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Shaping prospective teachers' national values through mobile learning: An exploration of practice

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Abstract

Comparative studies of national values are becoming increasingly important in contemporary globalization processes. An essential condition for shaping national values in learners is the enrichment of pedagogical technology with components of digital technology. Both qualitative and quantitative approaches were used in this study. This research aims to examine the efficacy of mobile learning in shaping the national values of prospective teachers. 180 participants participated in this study. Diagnostics of the levels of national values formation in the initial stage confirmed the assumption about the low formation of national values among teacher candidates and, consequently, the need for targeted work on their formation. This study demonstrates that significant advances in students' national values have occurred following the introduction and testing of mobile learning with EG participants to shape national values. This study serves as the basis for creating strategies for shaping the national values of learners in universities and as a methodological basis for adapting mobile learning for the shaping of national values.

Keywords: Elementary education, Mobile learning, National values, Shaping, Teacher candidates.

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Contents

Contribution of this paper to the literature
This study adds to the existing literature by evaluating the effectiveness of mobile learning in shaping national values in Kazakhstan and promoting the development of a harmonious and comprehensive personality.

1. Introduction

The 21st century's sociocultural environment is characterized by an increasing interest in the analysis of national values, including their dynamics and content (Gamage, Dehideniya, & Ekanayake, 2021). This problem becomes particularly relevant in the context of globalization when the preservation of traditional values is both an essential basis for the state and one of the means of ensuring its stable, progressive development (Giménez & Tamajón, 2019). Researchers place personal autonomy high in the value hierarchy within the information society (Sahin, 2019; Yenen & Ulucan, 2021).

People possess the ability to effectively develop relationships and acquaint themselves with diverse communities and cultural traditions. On the other hand, the intensive technological advancement of information technology has an impact on society, rapidly changing our living conditions, learning environments, and national values (Haleem, Javaid, Qadri, & Suman, 2022; Yamin, 2019). The national values of student youth are in the process of formation, require some time to gain stability, and therefore depend on various external factors (Allen, Kern, Vella-Brodrick, Hattie, & Waters, 2018). Modern universities have ceased to be educational institutions in the traditional sense, in which students learn only the fundamentals of future professional activity. Students' national values are an important, system-forming aspect of their higher education experience (Afrina, Abbas, & Susanto, 2021). The existing traditional model of education, with its priorities and values, has come into conflict with the changing sociocultural situation in society and the world, as well as with modern professional and educational values and value orientations of students. The need to develop national values for future teachers stems from the fact that the success of their professional activities is strongly influenced by the extent to which their life guidelines and moral principles have been established (Toker Gökçe, 2021).

Students experience difficulties in choosing value guidelines due to the worsening of social differentiation, uncertainty about life prospects, marginal position in society, and lack of work experience. Many students remain apolitical, exhibit bad habits, and lead unhealthy lifestyles. What values are truly valuable to today's young people? The solution to these issues is directly related to the strategy for the formation of national values among students and determining the need and importance of forming appropriate values among future teachers as an urgent problem. The most significant condition for shaping the national values of students is the enrichment of teaching with elements of digital technology (Holik, Kersánszki, Molnár, & Sanda, 2023; Voithofer & Nelson, 2020). Wireless technology enhances learning by easily delivering digital content to students with mobile devices now widely available. Students enjoy using mobile technologies for personal and educational purposes. Learning through mobile applications maintains high levels of student engagement and mutual collaboration compared to less technology-focused learning. However, current research does not provide a comprehensive theoretical justification for using mobile learning to shape teacher candidates' national values. Thus, it has not been implemented in Kazakhstan's modern higher education space.

The development of national values among teacher candidates faces numerous challenges. The research issue highlights the conflict between the necessity to cultivate teacher candidates' national values and the insufficient emphasis on this aspect through mobile learning. Overcoming these challenges requires innovative research approaches, particularly the effective application of mobile learning to stimulate the development of national values in teacher candidates. The primary question remains whether mobile learning enhances teacher candidates' national values and, if so, through what mechanisms. Unfortunately, existing literature has not adequately addressed the issue of developing national values among teacher candidates via mobile learning, despite the significance of this development. This research aims to evaluate the efficacy of mobile learning in shaping the national values of prospective teachers and will also contribute to the formation of a harmonious and comprehensively developed personality. The study seeks to answer the following research questions:

1.1. Research Question

Q1: What is the impact of using mobile learning (hereafter referred to as ML) on shaping the national values (hereafter referred to as NV) of future teachers?

1.2. Objectives

This research aims to examine the efficacy of mobile learning in shaping the national values of prospective teachers.

This study aims to demonstrate how the use of mobile learning in the training of teacher candidates can enhance their national values and contribute to the development of a harmonious and comprehensively developed personality.

1.3. Significance of the Study

This study addresses the critical need to use machine learning (ML) to help primary education teachers develop the foundations of national values. The emergence of value issues in education is the result of a modern society's spiritual and moral crisis, which has a pragmatic orientation towards material values (Chen, Liu, Dai, & Wang, 2023). In this regard, the strategy to instill national values in future teachers is one of the most important in Kazakh education. Therefore, the significance of this study stems from the fact that it is a conceptualization of NV that determines a person's position in life as a citizen, his attitude towards society and the state, the past, present, and future of his country, and his responsibility for the preservation and enhancement of national heritage (Oppenheim-Weller, Roccas, & Kurman, 2018). At the same time, many researchers believe that the introduction of mobile learning largely determines the success of further improvements in the educational system (Johannsen et al., 2023; Mohammadi, Sarvestani, & Nouroozi, 2020). This research adds to the preexisting literature by examining the impact of mobile learning on teacher candidates' formation of national values during professional development.

2. Review of the Literature

The problem of values is one of the most important issues in modern scientific discourse. Individuals' life strategies are designed around values, which determine the methods they use to achieve their goals (Schwartz & Cieciuch, 2021). The concept of "value" in modern science lacks a clear definition (Coelho, Hanel, Johansen, & Maio, 2019; Pincus, 2024). Value theory raises several questions for researchers. How do values exist, materially or ideally? (Skimina, Cieciuch, & Revelle, 2021; Tamar, Wirawan, Arfah, & Putri, 2021). Do they exist objectively, separate from people's consciousness, or subjectively as a result of that consciousness? What is the mechanism by which the values exist? Many researchers have attempted to address these issues as part of their theoretical understanding of the basic value problem (Gouveia, 2019; Passini, 2020). The German philosopher Kant insisted that value is a subjective phenomenon that has as its source a set of intellectual, psychological, and moral characteristics of the individual manifested externally (Polak, 2023). In other words, the value is the transcendental subject, whose supra-empirical status ensures the universal validity of values. Values are principles not of what is, but of what should be. Kant understood the inadmissibility of confusing value with an object that is presented as valuable. The objectivity of value assessment for him lies not in the objectivity of natural things but in the objectivity of the highest goals of human existence (Kaiser, 2024). There is no value in things, and we can only establish a certain level of value through our feelings. However, this does not imply that the values are purely subjective (Fisette, 2021). Values are the ultimate concept that encompasses everything imaginable. This recognition of the independent world of values emphasizes its objective nature, independent of the subject's evaluation activity, which is built on many factors such as upbringing, habits, and taste (Moussa, 2023). The transcendental subject's theoretical value attribution must be distinguished from the individual's practical evaluation. The concept of two levels of value consideration is the most significant contribution to the development of value theory. The first is transcendental. It deals with absolute and ideal values. The second is dispositional and empirical. It is determined by the subject's position in relation to life's realities, his needs and activities, and his choices and preferences regarding the first level's ideals (Stikkers, 2022). The values, in their essence, are similar to Plato's ideas and possess the qualities of genuine absolute principles. Values cannot be derived from anything, including the subject. In the real world, there are no such things as values; thus, people's actions are only evaluated using certain value criteria that exist in the subject's consciousness prior to and independently of any experience. The values themselves, objectively, remain essentially unchanged. However, value consciousness is shifting (Hartung, 2021).

Thus, it is particularly clear when historical eras shift that a new circle of ideal values forms with the revaluation of life. Most modern researchers recognize the fundamental divisions of values established in the classical period, namely the distinction between subjective and objective values, relative and absolute, transcendental and empirical. The national values themselves are considered a historically variable result of a value relationship realized in the act of evaluation.

Unity was manifested in a common understanding of the conditionality of national (and, more broadly, ethnic) processes through socioeconomic development. Values are impossible without a subject. Since national values are one of the types of social values, all the characteristics of the latter should be extended to national values. Second, the specification of these values as a type of social value should be done by identifying the specifics of their subject, i.e., nation. National values serve as social and normative-cultural guiding principles for the behavior of people of the same ethnicity (Pinho, Molleman, Braams, & van den Bos, 2021; Zhang et al., 2023). Recognition of these values is based primarily on a person's essential interests as a representative of a specific ethnic group: survival, development, goal achievement, and ideals.

Each nation is defined solely by its inherent combination and correlation of temperament, way of thinking, and worldview. Any nation's values include the uniqueness of its inner world and the stability of its internal structure, which organizes information received in a specific manner (Begum, Liu, Qayum, & Mamdouh, 2022). These are fundamental moral and ethical ideas and norms that focus on expressing one's own uniqueness, identity, character traits, customs, traditions, and way of life, as well as the most basic human needs. National values shape a people's life position, attitude towards society and the state, knowledge of their country's past, present, and future, and responsibility for the preservation and enhancement of national property.

3. Methods

3.1. Research Design

Both qualitative and quantitative approaches seek to answer the same question. Various techniques are used concurrently with equal importance, and data analysis aims to combine or compare trends discovered with their assistance (Dawadi, Shrestha, & Giri, 2021; McChesney & Aldridge, 2019). This example involved categorizing items based on a quantitative evaluation parameter to analyze verbal data on highly distinct and comparable objects independently. An integrated analysis of these two groups of data revealed the criteria used by the participants when making assessments of similarity and dissimilarity, and showed that the participants' strategies for describing similar and different objects differed.

3.2. Research Sample Formation

The study was conducted at Abai University in Kazakhstan. According to the purpose of the experiment, two groups were formed using random sampling. One was the control group (n = 88) (hereafter referred to as CG), and the other was the experimental group (n = 92) (hereafter referred to as EG). The experiment included 180 participants.

3.3. Measures

General sociometric indicators were collected from study participants (see Table 1).

Table 1. General sociometric indicators of the participants

Descriptive information about a respondent's		Quantity	Sample
Gender	Female	168	82.31%
	Male	12	17.69%
Age	20-25	120	60.76%
	25-30	52	30.13%
	30-35	8	9.11%
Study fields	"6B01303: Primary education with information and communication technologies"	180	100%
The university's name	Abai University	180	100%

3.4. Experimental Procedure

The experiment involved the implementation of the following stages:

Stage I: Search. At this point, national values are defined by their essence, content, and structure. The structure of national values is made up of four components: information-knowledge, value-oriented, personal-activity, and evaluative-reflective. At this stage of the study, we had to identify the initial level of the national values among the students. Ideas about indicators of national values of participants were obtained, and the needs and aspirations of students were identified.

Stage II is an important stage. At this stage, the following tasks were completed: a) a discipline was chosen; b) a mobile learning model was selected; c) a set of educational and methodological materials was prepared for students and teachers. The prepared set contains four functional blocks: a) an organizational and methodological block; b) an information and training block of training modules corresponding to the main sections of the discipline; c) a practice-oriented block, including test tasks and computer practical tasks; d) an identification and control block, including test tasks and user identification through password and login.

The experiment was carried out with third-year students during the academic years 2022-2023. The research team consisted of teachers, hypertext and multimedia application developers, programmers, and designers who provided valuable methodological support for the experiment's development and implementation. Promotion of national values among EG participants was carried out within the framework of the discipline "Methodology Shaping of Prospective Teachers' National Values," which third-year students study in the second semester, according to the curriculum. Mobile learning was used in EG with the Kazakh language of instruction. The methodology of the mobile learning process includes structure, logical organization, construction principles, forms and methods of cognition, and methods and means of activity.

Figure 1 shows the organizational and pedagogical support needed to implement the mobile learning process..

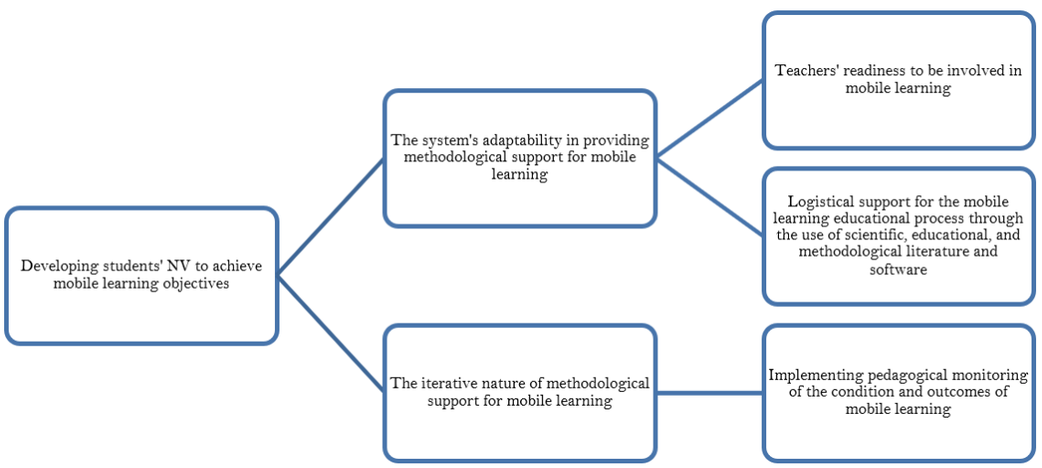

Figure 1. Organizational and pedagogical support to implement the mobile learning process

The technological foundations of the mobile learning process enable the presentation and study of educational material, mobile communication, mobile knowledge control, and mobile support training. The concept of a 'mobile textbook' was introduced as an electronic learning system intended for use on wireless devices, allowing students to study theoretical material in text and graphic form, view (listen to) audiovisual components, perform input functions, create a current and final copy of knowledge, and communicate with the teacher and other students.

The standard CG training program was traditional. The same teachers taught classes in both the EG and the CG, ensuring that the objectives of the experiment were met and that the educational process was effectively managed.

In general, the formative experiment took place in three stages: Stage I (motivational), Stage II (procedure), and Stage III (consolidation). The characteristics of the content of the results of each stage will be presented later in the results.

Stage III is the final stage. After training was completed, the research findings were thoroughly reviewed and synthesized. Data are collected, analyzed, interpreted, and described.

During the study, we adhered to the following levels of national values for the teacher candidates:

Low level: The student lacks knowledge of basic national values. An emotional attitude toward values is inadequate; the student rejects basic values, is not guided by them, and frequently violates moral standards.

Average level: The student's comprehension of fundamental national values is limited. Their emotional attitude towards values is not always appropriate; not all societal values are accepted. They are not always guided by them in their behavior and interactions with adults; they are friendly and capable of assisting others.

High level: The student has developed knowledge of basic national values. The emotional attitude towards reality is adequate. The student demonstrates positive emotions towards life values and is guided by them in behavior and in relationships with those around him. The student is friendly and willing to cooperate and assist one another.

3.5. Research Instrument

To collect information, we used: (1) a questionnaire for assessing students' national values and attitudes towards them. (2) a survey for determining students' attitudes towards the homeland, attachment to the homeland, traditions, and historical background. (3) a technique for determining awareness among students of patriotic and civil ideals, legal norms, and national traditions.

In this study, we used the Likert scale (total rating method) to assess students' perceptions of national values in mobile learning.

As mentioned above, this technique involves the use of a scale that allows for the identification of respondents' attitudes towards the problem being studied, in which they express their agreement or disagreement with the proposed judgment. There are various modifications to measurement scales that include two to seven rating points.

3.6. Ethical Compliance

Ethical issues were among the most important considerations in organizing educational research. The first requirement for participating in empirical research was the student's voluntary consent. Anonymity and confidentiality are two closely related concepts. Their implementation assumes that the toolkit contains no personally identifiable data and that the information provided by the respondent is not disclosed to third parties. Respondents received alphanumeric identifiers that they could use instead of their names in all surveys and assessments.

3.7. Data Analysis

The analysis of the data obtained in the diagnostic process of the state of formation of individual components of national identity was carried out according to the following algorithm: (1) the data were ranked and presented in the form of percentage distributions. (2) The resulting distributions were displayed graphically. (3) The statistical significance in the experimental group was evaluated using the method of mathematical statistics of the Wilcoxon W-test.

4. Results

Table 2 shows the levels of national values among the students in EG and CG at the initial stage.

Table 2. Initial levels of national values of EG and CG (%)

Components	Levels	EG	CG
Information-knowledge	High	67 (77 %)	61 (74%)
	Average	25 (23 %)	27 (26 %)
	Low	0 (0 %)	0 (0 %)
Value-oriented	High	11 (10 %)	10 (9 %)
	Average	57 (54 %)	58 (52 %)
	Low	24 (36 %)	20 (39 %)
Personal-activity	High	0 (0 %)	0 (0 %)
	Average	24 (25 %)	22 (26 %)
	Low	68 (75 %)	66 (74 %)
Evaluative-reflective	High	16 (18 %)	17 (19 %)
	Average	22 (23 %)	20 (22 %)
	Low	54 (59 %)	51 (59 %)

The histogram depicts the initial level of formation of national values among future teachers in EG and CG as identified at the beginning (see Figure 2).

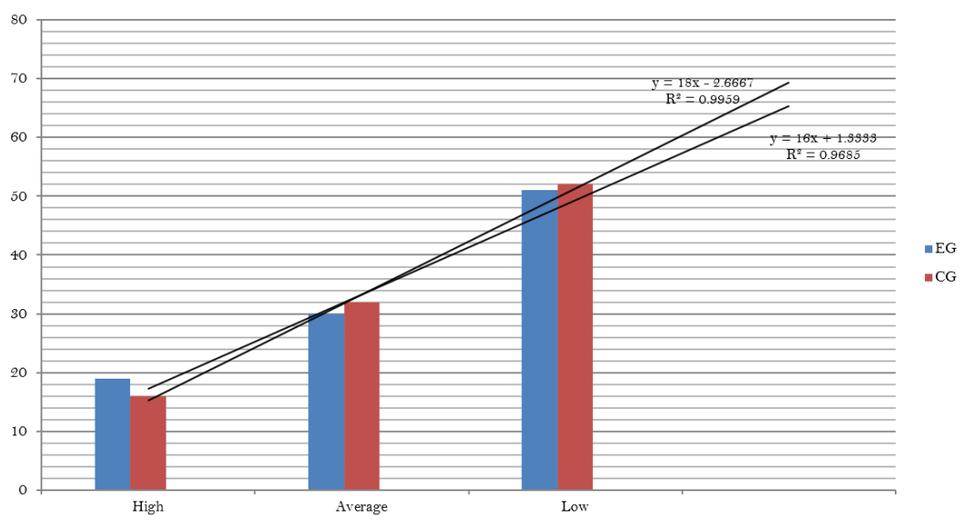

Figure 2. The initial level of national values among participants

It was determined by diagnostics that teacher candidates have low levels of NV, which suggests that they require targeted development work. The author's concept was used to shape national values in the EG.

The promotion of national values among EG participants was carried out within the framework of the discipline 'Methodology of Shaping Prospective Teachers' National Values,' in which students' studies in the second semester follow the curriculum (see Table 3).

Table 3. The content of the discipline 'Methodology Shaping Prospective Teachers' National Values'

Week/ Date	Title of the topic (lectures, practical classes, independent work of students)	Hours	Maximum score
1	2	3	4
	Module 1: Theoretical approaches to organize mobile learning		
1	Lecture 1. Education 4.0: From e-learning to mobile learning (m Learning)	2	4
	Practical lesson 1: Formal, non-formal, and informal education, open education, gamification, big data, adaptive learning, mixed (hybrid) learning models, and learning experiences.	2	6
2.	Lecture 2: Types of Mobile Devices and Main Characteristics of Common Mobile Operating Systems.	2	4
	Practical lesson 2: Mobile learning: opportunities (advantages) and limitations (problems and limitations). 2. Use of mobile technologies, creating content about smartphones and 5G.	2	6
	Students' independent work 1: Study of domestic and foreign experience in raising children. Preparation of digital content on the topic: Best practices to improve national education for children.	1	5
3	Lecture 3: Applications of mobile learning in the study of national values.	2	4
	Practical lesson 3: Use platforms to create interactive books and textbooks, knowledge testing resources, and mobile digital laboratories. Create an e-book on the topic 'National values in oral literature'.	2	6
4	Lecture 4: The historical basis for the development of ancient Kazakh traditions. Kazakh fairy tales and proverbs and their spiritual significance.	2	4
	Practical lesson 4: Preparation of content using digital resources on the topic 'The spiritual world of Kazakhs'.	2	6
	Students' independent work 2: Create podcasts on the topic of 'Kazakh traditions and their spiritual content'.	1	5
5	Lecture 5: Mobile Technologies in Organizing Projects and Research Activities for Students.	2	4
	Practical lesson 5: Preparation of content using digital resources on the topic 'Kazakh folktales and their spiritual meaning'.	2	6
6	Lecture 6: Methods and Forms of Using a Mobile Educational Environment to Teach the Topic: 'System of Family Values' and 'Educating Girls Is the Future of the Nation'.	2	4
	Practical lesson 6: Development of an assignment for students on the topic of national values using QR codes, augmented reality, and geolocation. Preparation of content using digital resources on the topic 'Educating girls is the future of the nation'.	2	6
	Students' independent work 3: Write an analytical essay on the topic: 'Traditions and customs of the Kazakh people'.	1	5
7	Lecture 7: Methods and Forms of Using a Mobile Educational Environment in Teaching on the Topic: 'Traditions and Customs of Kazakh Nomads.'	2	4
	Practical lesson 7: Preparation of content using digital resources on the topic: 'Traditions and customs of the Kazakh people.'	2	6
	Students' independent work 4: Preparation of video content on Kazakh traditions and customs.	1	5
8	Lecture 8: Analysis of the theme of national values in children's works of poets and writers.	2	4
	Practical lesson 8: A survey of students to assess their knowledge and understanding of national values.	2	6
	Midterm		100

The discipline under consideration investigates national values from the ethno genesis of the Kazakh people to the formation of modern society. The topics cover the ethnic problem, the place of the Kazakhs in history and the modern world, national spirituality, traditions, national identity, and national values. The spiritual and material achievements of the Kazakh people are very important; concerns about holy historical places and historical artifacts are discussed, and content is created through mobile technology.

The level of NV shaping in the EG and CG was assessed using a set of the same diagnostic methods.

The results of the shaping of the components of NV before and after learning are given in Table 4 and Figure 3.

Table 4. Results of national values in EG and CG before and after the intervention

Components	Group	Level					
		High		Average		Low	
		Before	After	Before	After	Before	After
Information-knowledge	EG	77 %	91 %	23 %	9 %	0 %	0 %
	CG	74 %	78 %	26 %	20 %	0 %	0 %
Value-oriented	EG	11 %	51 %	57 %	47 %	24%	0 %
	CG	10 %	45 %	58 %	46 %	20 %	7 %
Personal-activity	EG	0 %	13 %	24 %	42 %	68 %	44 %
	CG	0 %	5 %	22 %	25 %	66 %	70 %
Evaluative-reflective	EG	16 %	33 %	22 %	36 %	54 %	28 %
	CG	17 %	22 %	20 %	25 %	51 %	53 %

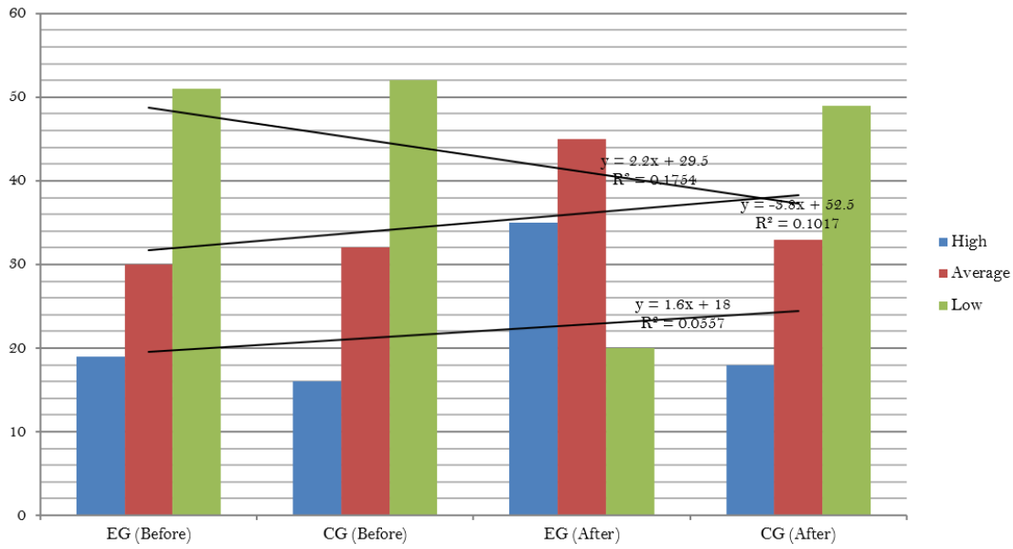

Figure 3. Comparison of results in EG and CG before and after the experiment

The data obtained show that in the CG, no significant changes were identified in the levels of formation of the components of NV. The dynamics of the development of the four components were most pronounced in the EG. At a high level, the NV indicators were formed in 35% of the students in EG, which is 17% higher than in CG. The average level was recorded in 45% of the students in EG and 33% in CG. The low levels are 20% and 51%, respectively (the difference is 31%).

The dynamics of the levels of formation of national values are presented in Figure 4.

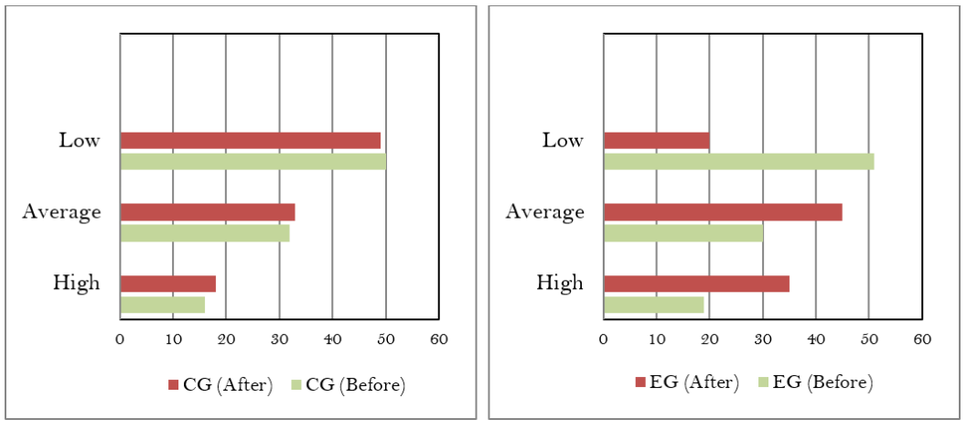

Figure 4. Dynamics of levels of formation of national values

Certain dynamics of NV formation levels in EG can be traced using ML, which confirms the validity of the hypothesis proposed and the achievement of the research objective.

The results of forming all components of the national content values in EG before and after ML are given in the provided document Table 5.

Table 5. Levels of formation of all components of national values in the experimental group

Components	Level					
	High		Average		Low	
	Before	After	Before	After	Before	After
Information-knowledge	77 %	91 %	23 %	9%	0 %	0 %
Value-oriented	11 %	51 %	57 %	47 %	24%	0 %
Personal-activity	0 %	13 %	24 %	42 %	68 %	44 %
Evaluative-reflective	16 %	33 %	22 %	36%	54 %	28 %

According to Table 4, we use the Wilcoxon W-test for related samples to establish not only the direction of changes in the components of national values but also their magnitude.

Null hypothesis H0: The intensity of the shifts in the obtained results in a larger direction does not exceed the intensity of the shifts in a smaller direction.

Alternative hypothesis H1: The magnitude of the shifts in the obtained results in a larger direction exceeds the magnitude of the shifts in a smaller direction.

If the empirical value of the Wilcoxon W-test is greater than the critical value corresponding to W > 0.05, then H0 is accepted and H1 is rejected. If the empirical value of the criterion is equal to the critical value corresponding to W ≤ 0.01, then H0 is rejected and H1 is accepted.

The lower the W value, the more reliable the differences. The empirical value of the Wilcoxon W-test is calculated using the following formula:

$$W = \sum R = \frac{n*(n+1)}{2}$$

Where R is the rank value of the shifts and n is the number of participants in the EG. To calculate R, it is necessary to subtract the points obtained in the determination experiment from the sum of the points obtained in the control experiment.

We obtain W = 3. For a given number of respondents: $p \leq 0.01 = 397$, $p \leq 0.05 = 466$. The empirical value obtained, W = 3, is in the zone of significance. Therefore, the alternative hypothesis **H1** is accepted, and the null hypothesis **H0** is rejected. The result obtained indicates the effectiveness of mobile learning and the methodology of its application.

5. Discussion

This study aims to examine the efficacy of ML in shaping the NV of prospective teachers. Diagnostics at the beginning confirmed the assumption about the low level of national values among teacher candidates, indicating the need for targeted development efforts (Berg et al., 2023).

An optimal combination of traditional and innovative forms and methods of pedagogical influence was used to solve the set tasks of the complex shaping of components of the future teacher's national value (Alam & Mohanty, 2023; Van Leeuwen & Janssen, 2019). The optimal combination of traditional and innovative mobile learning forms and methods aided students' consistent progression from the reproductive to the productive stages of mastering national values (Gao, Li, & Liu, 2021; Rahayu, Ferdiana, & Kusumawardani, 2022). Therefore, a set of interactive mobile learning methods involving the active use of mobile devices was introduced into the educational process of the EG participants. The changes made to the mobile learning pedagogical system focused on the training content, means, methods, and forms of the technological subsystem (Ahmadian Yazdi, Seyyed Mahdavi Chabok, & Kheirabadi, 2022; Yang, Anbarasan, & Vadivel, 2022). In the mobile learning information and educational environment, knowledge was presented in a visualized electronic form, and students perceived this knowledge, developing skills through an independent, interactive mode of working with electronic educational material and interactive information interaction (Akgun & Greenhow, 2022). The interactivity allowed the student to interact both with the educational material and with other students. In the mobile learning process, self-regulation is carried out by the student through independent acquisition of knowledge, self-organization, and self-governance (Nikolopoulou, 2023; Zhang & Yu, 2022). New forms of events were implemented (seminars and discussions on innovative technologies introduced into the educational process of mobile learning; organizing Internet conferences, mastering webinar tools for text, audio, and video communication, using presentation materials, holding master classes for innovative teachers in mobile learning systems). Therefore, the advantage of organizing the mobile learning process for students using a well-founded algorithm for the formation of national values compared to traditional learning has been revealed (Khasawneh & Khasawneh, 2023; Okai-Ugbaje, Ardzejewska, & Imran, 2022; Talan, 2020). Certain dynamics of national value formation are traced in the experimental group using mobile learning, confirming the validity of the hypothesis proposed and the achievement of the research goal.

6. Conclusion

This study aims to examine the efficacy of ML mobile learning in shaping NV national values in prospective teachers. Diagnostics at the beginning confirmed the assumption of a low level of NV among teacher candidates, indicating the need for targeted development efforts. The promotion of national values among the participants in the EG was carried out within the framework of the discipline 'Methodology Shaping of Prospective Teachers' National Values.' The use of an optimal combination of traditional and innovative pedagogical forms and methods helped students consistently transition from the reproductive to productive stages of learning national values. A set of interactive mobile learning methods that involve the active use of mobile devices was introduced into the educational process for EG participants. The changes made to the mobile learning pedagogical system focused on the content, means, methods, and forms of the training of the technological subsystem. The interaction allowed students to engage both with the educational material and with each other. New forms of events were implemented (seminars and discussions on innovative technologies introduced into the educational process of mobile learning, organizing Internet conferences, mastering webinar tools for text, audio, and video communication, using presentation materials, holding master classes for innovative teachers in mobile learning systems). Therefore, the advantage of organizing the mobile learning process for students using a well-founded algorithm for the formation of national values, compared to traditional learning, has been revealed.

7. Limitations and Additional Future Directions

This study does not claim to be a comprehensive analysis of the efficacy of mobile learning in shaping the national values of prospective teachers, but it can be expanded to foster students' familiarization with universal human values under the conditions of mobile education in universities. Some of its features warrant a more thorough investigation.

1. In the future, researchers may investigate the content and structure of the process of familiarization with the universal human values of students.

More methodological research should be conducted to shape the attitudes of students towards the world, their moral feelings, and their internal personal qualities (interpretation of universal human values).

2. It is necessary to investigate and justify the criteria for the formation of moral qualities, indicating the level of student development not only with national values but also with universal human values.

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