907	68,97596491
Observation	66	76
df	65	75
F	2,098933895	
P(F<=f) (1)	0,00103266	
F Critical (1)	1,482397868	

Two sample unequal variance t-test is shown in Tab. 7.

Tab. 7

Two sample unequal variance t-test		
	Variable 1	*Variable 2*
Mean	62	47
Variance	145	69
Observation	66	76
Hypothesized Mean Difference	0	
df	113	
t Stat	8,378142248	
P(T<=t) (1)	8,32488E−14	
t Critical (1)	1,658450217	
P(T<=t) (2)	1,66498E−13	
t Critical (2)	1,981180296	

These tables show that there is statistically a significant difference between results of students in both groups and it makes sense to make statistical analysis and do the test of fluency and interaction.

The Tab. 8 shows the results of the two-sample F test for variance.

Tab. 8

	Variable 1	*Variable 2*
Mean	14	10
Variance	32	22
Observation	66	76
df	65	75
F	1,483297636	
P(F<=f) (1)	0,049740417	
F Critical (1)	1,482397868	

Two-sample unequal variance t-test results are as follows:

Tab. 9

	Variable 1	*Variable 2*
Mean	14	10
Variance	32	22
Observation	66	76
Hypothesized Mean Difference	0	
df	126	
t Stat	4,455289	
P(T<=t) (1)	9,14E−06	
t Critical (1)	1,657037	
P(T<=t) (2)	1,83E−05	
t Critical (2)	1,978971	

Results of the contingency table in Tab. 10 indicate that it is statistically proved that the rotation of seats matters in fluency. The difference between the two populations is statistically significant, not random.

Tab. 10

	Description of Columns			
Description of Rows	**Fluency A**	**Fluency B**	**Fluency C**	**Total**
With rotation				
Number—Fluency	10	13	43	66
Number—Fluency2	15%	20%	65%	100,00%
Without rotation				
Number—Fluency	23	37	16	76
Number—Fluency2	30%	49%	21%	100,00%
Total—Fluency	**33**	**50**	**59**	**142**
Total—Fluency2	**23%**	**35%**	**42%**	**100,00%**
Observed frequencies	10	13	43	66
	23	37	16	76
	33	50	59	142
Expected frequencies				
	15,338	23,239	27,423	
	17,662	26,761	31,577	
Significance of the Chi-Square Test				6,69345E−07

The same process was repeated with interaction. Again, a two-sample F test for variance and a two-sample unequal variance t-test were carried out (see Tab. 11 and Tab. 12).

Tab. 11

Two sample F test for variance	*Variable 1*	*Variable 2*
Mean	10	8
Variance	15	11
Observation	66	76
df	65	75
F	1,279076132	
P(F<=f) (1)	0,151317182	
F Critical (1)	1,482397868	

Tab. 12

Two sample unequal variance t-test	*Variable 1*	*Variable 2*
Mean	10	8
Variance	15	11
Observation	66	76
Hypothesized Mean Difference	0	
df	131	
t Stat	4,034459	
P(T<=t) (1)	4,62E−05	
t Critical (1)	1,656569	
P(T<=t) (2)	9,25E−05	
t Critical (2)	1,978239	

Results in the final table (Tab. 13) of interaction demonstrate that significance of the Chi-Square test is lower than 0.05 which leads to a conclusion that statistically there is a difference between the two groups of students.

1.2 Results

1.2.1 Grammar

Students that were used to the rotation of seats dared to use multiple tenses, but with errors. There was a lot of instant self-correction, peer correction and repetition of phrases already corrected. Students from the traditional group demonstrated mastery only of the present tense, although mostly speaking slowly and sometimes reciting the phrases quietly.

Tab. 13

	Description of columns			
Description of Rows	**Inter A**	**Inter B**	**Inter C**	**Total**
With rotation				
Number—Interaction	12	23	31	66
Number—Interaction2	18%	35%	47%	100,00%
Without rotation				
Number—Interaction	30	29	17	76
Number—Interaction2	39%	38%	22%	100,00%
Total—Interaction	**42**	**52**	**48**	**142**
Total—Interaction2	**30%**	**37%**	**34%**	**100,00%**
Observed frequencies				
	12	23	31	66
	30	29	17	76
	42	52	48	142
Expected frequencies				
	19,521	24,169	22,310	
	22,479	27,831	25,690	
Significance of the Chi-Square Test				0,002679243

1.2.2 Vocabulary

As already mentioned, the A2 level students were the most heterogeneous group. However, each student had different previous knowledge. As for the vocabulary used, the influence of pre-university linguistic studies was observed in both groups. In fact, some of the participants of the experiment belonged to a higher level (level B1).

1.2.3 Fluency

In both groups, both shyness and spontaneity were appreciated. This also affected fluency and its assessment. The experimental group showed greater spontaneity. Students from the traditional group limited themselves to a large extent to merely repeating questions from their partner.

1.2.4 Interaction

A reaction of participants during the dialogue was in some cases in both groups by deduction. Nevertheless, it was demonstrated that they did not have to understand everything that was said by the interlocutor.

In order to pass the exam at the end of the semester, students were evaluated individually, although they were examined in pairs. Students passed a conversation exam. They had to talk about a topic that they drew lots for following instructions about the sequence of a discourse according to certain previous experience and coming to a conclusion. They could not use any learning aids.

Conclusion

The F-test performed shows that in conversation classes the controlled rotation of seats has influence on results and a final grade of participants when an oral conversation exam is performed. According to the F-test performed, fluency and interaction of a thematic dialogue increase between interlocutors that have a conversation with different people and under a number of circumstances. A seating arrangement in a language class is a great help for this purpose. In conversation classes fluency and interaction in dialogues become more enjoyable and have more easiness when carried out between different partners. The Chi-Square test performed shows that a positive influence of a controlled rotation of seats in a conversation class is not something random. A controlled rotation of seats in language classes can be recommended to all language levels.

A rotation of seats (assigned by a teacher) is not a voluntary choice of students although it is positively viewed *a posteriori*. The rotation helps to homogenize groups initially heterogeneous, makes a class more pleasant, and reinforces socialization and cooperative learning among students.

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