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Technology of teaching ethno-cultural subjects in secondary schools

Nazarbekova Alua, M. Kh. Dulaty Taraz Regional University, Department of Kazakh Language and Literature, 7, Suleymenov Street, Taraz, Kazakhstan, https://orcid.org/0000-0003-3691-3154),

Smanova Alua*, M. Kh. Dulaty Taraz Regional University, 7, Suleymenov Street, Taraz, Kazakhstan, https://orcid.org/0000-0003-4604-4394

Aitenova Elmira, Kazakh National Pedagogical University named after Abai, 13, Dostyk Avenue, Almaty, Kazakhstan, https://orcid.org/0000-0003-0714-5897

Sadirbekova Dinara, Kazakh National Pedagogical University named after Abai, 13, Dostyk Avenue, Almaty, Kazakhstan https://orcid.org/0000-0002-1323-336X),

Nishanbayeva Sabira, Kazakh National Pedagogical University named after Abai, 13, Dostyk Avenue, Almaty, Kazakhstan, Nishanbayeva. https://orcid.org/0000-0002-4290-7511

Akzholova Aktoty, Kazakh National Pedagogical University named after Abai, Institute of Pedagogy and Psychology, Department of Professional Training Educational Program, 13, Dostyk Avenue, Almaty, Kazakhstan, https://orcid.org/0000-0002-7908-968X

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Abstract

The aim of this study is to evaluate teacher competencies related to the technology of teaching ethno-cultural subjects in secondary schools. In the research, the descriptive survey model, one of the quantitative research methods, was used. The sample of the research consists of 288 teachers working in various secondary schools in the city of Almaty in Kazakhstan in the 2022–2023 academic year. Research data were collected with the 'Ethno-Cultural Subjects Teaching Technology Sufficiency Scale' developed by the researchers. Statistical Package for the Social Sciences 20.0 quantitative analysis program was used in the analysis of the data. Independent groups *T*-test and one-way analysis of variance were used to analyse the data. As a result of the research; It has been determined that teachers are partially competent in the sub-dimension of proficiency in ethno-cultural subjects, in the sub-dimension of proficiency in the use of technology in teaching

* ADDRESS FOR CORRESPONDENCE: Smanova Alua, M. Kh. Dulaty Taraz Regional University, 7, Suleymenov Street, Taraz, Kazakhstan.
E-mail address: smanovaalua@dulaty.kz

ethno-cultural subjects, and in the overall proficiency scale of teaching technology of ethno-cultural subjects. It was determined that the teachers' ethno-cultural subjects teaching technology proficiency did not show a significant difference according to the gender variable. It is seen that the ethno-cultural subjects education technology competencies of the teachers participating in the research make a significant difference in favour of English teachers and social studies teachers according to the branch variable. It has been determined that teachers' ethno-cultural subjects education technology competencies make a significant difference in favour of teachers with 13 years or more experience according to the experience variable.

Keywords: Ethno-cultural, ethno-cultural teaching technology, secondary school;

1. Introduction

The factors that cause unity among people in the formation of a society have an important role in the emergence of those societies and their survival (Davulcu, Kuluma, & Kaçmaz, 2021; Turalbayeva et al., 2021). Elements such as common ideas, behaviours and beliefs among people form a society. For the formation of a society, the individuals who will form the society must have a set of common values (Gulbaram, Rymshash, Alima, Akbidash, & Rizuanova, 2021; Ince & Uzunboylu, 2020). When common values, ideas, behaviours or beliefs do not occur, individuals or families will continue their lives independently from other individuals and families, and therefore, it can be said that there will be no need for the formation of the society in such a case (Beresova, 2016; Gomez, 2017). From this point of view, when the elements that make up the society disappear, the existence of society is no longer a necessity. For this reason, transferring the ideas, traditions and values that make the society a society to future generations is of great importance in terms of the continuity of the society (Karaaziz, Can, & Keskindag, 2017).

1.1. Theoretical and conceptual framework

Ethnocultural education as a general component has ample opportunities for primary education, the formation of self-awareness of national identity, positive national ethos, spiritual, moral, social, general cultural and intellectual development of the individual at secondary school age (Cohen-Kfir et al., 2020; Hannigan, Faas, & Darmody, 2022). Ethnocultural education is an extremely important element in pedagogy, as it contributes to the full socialisation of the individual in a multi-ethnic world (Gorshenina & Yakunchev, 2014; Han, West-Olatunji, & Thomas, 2011; Kopzhassarova, Sakharova, & Rettikh, 2016; Sleptsova, Ushnitskaya, & Herd, 2020).

It provides awareness and reproduction of not only a certain knowledge set and value ideas of a particular ethnic community, but also moral, ethical and aesthetic views of its people through sign-symbolic foundations (Higginbottom et al., 2011; Kokanovic, Petersen, & Klimidis, 2006; Stefanenko & Kupavskaya, 2010; Uraskina, Vahrusheva, Busygina, Yamaeva, & Borodina, 2022). Ethnocultural education, together with a similar attitude towards the cultures of other peoples, forms the basis of understanding and respecting one's culture (Akkari, Bauer, & Radhouane, 2017; Baigabylov, Beisembaev, & Baigusheva, 2013; Kozak, Ukhanova, & Sulym, 2020; Martinez & Phillips, 2008; Poghosyan, Gasparyan, Nurdiana, Ridwan, & Amal, 2020).

The result of the implementation of such an education is a holistic worldview and a prevailing system of value orientations (Andrew, Larochelle-Audet, Borri-Anadon, & Potvin, 2014; Dilmukhametova,

2014). Ethnocultural education can be interpreted in two ways: first, as a historically established and developing activity of an ethnic group in creating and developing its own culture (its own holidays, traditions, rituals, original folk art), embodying ethnic self-consciousness, ethnic stereotypes and its character (Varlamova, 2017). Secondly, the activities of various socio-cultural institutions, state and non-state structures aimed at studying, preserving, developing traditional folk culture and translating their works and values into the modern socio-cultural field (Glugoski, 1994). Considering the integrative nature of ethnocultural education as a whole, it becomes necessary to include ethnocultural material in the fabric of the relevant subjects of all secondary school disciplines in a planned and systematic way (Tsekhmister, Pak, Nosachenko, & Daniluk, 2022).

1.2. Related research

In their study, Makarova, Maltseva, Mukhina, and Shestakova (2015) reveal the theoretical basis of environmental competence and ethno-cultural education together with various approaches to the concept of 'ethno-cultural awareness'. In the research, the results of the diagnosis of environmental awareness and ethno-cultural competence contributed to the development of study areas for creating and developing students' environmental competence on the basis of ethno-cultural education, which requires the use of the environment by the teacher.

Radevskaya, Veselova, Dvoretskaya, Korjova, and Monakhova (2016) aimed to create theoretical and practical approaches for the development of a socio-psychological adaptation model to the ethno-cultural characteristics of the society of international students in the educational environment of universities. In his research, Stonkuvienė (2012) evaluated ethno-cultural education strategies in Lithuanian general education schools in search of cultural identity. In the research, it was concluded that the attitudes of students, parents and teachers towards the importance of ethnic culture in the educational process affect the formation of cultural identity and ethno-cultural education at school.

Grigoryeva et al. (2016) evaluated the ethno-cultural approach to training undergraduate teachers in the context of modernisation in preschool education. In the research, it has been revealed that the ethnocultural approach creates a qualified educational environment that creates the civic identities of future teachers and strengthens peace, respect for human beings, friendship and solidarity. Arsaliev (2016) evaluated the best approaches created through ethnopedagogical technologies. Han and Singh (2007) emphasised the importance of creating educational content related to ethnocultural diversity in the education process of future foreign language teachers in teacher training policies.

1.3. Purpose of the research

The purpose of this research is to evaluate teacher competencies in the technology of teaching ethno-cultural subjects in secondary schools. Within the scope of the research, answers to the following questions are sought.

1. What is the level of teachers' competence in the technology of teaching ethno-cultural subjects?

2. Do teachers' proficiency in teaching technology of ethno-cultural subjects differ according to the gender variable?

3. Do teachers' proficiency in teaching technology of ethno-cultural subjects differ according to the branch variable?

4. Do teachers' proficiency in teaching technology of ethno-cultural subjects differ according to the variable of professional experience?

2. Methods and materials

2.1. Research method

In the research, the descriptive survey model, one of the quantitative research methods, was used. Descriptive scanning is the statistical operation that allows collecting, describing and presenting numerical values for a variable. Within the scope of the research, the competencies of the teachers participating in the research on the technology of teaching ethno-cultural subjects in secondary schools were evaluated in the descriptive survey model.

2.2. Participants

The sample of the research consists of 288 teachers working in various secondary schools in the city of Almaty in Kaakistan in the 2022–2023 academic year. Demographic information about the sample group of the study is given in Table 1.

Table 1. Demographic information of teachers

Gender	***F***	**%**
Female	129	44.8
Male	159	55.2
Branch		
English	84	29.1
Social studies	72	25
Science	65	22.4
Math	67	23.5
Experience		
1–6 years	78	27
7–12 years	109	37.2
13 years and above	101	35.1
Total	288	100

In Table 1, the gender, branch and experience distributions of the teachers participating in the research are given. 44.8% of the teachers participating in the research are female and 55.2% are male. 29.1% of the teachers are English teachers, 25% are social studies, 22.4% are science teachers and 23.5% are mathematics teachers. 27% of the teachers have 1–6 years, 37.2% 7–12 years and 35.1% have 13 years or more professional experience.

2.3. Data collection tools

Research data were collected with the 'Ethno-Cultural Subjects Teaching Technology Sufficiency Scale' developed by the researchers. In the first step of the scale development study, a literature review was made and an item pool was created. The opinions of four experts were taken for the 32-item scale item pool created. With expert opinions, the number of items was reduced to 19 items. For the pilot application, 234 secondary school teachers were studied. 146 of the teachers participating in the pilot study of the study were female and 88 were male. After the pilot application, exploratory factor analysis was applied to the data set. When the factors constituting the scale were structured for the first time, varimax techniques were applied as the basic component and rotation, and homogeneity and factor loading values of the items were taken into account in order to create the factor structure. As a result of the first analysis, nine items were removed from the draft scale as they had insufficient load values and were overlapped by more than one factor. Explanatory factor analysis was repeated by removing these items and the final result was obtained. It is seen that two factors with an eigenvalue greater than 1 were considered and the total variance explained was 88.332%. In addition, it was determined that the item-total correlation coefficients for each item of the scale were higher than the critical value of 0.25. The first factor determined was named 'Competence on Ethno-Cultural Subjects', and the second factor was named 'Competence on the Use of Technology in Teaching Ethno-Cultural Subjects'. Confirmatory factor analysis was applied to test the compatibility of the factor structures with the items. Structural equation modelling was used for confirmatory factor analysis. The fit indices used in the evaluation of the model were examined. Among the model fit criteria, χ^2/df, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI) and approximate root mean square (RMSEA) values were determined.

According to the findings obtained as a result of the Confirmatory Factor Analysis, χ^2/df = 4.509, p < 0.001, GFI = 0.903, AGFI = 0.928 and RMSEA = 0.041 values were reached. A χ^2/df ratio below 2 indicates good fit, and below 5 indicates acceptable fit, while an RMSEA value less than or equal to 0.05 is a good fit, between 0.05 and 0.08 adequate fit, 0.08 and Between 0.10, it shows a weak agreement. AGFI and GFI values above 0.95 indicate a perfect fit, and 0.90 and above indicate a good fit (Kline, 2015). When the values are examined; it was concluded that the model of the scale was well-fitted. The Cronbach Alpha internal consistency coefficient was calculated for the reliability of 10 items of the scale. The Cronbach Alpha internal consistency coefficient of the sub-dimension of competence in ethno-cultural subjects was found to be 0.88, and the internal Cronbach Alpha internal consistency coefficient of the sub-dimension of efficiency in using technology in teaching ethno-cultural subjects was 0.81. The Cronbach Alpha internal consistency coefficient of the ethno-cultural subjects teaching technology sufficiency scale was found to be 0.87. As a result of all the evaluations, it has been determined that the scale is a valid and reliable scale suitable for the application.

The maximum score that individuals can get from the scale, which is prepared in the form of a 5-point Likert-type rating scale and consists of 10 positive items, is 50, and the minimum score is 10. There are four ranges from 1 to 5 on the scale, and 0.80 is added to the range to calculate the score range of each range. In this direction; '1.00–1.80 range; very insufficient', 'range 1.81–2.60; insufficient', 'range 2.61–3.40; partially adequate', 'range 3.41–4.20; sufficient' and 'range 4.21–5.00'; determined as 'very sufficient'. The ethno-cultural subjects teaching technology sufficiency scale are included in Appendix 1.

2.4. Data collection process

The ethno-cultural subjects teaching technology sufficiency scale was applied to the teachers in the sample group of the research and certain groups at the predetermined date and time in the schools where they work. The application took about 20–25 minutes. It took about 6 weeks to obtain the data set after all applications were completed.

2.5. Data collection analysis

Statistical Package for the Social Sciences 20.0 quantitative analysis program was used in the analysis of the data. A normality test was performed before deciding which analyses to be performed. After this analysis, it was determined that the data were normally distributed because the Kolmogrov–Smirnov value ($p > 0.05$) was appropriate. It was decided to perform parametric analyses because the data was a ratio scale and conformed to a normal distribution. Independent groups *T*-test and one-way analysis of variance (ANOVA) were used to analyse the data.

3. Results

In Table 2, the sub-dimensions of the ethno-cultural subjects teaching technology sufficiency scale and the averages and standard deviations of the overall scale are given.

Table 2. Ethno-cultural subjects teaching technology sufficiency scale

	X	**SS**
Competence in ethno-cultural issues	3.32	0.655
Competence in using technology in teaching ethno-cultural subjects	3.22	0.662
Ethno-cultural subjects teaching technology sufficiency scale	3.27	0.623

In Table 2, the sub-dimensions of the technology proficiency scale of teaching ethno-cultural subjects of the teachers participating in the research and the standard deviations and averages of the overall scale are given. In the proficiency sub-dimension of ethno-cultural subjects (X = 3.32), in the proficiency sub-dimension on the use of technology in the teaching of ethno-cultural subjects (X = 3.22) and in the overall proficiency scale in the technology of teaching ethno-cultural subjects (X = 3.27) were found to be partially sufficient.

In Table 3, the *T*-test results of the teachers participating in the research are given according to the gender variable.

Table 3. *T*-test results by gender variable

Gender	***N***	***X***	**SS**	***F***	***p***
Female	129	3.25	0.465	6.473	0.226
Male	159	3.28	0.499		

In Table 3, the ethno-cultural subjects teaching technology competencies of the teachers participating in the research were evaluated according to the gender variable. According to the

gender variable of teachers' ethno-cultural education technology competencies (F = 6.473, p > 0.05) no significant difference was found.

In Table 4, the results of the one-way ANOVA of the teachers participating in the research according to the branch variable are given.

Table 4. One-way ANOVA results by branch variable

Branch	***N***	***x***	**SS**	***F***	***p***
English	84	3.49	0.991	14.881	0.000
Social studies	72	3.41	0.932		
Science	65	3.09	0.608		
Maths	67	3.06	0.630		

In Table 4, the ethno-cultural subjects' teaching technology competencies of the teachers participating in the research were evaluated according to the branch variable. According to the branch variable of teachers' ethno-cultural education technology competencies (F = 14.881, p < 0.05) was found to be a significant difference. The significant difference is in favour of English and social studies teachers. Based on this, it is possible to say that English teachers and social studies teachers have higher ethno-cultural teaching technology competencies than science teachers and mathematics teachers.

In Table 5, the results of one-way ANOVA according to the experience variable of the teachers participating in the research are given.

Table 5. One-way ANOVA results by experience variable

Experience	***N***	***X***	**SS**	***F***	***p***
1–6 years	78	3.20	0.774	16.227	0.000
7–12 years	109	3.16	0.741		
13 years and above	101	3.51	0.892		

In Table 5, the evaluation of the technology competencies of the teachers participating in the research according to the experience variable was made. It has been determined that there is a significant difference according to the experience variable (F = 16.227, p < 0.05) of the teachers' ethno-cultural subjects' education technology competencies. The significant difference is in favour of teachers with 13 years or more of experience. From this point of view, it is possible to say that teachers with 13 years or more experience have higher ethno-cultural subjects teaching technology competencies than teachers with 1–6 years and 7–12 years of experience.

4. Discussions

that the teachers participating in the research were partially competent in the ethno-cultural subjects proficiency sub-dimension, in the proficiency sub-dimension on the use of technology in teaching ethno-cultural subjects, and in the overall technology proficiency scale of teaching ethno-cultural subjects. Yarmakeev, Akhmadullina, Valiakhmetova, and Salpykova (2018) evaluated the potential of pedagogical disciplines in forming the ethno-cultural competencies of future teachers in their study. In the research, it was emphasised that the teachers of the future have moderate ethno-cultural competencies and that necessary initiatives should be made in universities to develop this. Tasova, Umbetova, and Shynpeis (2022) similarly emphasised the need to increase teacher competencies in their study in which they evaluated the ethnic-cultural competencies of future teachers. It was determined that the technology competencies of the teachers participating in the research did not show a significant difference according to the gender variable.

It has been determined that there is a significant difference in the education technology competencies of the teachers participating in the research according to the branch variable. Based on this, it is possible to say that English teachers and social studies teachers have higher ethno-cultural teaching technology competencies than science teachers and mathematics teachers. Vladimirova (2018) evaluated the ethno-cultural competencies of teachers in her study. In the research, it was emphasised that improving the ethno-cultural competence of teachers, which is necessary for joint educational activities, has an important place in the methodology of learning Russian as a foreign language, especially in the field of multilingual education. In addition, it was stated that the ethno-cultural equipment of the teachers, which is considered to be at a sufficient level, should be supported and increased under all circumstances.

It has been determined that there is a significant difference in the education technology competencies of the teachers participating in the research according to the experience variable. From this point of view, it is possible to say that teachers with 13 years or more experience have higher ethno-cultural subjects teaching technology competencies than teachers with 1–6 years and 7–12 years of experience. Dzhaubaeva (2013) stated in her research that the formation of students' ethno-cultural competences can only be possible with ethno-cultural education. Arsaliev and Taaev (2019) evaluated the role of ethno-cultural competencies in the professional development of teachers in their research. In the research, ethnocultural competence was expressed as a characteristic of a person, expressed in the presence of a set of objective ideas and knowledge about a particular ethnic culture, through skills and behavioural patterns that promote effective understanding and interaction between ethnic groups. The research drew attention to the training of teachers with ethnocultural competencies.

5. Conclusion

The globalising post-modern world of the 21st century is exposed to a great change in almost all fields, especially in the economic and social fields. The effect of individuals' cultural characteristics on their interpersonal interactions and the way they interpret the world has become an undeniable reality as a result of many studies. Based on this, the effect of individuals' cultural characteristics on educational processes has become the focus of many researchers in recent years. Especially in recent years, the importance of ethno-cultures, characteristics and competencies in the field of education has come to the fore. Based on this situation, in this study, teacher competencies related to the technology of teaching ethno-cultural subjects in secondary schools were evaluated. As a result of

the research; it has been determined that teachers are partially competent in the sub-dimension of proficiency in ethno-cultural subjects, in the sub-dimension of proficiency in the use of technology in teaching ethno-cultural subjects, and in the overall proficiency scale of teaching technology of ethno-cultural subjects. It was determined that the teachers' ethno-cultural subjects teaching technology proficiency did not show a significant difference according to the gender variable. It is seen that the ethno-cultural subject education technology competencies of the teachers participating in the research make a significant difference in favour of English teachers and social studies teachers according to the branch variable. It has been determined that teachers' ethno-cultural subject education technology competencies make a significant difference in favour of teachers with 13 years or more experience according to the experience variable.

6. Recommendations

The following suggestions have been developed regarding the development of the ethno-cultural competencies of the teachers participating in the research.

1. In-service training should be given in secondary schools in order to increase the ethno-cultural competencies of teachers. Regular and frequent organisation of training sessions is important for the formation of ethno-cultural competencies.

2. The course contents of teacher training programs at universities should be created in order to ensure that future teachers have ethno-cultural competencies.

3. The development of the ethno-cultural aspects of the students studying in all faculties, not only in the education faculties, should be ensured through the course content and the activities carried out at the universities.

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Appendix 1. Ethno-cultural subjects teaching technology sufficiency scale

	Ethno-cultural subjects teaching technology sufficiency scale		Very enough	Sufficient	Partly enough	Insufficient	Very inadequate
	Very good – 5 points Sufficient – 4 points Partially sufficient – 3 points Insufficient – 2 points Very unsatisfactory – 1 point	Explanation: Please tick the most appropriate option for you in the following items.					
	Competence in ethno-cultural issues						
1	Competence in the ethno-cultural field						
2	Proficiency in blending ethno-cultural issues with my major						
3	Competence in the use of materials in the teaching of ethno-cultural subjects						
4	Competence in the ability to use different methods in the education of ethno-cultural subjects						
5	Competence in assessment skills in the education of ethno-cultural subjects						
	Competence in using technology in teaching ethno-cultural subjects						
6	Competence in the use of technology in teaching ethno-cultural subjects						

7	Competence in effectively designing learning and teaching environments with the help of technology					
8	Competence in providing a permanent learning in the student about ethno-cultural issues with the help of technology					
9	Competence in making technology-assisted assessment					
10	Proficiency in blending ethno-cultural issues, technology and course content					