

# Examining the Teachers' Views Regarding the Usefulness of Dramatization in Primary Education Based on Non-Parametric Statistical Tests

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**ABSTRACT:** In this article, we examine the differences that arise in teachers' views regarding the utilization of dramatization in the educational process, using reliable inferential statistical methods. Our sample consisted of 60 (sixty) primary school teachers on the Greek island of Paros, of which 15 (fifteen) are men and 45 (forty-five) are women. The subjects completed a well-structured questionnaire, during the period October 2017-May 2018, allowing us to draw useful conclusions on both their knowledge and the usefulness of dramatization inside a school environment. Furthermore, we explore their general tendencies according to the importance and necessity of dramatization within the educational procedure, while the analysis focuses on their differentiation of views based on their gender and years of work experience, using the non-parametric statistical tests of Mann-Whitney and Kruskal-Wallis. These tests are ideal for the comparison of data resulting from questionnaires employing the Likert scale, due to the avoidance of mean value's usage during their application. Finally, these well established and widely used statistical tools, enhance the trustworthiness of the produced results and conclusions, providing a representative insight of the general teachers' opinions about the inclusion of dramatization in primary education.

**KEYWORDS:** Dramatization, Pedagogy, Non-Parametric statistical tests, Mann-Whitney test, Kruskal-Wallis test

## Introduction

Dramatization is a theatrical technique that can aid pupils, as well as adults, in better understanding certain concepts, both within and outside the strict educational environment. 'Dramatopoesis', the Greek word for dramatization, is a compound word, formed by the words *drama* and *poetry* ('poesis' in Greek). The latter does not refer to its literary significance (poetry: the art of poems) but to its basic etymological meaning, namely: to make, to do, to construct (Gargalianos 2020: 49). There is a lot of research that supports the integration of dramatization in the educational process by emphasizing its beneficial properties.

In this study, through the usage of a well-constructed questionnaire, we explored the tendencies of primary school teachers of Paros Island, regarding the inclusion of dramatization in education together with its possible beneficial effects for the students of a primary school. In addition, special emphasis was placed on the comparison of their opinions according to their gender and years of experience, using the Mann-Whitney and Kruskal-Wallis non-parametric tests, which seem as ideal for questionnaires based on Likert scale, due to their construction. There are several studies on the influence of dramatization in the educational process using the aforementioned tests; Şengün & İskenderoğlu (2010) presented the analyses of 17 articles on the use of dramatization in the teaching of Mathematics; Kayılı & Erdal (2021) compared the performance of 40 pupils through the Mann-Whitney test, in order to decide whether dramatization enhances the understanding of preschool children, while Momeni et al. (2017) investigate the improvements in the creativity of 4-6 year-olds using a sample of 52 children, caused by the inclusion of dramatization. Also, Kilic &

Namdar (2021) assessed whether dramatization contributes to the acquisition of values in 5-year-old children. Finally, Yaşar & Aral (2020) examined whether dramatization contributes to the development of creative thinking of children aged 61-72 months, while Pesen & Üzüm (2017) explored the self-efficacy levels of English teachers who used similar teaching techniques. Another widely used statistical tool that is adequate in the exploration of correlation between the answers of respondents in various questions, is the Spearman index that also belongs to the category of non-parametric statistical tests (Papageorgiou & Tsaklidis 2021; Murray 2013) rendering it ideal for the particularities of Likert scale.

### **Questionnaire reliability**

In this section, emphasis is placed on assessing the reliability of the questionnaire measurement scale, through Cronbach's alpha coefficient, which returns values ranging from 0 to 1 (Adeniran 2019; Tavakol & Dennick 2011; Taber 2017). The higher the value, the more reliable is the scale utilized in the questionnaire items. Values that tend to 1 are almost impossible in practice; therefore, researchers consider values greater than 0.5 as relatively acceptable, and those greater than 0.7 as extremely satisfactory. In this case, the coefficient calculated through SPSS (version 23.0) is 0.861; this constitutes a particularly satisfactory and trustworthy value, which confirms the strong reliability of the used scale.

### **Normality of data distribution**

The basic condition of many statistical tests is the assumption that the sample's observations follow the normal (Gaussian) distribution (Wong & Wong 2016). The dissatisfaction of this hypothesis leads to the utilization of non-parametric statistical tests such as those of Mann–Whitney and Kruskal-Wallis, which are employed during our analysis. In addition, these two statistical tests are more appropriate in cases of ordinal measurement data scale -such as Likert data scale- as their function is based on the order rather the mean of the observations. The statistical methodologies and tools that invoke the usage of the sample mean are more adequate in analysing interval or ratio scale data. These two characteristic non-parametric tests, the Mann–Whitney (Jingdong & Priebe 1998, Wallace 2004) and Kruskal-Wallis tests (Dalgaard 2002, Brown & Hettmansperger 2002) could be used to examine the existence of statistically significant differentiations between the views of two or among the views of three or more groups of questionnaire respondents correspondingly (Winter & Dodou 2012, Ostertagová & Ostertag 2014).

The respective parametric tests are the t-test and Anova, which are highly popular having similar intuitive interpretation as Mann–Whitney and Kruskal-Wallis tests. During the present analysis, we utilize the Kolmogorov–Smirnov and Shapiro–Wilk statistical tests to assess the normality of data distribution; both tests produce similar results and conclusions for all questionnaire items. The two tests produce a p-value of  $0.00 < 0.05$  for all 24 questions-affirmations, which is expected due to the nature of Likert scale; thus, the normality hypothesis is rejected.

### **Comparison of views based on sex**

In this paragraph, we examine the difference in views according to gender, via the Mann-Whitney test. The variable “gender” is coded as “Male” = 0 and “Female” = 1; the answers to the questions of the five-point Likert scale are coded with values between 1 - 5, where higher values represent more positive answers to the statements-affirmations.

Tables 1a up to 1d illustrate the statistical results produced by the non-parametric test of Mann-Whitney. More specifically, the 3rd column presents the number of respondents in

each subgroup, the 4th and 5th show the average value and standard deviation for each group, correspondingly, and the 6th column displays the statistical significance of the comparison between the 2 categories (p-value).

Table 1a. Comparison of teachers' views based on gender through the Mann–Whitney test

Teachers' Statements	Gender	N	Mean Value	Standard Deviation	p-value
1. Dramatization is an effective teaching method	Male	15	4.40	0.632	0.431
	Female	45	4.28	0.645	
2. Dramatization is widely used in the teaching of general classes	Male	15	3.07	0.884	0.836
	Female	45	3.02	0.917	
3. Dramatization is appropriate for teaching foreign-language pupils	Male	15	4.27	0.594	0.636
	Female	45	4.33	0.674	
4. Teachers are trained to use dramatization as a teaching method	Male	15	2.73	0.961	0.636
	Female	45	2.53	0.726	
5. Dramatization presupposes good use of the dominant language	Male	15	3.60	1.183	0.033
	Female	45	2.96	0.952	

Table 1b.

Teachers' Statements	Gender	N	Mean Value	Standard Deviation	p-value
6. I have used dramatization in the teaching of the Greek language	Male	15	2.87	1.356	0.637
	Female	45	3.02	0.941	
7. I use dramatization in the teaching of the Greek language	Male	15	2.67	1.397	0.363
	Female	45	2.96	1.021	
8. I use dramatization in teaching courses other than the Greek language	Male	15	3.00	1.414	0.537
	Female	45	2.87	1.179	
9. I create dramatization activities in addition to the content of the textbook	Male	15	2.93	1.223	0.837
	Female	45	2.82	1.007	
10. I use dramatization when it is suggested by the Teacher's Handbook	Male	15	2.60	0.986	0.132
	Female	45	3.11	1.153	
11. I would choose dramatization to make teaching more effective	Male	15	3.47	1.060	0.362
	Female	45	3.78	0.735	
12. I would choose dramatization for more enjoyable teaching and easier learning	Male	15	3.93	1.163	0.970
	Female	45	4.09	0.583	

Table 1c.

<b>Pupils, through dramatization...</b>	Gender	N	Mean Value	Standard Deviation	p-value
13. Expand life and learning experiences	Male	15	4.07	0.704	0.698
	Female	45	3.96	0.767	
14. Gather information about the "Other"	Male	15	3.87	0.834	0.630
	Female	45	3.93	0.720	
15. Develop their language skills	Male	15	4.00	0.535	0.912
	Female	45	4.00	0.674	
16. Release emotional charge	Male	15	4.20	0.676	0.123
	Female	45	4.44	0.813	
17. Develop democratic relationships within the classroom and the school environment	Male	15	3.93	0.704	0.704
	Female	45	4.00	0.769	
18. Feel creative	Male	15	4.13	0.743	0.040
	Female	45	4.56	0.586	

Table 1d.

<b>Pupils, through dramatization...</b>	Gender	N	Mean Value	Standard Deviation	p-value
19. Combine relaxation and creativity	Male	15	4.13	0.743	0.108
	Female	45	4.47	0.661	
20. Develop motor skills	Male	15	4.20	0.561	0.896
	Female	45	4.18	0.777	
21. Discover and develop their senses	Male	15	4.13	0.640	0.613
	Female	45	4.22	0.704	
22. Stimulate their imagination	Male	15	4.60	0.507	0.904
	Female	45	4.58	0.621	
23. Set aside inhibitions and phobias	Male	15	4.13	0.834	0.772
	Female	45	4.04	0.796	
24. Socialise	Male	15	4.33	0.816	0.703
	Female	45	4.44	0.693	

Observing the results of the above tables, we pay attention to the statements "Dramatization presupposes good use of the dominant language" and "Feel creative", with ( $U = 217.5$ ,  $p = 0.033 < 0.05$ ) and ( $U = 230.5$ ,  $p = 0.040 < 0.05$ ), correspondingly. In the case of the question "Dramatization presupposes good use of the dominant language", the opinions of men (mean value = 3.6) seem to be more positive compared to those of women, with a mean value of 2.96. The value of 3.6 indicates that men's views concentrate on the option "I agree", while the women's views rather converge on the moderate answer "Neither agree nor disagree".

The female teachers who participated in this research seem to be of the option that dramatization contributes beneficially to the stimulation of children's creativity more strongly than men, as their answers' mean value to the corresponding question is 4.56, compared to the 4.13, which is the mean of male teachers' responses (Golia 2021: 78). No statistically significant differentiations are displayed in the tendencies of men and women in the remaining questions, as illustrated by the corresponding p-values, which are greater than the significance level of 0.05.

### Comparison of views based on years of experience

At this point, with the help of the Kruskal–Wallis test, the difference in the views of the teachers who participated in the research according to their years of experience is being examined. The variable “years of experience” was coded as “1 - 6 = 1”, “7 - 12 = 2”, “13 - 18 = 3” and “18+ = 4”. In the original questionnaire there are five groups for this variable, however due to the small number of participants, in the subgroups “18 – 23” and “23+” these two groups are merged into one “18+”, which is coded with 4.

In Tables 2a up to 2d, we observe the results of the Kruskal-Wallis test. More specifically, in the 3rd column we have the number of respondents of each group, in the 4th the average value of the four groups, in the 5th the standard deviation and in the 6th the statistical significance of the test (p–value).

Table 2a. Comparison of teachers’ views based on years of experience, via the Kruskal-Wallis test

Teachers’ Statements	Years of Experience	N	Mean Value	Standard Deviation	p-value
1. Dramatization is an effective teaching method	1 - 6	14	4.29	0.611	0.115
	7 - 12	26	4.08	0.688	
	13 - 18	12	4.50	0.522	
	18+	8	4.63	0.518	
2. Dramatization is widely used in the teaching of general classes	1 - 6	14	2.57	0.756	0.019
	7 - 12	26	3.35	0.892	
	13 - 18	12	3.17	0.718	
	18+	8	2.63	1.061	
3. Dramatization is appropriate for teaching foreign-language pupils	1 - 6	14	4.43	0.756	0.470
	7 - 12	26	4.19	0.694	
	13 - 18	12	4.50	0.522	
	18+	8	4.25	0.463	
4. Teachers are trained to use dramatization as a teaching method	1 - 6	14	2.71	0.914	0.895
	7 - 12	26	2.54	0.582	
	13 - 18	12	2.58	0.793	
	18+	8	2.50	1.195	
5. Dramatization presupposes good use of the dominant language	1 - 6	14	2.86	1.027	0.354
	7 - 12	26	3.27	0.962	
	13 - 18	12	2.83	0.937	
	18+	8	3.50	1.414	

Table 2b.

Teachers’ Statements	Years of Experience	N	Mean Value	Standard Deviation	p-value
6. I have used dramatization in the teaching of the Greek language	1 - 6	14	2.50	1.160	0.100
	7 - 12	26	3.19	0.981	
	13 - 18	12	2.83	1.115	
	18+	8	3.38	0.744	

7. I use dramatization in the teaching of the Greek language	1 - 6	14	2.43	1.222	0.098
	7 - 12	26	3.19	1.059	
	13 - 18	12	2.50	1.087	
	18+	8	3.25	0.886	
8. I use dramatization in teaching courses other than the Greek language	1 - 6	14	2.93	1.072	0.410
	7 - 12	26	2.69	1.192	
	13 - 18	12	2.92	1.379	
	18+	8	3.50	1.414	
9. I create dramatization activities in addition to the content of the textbook	1 - 6	14	2.86	0.949	0.360
	7 - 12	26	2.65	0.977	
	13 - 18	12	2.83	1.115	
	18+	8	3.50	1.309	
10. I use dramatization when it is suggested by the Teacher's Handbook	1 - 6	14	2.57	1.222	0.257
	7 - 12	26	3.12	1.143	
	13 - 18	12	2.83	0.937	
	18+	8	3.50	1.069	
11. I would choose dramatization to make teaching more effective	1 - 6	14	3.71	0.994	0.564
	7 - 12	26	3.62	0.752	
	13 - 18	12	3.67	0.985	
	18+	8	4.00	0.535	
12. I would choose dramatization for more enjoyable teaching and easier learning	1 - 6	14	3.93	1.072	0.153
	7 - 12	26	3.92	0.796	
	13 - 18	12	4.08	0.900	
	18+	8	4.63	0.518	

Table 2c.

<b>Pupils, through dramatization...</b>	<b>Years of Experience</b>	<b>N</b>	<b>Mean Value</b>	<b>Standard Deviation</b>	<b>p-value</b>
13. Expand life and learning experiences	1 - 6	14	4.36	0.497	0.026
	7 - 12	26	3.65	0.745	
	13 - 18	12	4.17	0.718	
	18+	8	4.13	0.835	
14. Gather information about the "Other"	1 - 6	14	4.36	0.497	0.043
	7 - 12	26	3.65	0.797	
	13 - 18	12	3.92	0.669	
	18+	8	4.00	0.756	
15. Develop their language skills	1 - 6	14	4.29	0.611	0.144
	7 - 12	26	3.81	0.634	
	13 - 18	12	4.00	0.426	
	18+	8	4.13	0.835	
16. Release emotional charge	1 - 6	14	4.71	0.469	0.231
	7 - 12	26	4.15	0.925	

	13 - 18	12	4.50	0.674	
	18+	8	4.38	0.744	
17. Develop democratic relationships within the classroom and the school environment	1 - 6	14	4.21	0.802	0.423
	7 - 12	26	3.81	0.749	
	13 - 18	12	4.08	0.793	
	18+	8	4.00	0.535	
18. Feel creative	1 - 6	14	4.64	0.497	0.629
	7 - 12	26	4.38	0.637	
	13 - 18	12	4.33	0.778	
	18+	8	4.50	0.756	

Table 2d.

<b>Pupils, through dramatization...</b>	<b>Years of Experience</b>	<b>N</b>	<b>Mean Value</b>	<b>Standard Deviation</b>	<b>p-value</b>
19. Combine relaxation and creativity	1 - 6	14	4.50	0.519	0.947
	7 - 12	26	4.38	0.697	
	13 - 18	12	4.25	0.866	
	18+	8	4.38	0.744	
20. Develop motor skills	1 - 6	14	3.93	0.829	0.217
	7 - 12	26	4.12	0.711	
	13 - 18	12	4.50	0.522	
	18+	8	4.38	0.744	
21. Discover and develop their senses	1 - 6	14	4.00	0.679	0.303
	7 - 12	26	4.15	0.675	
	13 - 18	12	4.50	0.522	
	18+	8	4.25	0.886	
22. Stimulate their imagination	1 - 6	14	4.04	0.497	0.678
	7 - 12	26	4.46	0.706	
	13 - 18	12	4.75	0.452	
	18+	8	4.63	0.518	
23. Set aside inhibitions and phobias	1 - 6	14	4.07	0.917	0.351
	7 - 12	26	4.00	0.693	
	13 - 18	12	3.92	0.900	
	18+	8	4.50	0.756	
24. Socialise	1 - 6	14	4.57	0.514	0.678
	7 - 12	26	4.27	0.827	
	13 - 18	12	4.42	0.793	
	18+	8	4.63	0.518	

There is a statistically significant difference in 3 out of the 24 statements listed in the questionnaire. A significant difference appears in statement “Dramatization is widely used in the teaching of general classes” with  $\eta = 10.005$  and  $p - \text{value} = 0.019 < 0.05$ . This result is

due to the difference in the views of teachers with “7 – 12” and “13 – 18” years of experience in relation to the opinions of the other two groups. More specifically, the mean values 3.35 of group “7 – 12” and 3.17 of group “13 – 18”, indicate a more moderate attitude regarding whether dramatization is used in general education classes, while teachers with “1 – 6” and “18+” years of experience are found to be between the “Disagree” and the moderate choice, with averages of 2.57 and 2.63 respectively.

Regarding the statement “They expand the life and learning experiences”, there is a statistically significant difference with  $\eta = 9.260$  and  $p - \text{value} = 0.026 < 0.05$ . Essentially, the group that differs significantly from the rest is that of “7 – 12” years of experience, which seems to be between the options “Neither Agree nor Disagree” and “Agree” with an average of 3.65. Finally, differentiated answers appear in the statement that elementary school students collect information about the “Other” through dramatization with  $\eta = 8.156$  and  $p - \text{value} = 0.043 < 0.05$ . The answers of teachers with “7 – 12” years of experience seem to have been divided between the options “Neither Agree nor Disagree” and “Agree” with an average of 3.65. At the same time, the other three groups converge on the “Agree” option with averages of 3.92 and 4 for the “13 – 18” and “18+” groups, while the teachers who belong to the “1–6” category have the highest average value of 4.36.

## Conclusions

This study examines the views of 60 primary education teachers on the island of Paros, during the period October 2017-May 2018, regarding the inclusion and usefulness of dramatization in the educational process. According to their general tendencies, we found that, indeed, dramatization is a technique that significantly helps teachers in their lessons regardless of specialty. Next, we understood that the training of teachers in dramatization context is absent from the general educational process; as a result, the processes that take place in the classroom are not the desirable ones, nor do they raise the level of the general educational process.

As the normality hypothesis is rejected, but also due to the ordinal scale used in the questionnaire, we utilize the Mann-Whitney and Kruskal-Wallis non-parametric statistical tests. Based on the results presented in the above analysis, there are minor differentiations in the tendencies of teachers according to gender and years of experience. The two aforementioned non-parametric tests help us to ascertain differences of views on specific questions; subsequently, via descriptive statistics, we draw further conclusions regarding the opinions of each group of primary school teachers. Thus, we conclude, that the methodology that we utilize is ideal in order to manage and explore questionnaire results. The above methodology may be used similarly to conduct other studies in the field of Education and Social Sciences, and, more specifically, with regard to the inclusion of different types of theatre therein.

## References

- Adeniran, A.O. 2019. “Application of Likert Scale Type and Cronbach's Alpha Analysis in an Airport Perception Study.” *Scholar Journal of Applied Sciences and Research*, vol. 2(4): 1-5.
- Brown, B.M. and Hettmansperger T.P. 2002. “Kruskal-Wallis, Multiple Comparisons and Efron Dice.” *Australian & New Zealand Journal of Statistics* 44(4): 427-438. DOI:10.1111/1467-842X.00244.
- Gargalianos, S. 2020. *Dramatization Techniques and Methods in Education*. Thessaloniki, Kyriakidis Brothers.
- Golia, D. 2021. “The role of dramatization in inter-cultural teaching methods in the Primary School Classrooms with mixed Non-Native and Native Pupils.” *Master Thesis. Trans-national, Inter-university, Inter-disciplinary Postgraduate Program*. Democritus University of Thrace. June 2021.
- Dalgaard, P. 2002. *Introductory Statistics with R*. New York, Springer. DOI: 10.1007/978-0-387-79054-1
- Jingdong, X. and Priebe C. 2000. “Generalizing the Mann-Whitney-Wilcoxon Statistic.” *Journal of Nonparametric Statistics* 12(5): 661-682. DOI:10.1080/10485250008832827.



- Kayili, G. and Erdal Z. 2021. "Children's problem solving skills: Does Drama Based Storytelling Method work?" *Journal of Childhood Education & Society* 2(1): 43-57. DOI:10.37291/2717638X.20212164.
- Kilic, Z., Namdar A.O. 2021. "The Effect of Creative Drama-based Activities on Acquisition of Values by 5-Year-Olds." *International Journal of Progressive Education* 17(1): 392-403. DOI: 10.29329/ijpe.2020.329.25.
- Momeni, S., Khaki, M., and Amini, R. 2017. "The Role of Creative Drama in Improving the Creativity of 4-6 Years Old Children." *Journal of History Culture and Art Research* 6(1): 617-626. DOI:10.7596/taksad.v6i1.765.
- Murray, J. 2013. "Likert Data: What to Use, Parametric or Non-Parametric?" *International Journal of Business and Social Science* 4: 258-264.
- Ostertagova, E. and Ostertag O. 2014. "Methodology and Application of the Kruskal-Wallis Test." *Applied Mechanics and Materials*, vol. 611: 115-120. DOI:10.4028/www.scientific.net/AMM.611.115.
- Pesen, A. and Üzümlü B. 2017. "The Analysis of Self Efficacies of English Language Teachers in Terms of Creative Drama Use in Education." *Universal Journal of Educational Research* 5(8): 1378-1385. DOI:10.13189/ujer.2017.050811.
- Şengün, Y. and İskenderoğlu T. 2010. "A review of creative drama studies in math education: aim, data collection, data analyses, sample and conclusions of studies." *Procedia – Social and Behavioral Sciences* 9: 1214-1219. DOI:10.1016/j.sbspro.2010.12.309.
- Taber, K.S. 2018. "The use of Cronbach's Alpha when developing and reporting research instruments in science Education." *Research in Science Education* 48: 1273-1296. DOI:10.1007/s11165-016-9602-2.
- Tavakol, M. and Dennick R. 2011. "Making sense of Cronbach's alpha." *International Journal of Medical Education* 2: 53-55. DOI:10.5116/ijme.4dfb.8dfd.
- Papageorgiou, V. and Tsaklidis G. 2021. "Modeling of Premature Mortality Rates from Chronic Diseases in Europe, Investigation of Correlations, Clustering and Granger Causality." *Communications in Mathematical Biology and Neuroscience*, vol. 2021(67). DOI:10.28919/cmbn/5926.
- Wallace, D.P. 2004. "The Mann-Whitney Test." *Journal of the American Society for Information Science and Technology* 55:93.
- Winter, J.C.F. and Dodou D. 2010. "Five-Point Likert Items: t test versus Mann-Whitney-Wilcoxon." *Practical Assessment, Research, and Evaluation* 15: 1-16. DOI:10.7275/bj1p-ts64.
- Wong, A., Wong S. 2016. "A cross-cohort exploratory study of a student perceptions on mobile phone-based student response system using a polling website." *International Journal of Education and Development using Information and Communication Technology* 12(3): 58-78.
- Yaşar, M.C. and Aral N. 2012. "Drama Education on the Creative Thinking Skills of 61-72 Months Old Pre-school Children." *Education Review* 6: 568-577.