Cypriot Journal of Educational Sciences

Volume 17, Issue 5, (2022) 1860-1870

www.cjes.eu

Methods of formation of the scientific creativity of students through speech culture

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Suggested Citation:

Maimuratovna, K. B. & Tokenovna, A. G.(2022). Methods of formation of the scientific creativity of students through speech culture. *Cypriot Journal of Educational Science*. *17*(5), 1860-1870. https://doi.org/10.18844/cjes.v17i5.7454

Received from January 25, 2022; revised from April 29, 2022; accepted from May 17, 2022.

Abstract

In this study, it is aimed to form methods of creating scientific creativity of students through speech culture. The study was carried out in the spring term of 2021–2022, with the participation of 354 university students, and was carried out in the quantitative research model. In the study, university students were given training for the formation of scientific creativity with a 2-week distance education model. In order to collect data in the study, the 'Speaking Culture and Scientific Research' data collection tool developed by the researchers was used. The data collection tool used in the research was delivered and collected by the university students' Google drive form method. The analysis of the data was made by using the SPSS programme, frequency analysis and *t*-test; the results were added to the research in the presence of tables. As a result of the research, it was concluded that the speech culture of the university students improved and the level of scientific creativity increased.

Keywords: Speech culture, scientific creativity, distance education, university students;

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1. Introduction

It is known that scientific creativity is sometimes described as a cognitive process and sometimes as a skill and event in the literature, and it is known that the creativity potential in students is tried to be determined with various scales developed (Shavkatovna, 2021). According to scientific research theory, creativity consists of the negative aspects of human nature and emerges as a product of assertiveness with unknown instinctive impulses. The internal conflicts and aggressive energy of the individual turn into approved cultural behaviours (Bianco, Giaconi, Gison, D'Angelo, & Capellini, 2021). In addition, it is known that this skill is a continuation of the games in childhood, although it disdains scientific creativity (Pulatova, 2021). The scientific creative process, the basis of creative thinking, is preconscious with fear, guilt etc. While theorists do not support creativity, they argue that there is a need for creativity that will provide superior talent and self-satisfaction for all humanity (Lisinskiene & Sukys, 2016). Scientific creative behaviour and discovery process, as a function of problems that need to be solved or difficulties that arise, see a particular situation as an incomplete whole that needs to be rediscovered in a new whole and the problem to be completed. Although they talk about creative behaviour in the face of problems and solutions, they do not explain the creative process (Hasanov & Akbulaev, 2020).

It is known that scientific creativity is a skill that can be developed with the education given to students. In this context, educational activities to develop creativity are important during the university period (Mukhtoraliyevna & Madaminkhonqizi, 2022). Creativity can be developed in environments where appropriate conditions are provided (Kurtulus, 2012). It is known that it plays an important role in the development of speech culture in creating the necessary environment for creativity to develop (Miah, Rahman, Sayok, Samdany, & Hannan, 2021). In this respect, it gains the feature of looking at the culture of speech from a different perspective. It is known that students are expected to become a subject of curiosity and learn with this method, as they are keen on scientific creativity, asking questions and conducting research (Sirojiddinova, 2021). It is necessary to benefit from applications such as research, speaking, application, examination, experiment and project development that will bring their scientific creativity to the fore (Jabborova, 2021). The rapidly changing structure of science and the rapid proliferation of information have caused science to be divided into different branches. One of these branches is the culture of speech and scientific research (Valeev, Valeeva, & Sirazeeva , 2015). When science is thought of as examining, explaining, generalising, finding principles and predicting future events with these principles, it is seen how much scientific research is needed to make sense of events and situations in nature. Speech culture is a science that is formed as a result of a systematic examination of students, the environment and spontaneous events (Mosunova, 2018). Thus, scientific research makes it easier for students to make sense of, as it can be seen, it can be said that speech culture focuses on systematically examining the events that make up scientific research and predicting events that have not yet been observed (Pavlova & Vtorushina, 2018).

In this respect, the research will focus on the development of scientific creativity based on speech culture and its existence in students, and in this context, students will be approached with the hope of being a light.

1.1. Related Research

Maksymenko, Bei, Khimchuk, and Vovchok (2020) devoted their work to the problem of creating a communication culture of future teachers in the project teaching process. They aimed to examine methodological approaches to the definition of the concept of 'communicative culture', and as a result, they came to the conclusion that project teaching is defined by both students and teachers as one of the effective ways to create the communication culture of future graduate students.

In their study, Zinchenko, Ogrenich, Shepel, and Yakovlieva (2020) aimed to deal with the formation of cultural competence and business English-speaking etiquette, and as a result, they reached the conclusion that they proposed an experimental model that includes a system of oral communication exercises aimed at improving speech etiquette in their research.

In the research published by Mukaddas and Nilufar (2021), interactive teaching methods for scientific research aimed to solve educational problems from various perspectives, and as a result, having learning technology and using it in the education process undoubtedly contributes to the development of students' qualities that correspond to the processes occurring in life today, which have achieved positive results.

1.2. Purpose of the Study

The general aim of this study is to form methods of creating scientific creativity of students through speech culture. In order to reach the problem situation in the research, answers to the following questions were sought:

1. What is the speech culture status of the participant groups participating in the research?

2. Is there a significant difference in the scientific creativity status of the participant groups participating in the research according to the gender variables?

3. What is the status of the participant groups participating in the research in terms of activating the speech culture and scientific creativity?

4. What is the status of the participant groups participating in the research according to their educational status on distance education and scientific creativity?

In the study, it was aimed to create a technology workshop based on health psychology protection at the university and answers were sought for the study's questions for the determined general purpose.

2. Method

In this section, the method and model of the research, as well as the study group, the type and source of the data, the data collection tools and the statistics used in the research will be discussed.

2.1. Research model

It is known as the research model is an important step in the studies, it is seen that it was designed with the support of the quantitative research method in this research (Caliskan, Suzek, & Ozcan, 2018). In this study, the formation of methods for creating scientific creativity of students through the quantitative research method and the culture of speech is described according to the variables of gender, education status and education duration.

2.2. Working group/participants

In this section, we see that the study was carried out on 354 volunteer students, who continue their education in universities in Kazakhstan, in the spring term of 2021–2022. The data collection tool used in the research was accepted by applying the Google drive method to 354 students.

2.3.1. Gender

The data of the participant groups participating in the research according to the gender variable were transferred in this section and added to Table 1 in groups. In this section, care was taken to make equal distributions between the groups and the participant groups were randomly selected.

Table 1. Gender variable distribution of the participants participating in the research

Gender	Male		Female	
	F	%	*F*	%
Variable	178	50.28	176	49.72

As seen in Table 1, the gender values of the people who participated in the research voluntarily are given as a group. In this context, it is seen that 50.28% (178 people) are male participants and 49.72% (176 people) are female participants. In the gender section, the findings reflect the actual gender distribution.

2.3.2. Distance education information

In this section, since the research was conducted online, the participants in the research were asked whether they had knowledge about distance education and what kind of information they had, and it was added to Table 2 by asking the students participating in the research.

Table 2. University students' distance education information

Distance Education	I have information		I don't know		I have partial knowledge	
	F	%	*F*	%	*F*	%
Variable	281	79.38	12	3.39	61	17.23

As can be seen in Table 2, the distance education knowledge levels of the study group students were investigated and the information is added to Table 2. In light of this information, 79.38% (281 people) of the study group chose the option 'I have knowledge', while 3.39% (12) of the students chose the option 'I don't know'. The findings in this part of the quotes reflect the actual distribution.

2.3.3. Class status

In this section, the class status of the university students participating in the research was examined and detailed information is given in Table 3.

Table 3. Distribution of university students participating in the research by grade

Year	2nd year		3rd year		4th year	
	F	%	*F*	%	*F*	%
Variable	79	22.32	129	36.44	146	41.24

As seen in Table 3, 41.24% (146 students) of the students participating in the research stated that they were in the fourth year, while 36.44% (129 students) stated that they were in the third year. As

a result, it is seen that 22.32% (79 people) are in the first year. In the class situations section, the findings reflect the actual distribution.

2.3 Data collection tools

It is seen that the personal information form developed by the researchers was used in order to collect the necessary information about the people participating in the research, called the 'Speaking Culture and Scientific Research' measurement tool. The content validity of the developed measurement tool was examined by three experts, with the title of professors, working on the areas related to the problem situation of the research, and unnecessary items were removed from the measurement tool. 21 items of the measurement tool consisting of 25 items in total were used and 4 items were removed from the measurement tool, thanks to experts' opinions. The students participating in the research were asked to participate in the research in two factorial dimensions, namely 'speaking culture' and 'scientific research'.

The opinions of the participating students were consulted. The Cronbach alpha reliability coefficient of the measurement tool as a whole was calculated as 0.92. The measuring tool was in the range of 'strongly disagree' (1), 'disagree' (2), 'undecided' (3), 'agree' (4) and 'strongly agree' (5). The measurement tool was also collected from university students in the form of Google drive media.

1. First form: Information given in this form was on gender, class, distance education information etc.

2. Second form: A 5-point Likert-type data collection tool was prepared in order to get information about the opinions of the people participating in the research in order to reinforce, have knowledge, improve and increase their knowledge about the culture of speech and scientific research. 21 items of the 25-item measurement tool were used and 4 items were extracted by people experienced in the data collection tool, which ranged as 'strongly disagree' (1), 'disagree' (2), 'undecided' (3), 'agree' (4) and 'strongly agree' (5). The measurement tool was also collected by the people participating in the research in the form of Google drive forms.

2.4. Application

A distance education environment has been prepared for 354 volunteer university students who continue their education in Kazakhstan, and the educational environment has been shown to experts on these platforms and patterned. During the 2-week distance education, information about the field, activity approaches etc., was given to the participant audience group participating in the research in the form of distance education, and the files related to scientific creativity were shown to the people participating in the research on this subject. After the 2-week training, the data collection tool and information form of the students participating in the research were applied and the data were given in tables in the findings section. The training is set to 6 sections through the Google Meet application programme, which is preferred by most universities, and each section is distributed over the weeks to be limited to the thought of completing it with a maximum of 60 university students, 30 minutes of each online training is training, 10 minutes of which are in the form of questions and answers, totalling 40 minutes. The participants were expected to come and participate in this environment by using smart devices in the form of distance education. The measurement tool applied to the student groups participating in the research was collected by means of Google Drive and transferred to the SPSS programme by coding in the calculation programmes environment.

2.5. Analysis of data

Data obtained from university students were analysed in the Statistics programme using frequency (*f*), percentage (%), mean (*M*), standard deviation (SD), *t*-test and one-way analysis of variance (ANOVA). The data obtained from the programme are given in the findings section accompanied by tables and comments.

3. Findings

In this section, the findings obtained as a result of the analysis of the data obtained in the research are added in tables, and various interpretations are given in line with the findings.

3.1. Speech culture status of the students participating in the research

After the training given under two headings in this section, speech culture situations were investigated again and it is seen that the findings are added to Table 4.

Table 4. Speech culture status of the students participating in the research

Speech culture	*N*	*M*	SS
Having an Affinity for Speech Culture	354	4.27	0.381
Using the Placement Culture	354	4.22	0.377

When Table 4 is examined, the situations regarding the speech culture status of the students participating in the research are examined. According to these values, it is seen in Table 4 that the students included in the study after the study were prone to speech culture and using speech culture.

3.2. Is there a significant difference between the scientific creativity status of the participant groups participating in the research according to the gender variables?

In this part, the *t*-test was applied to find out that the students participating in the research did not have a difference in terms of the gender variable over the geography course based on the activity approach.

Table 5. Distribution of scientific creativity status of the participant groups participating in the research by gender

Scientific Creativity	***Gender***	***N***	***M***	**SS**	**SD**	***t***	***P***
Scientific creativity predisposition	Male	178	4.18	0.203	354	−2.12	0.018*
	Female	176	4.04	0.212			
Scientific creativity interaction	Male	178	4.12	0.329	354	2.08	0.019*
	Female	176	4.09	0.332			

According to the results of the *t*-test applied according to Table 5, it was concluded that the difference in the 'scientific creativity disposition' dimension in terms of gender in the scores of the students participating in the research for their scientific creativity disposition was significant [$t(354) = -2.12$, $p < 0.05$]. When the arithmetic averages in the dimensions of scientific creativity and aptitude are examined, it is seen that the mean of the male participant group is $M = 4.18$ and the average

score of the female participant group is *M* = 4.04, with the male participants' scores being higher. Accordingly, it can be said that the male participant group is more prone to scientific creativity than the female participant group.

Among the scores calculated from the measurement tool of the students participating in the research according to the gender variable, the *t*-test was the last one to show that the difference in the dimension of 'interaction' was significant [*t*(354) = 2.08, *p* < 05]. When the arithmetic averages in the dimension of scientific creativity interaction are examined, it is seen that the average of male students (*M* = 4.12) and the average of female students (*M* = 4.09) have an average score. According to this result, male students are seen to interact more than female students. This value supports the disposition scores of male students.

3.3. Examination situations of activating scientific creativity with speech culture of participant groups participating in the research

In this section, the ANOVA test was applied to find out that there is no difference between the groups participating in the research in terms of the study of activity approach related to speech culture and scientific creativity, activity approach and examination of standard patterns.

Table 6. Examination status of activating scientific creativity with speech culture of participant groups participating in the research

Dimension	You are variance	Squares total	SD	Squares average	*F*	*p*
Event approach	Source	52.880	354	0.202	1.191	0.215
	Intergroup	51.770	354	0.102		
	Ingroups	52.325	354			
Standard moulds	Average Total	61.101	354	0.121	0.298	0.6400
	Intergroup	60.120	354	0.280		
	Ingroups	60.610	354			

As can be seen in Table 6, according to the results of one-way analysis of variance (ANOVA) conducted for the students who participated in the research on the activity approach examination status of speech culture and scientific creativity, no statistically significant difference was found for the activity approach maintenance dimension [*F*(354-354) = 1.191, *p* > 0.05]. Again, it was concluded that there was no significant difference between the analysis findings in terms of standard patterns [*F*(354-354) = 0.298, *p* > 0.05]. In this context, the fact that there is no significant difference between these two dimensions can be seen in Table 6, with the knowledge that the students understand and adapt to the problem situation.

3.4. Status of the participant groups participating in the research on distance education and scientific creativity according to their educational status

In this part of the research, the distance education and activity approach of the participant groups participating in the research were investigated according to their educational status on the geography course and the findings are added to Table 7.

Table 7. Status of distance education and activity approach in geography course according to the educational status

Scientific creativity with distance education	*N*	*M*	*SS*
Susceptibility to scientific creativity with distance education	354	4.21	.398
Distance education using scientific creativity	354	4.15	.415

Data were collected from the participant groups regarding the evaluation of educational status on distance education and scientific creativity, which is the last problem situation of the research, and added on Table 7. It is seen that the students who participated in the research had the highest value (*M* = 4.21) in the dimension of 'predisposition' and at the same time they were 'using creativity' (*M* = 4.15). When Table 7 is examined, it is seen that it is high in two dimensions and they use it in this environment with a tendency.

4. Discussion

In the study of Khamroev (2021), it was aimed to determine the important elements for education, such as the educational and methodological tasks necessary to achieve the educational goal, how to control the stages between reaching the goal and the overall result and which auxiliary tools are used. As a result, this is the case in creative education. The connection, which changed its shape, took the main place and they benefited in science. In addition, they also stated that group thinking and visual development are beneficial in this system. In this context, it can be said that these approaches also benefit students in science.

In their research, Ovsyannikova, Mishcherina, and Bocharnikov (2020) aimed to deal with the content features of the formation process of the speaking abilities of the students of higher education institutions, the methods of speaking teaching and the possibility of their application in the educational process. It is seen that positive results have been achieved by considering linguistic features and students' psychological, operational dynamic, motivational, cognitive, emotional, regulatory and productive components. It is seen that the results they provide have been achieved; it is said that these two values will benefit the researches if it is thought that it is important for the students to create an environment in which speech and language will always be renewed.

Information and computer technologies, including remote ones, aimed at teaching the art of singing with remote access and mastering the basics of sound amplification equipment by both future performers and music teachers. In their work, Ovcharenko, Samoilenko, Moskva, and Chebotarenko (2020) aimed to examine music therapy and technology with health effects, and as a result, the structure of this phenomenon including axiological–cultural, epistemological–emotional and technological and activity approaches, as well as creative–professional. It is seen that the formation levels reach positive values as determined by the defined criteria.

In line with the values of the research, it is seen that reinforcing the speech culture with scientific creativity will benefit both fields and it is possible to provide the formation of abstract skills for

people, individuals, educators and teachers who use them for these fields. Each value of the research takes its place among the expectations that it will benefit the people doing the research.

5. Results

Among the results of the research, it is seen that the numerical value of the participant population is included first. The number of participants is always important in influencing the course of a research. In this context, it is seen that 354 people participated in the research. Another value of the research is that the study will continue with distance education. In addition, in light of this information, distance education information was given to the people participating in the research and it was seen that the values were high. In addition, another value of the research is that the situations related to the speech culture status of the students participating in the research were examined, and after the study, it was concluded that the students included in the study were prone to speech culture and using speech culture.

While it is seen that each value of the research provides meaning and benefit to university students, another value is that the difference in the dimension of 'scientific creativity aptitude' in terms of the gender variable of the scores of the students participating in the research for scientific creativity aptitude is significant. According to this result, male students are seen to interact more than female students. It is seen that this value supports the aptitude scores of male students. Another value of the research is that the analysis of the activity approach related to speech culture and scientific creativity is based on the results of the one-way ANOVA made for the scores of the students participating in the research for the activity approach and standard patterns. It was concluded that there was no statistically significant difference for the approach care dimension, and there was no significant difference in terms of standard patterns among the analysis findings. The final result of the research is that data were collected from the participant groups regarding the evaluation of their educational status on distance education and scientific creativity, and it was concluded that it was high in two dimensions and that they used this environment more productively.

As a result of the research, it was concluded that the speech culture of university students improved and their scientific creativity levels increased.

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