

Developing the personal readiness of vocational school heads for management in the digital education space through distance postgraduate education

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Abstract. This paper examines the personal readiness of vocational school heads for management in the context of the digitalisation of education. An empirical study revealed insufficient leadership qualities like entrepreneurship, self-efficacy, focus and communication among vocational school heads. A training program was developed to improve these competencies through distance postgraduate education. The program consisted of two modules delivered online over 30 hours. It utilised interactive methods like group discussions, role-playing, case studies and individual assignments. The program's effectiveness was evaluated through a pre/post-test design with experimental and control groups. Results showed statistically significant improvement in personal readiness components like entrepreneurship and focus on business in the experimental group compared to the control. The study demonstrates the potential of distance postgraduate programs to develop the leadership competencies needed to manage vocational schools effectively in the digital era.

Keywords: personal readiness, vocational school heads, management, digital education, training program, distance postgraduate education

1. Introduction

The global education landscape is undergoing rapid transformation, catalysed by the COVID-19 pandemic's impact [40, 45]. Educational institutions worldwide have been compelled to transition to remote learning modalities quickly. This disruption has accelerated the digitalisation of education across all levels – from schools to universities. Educational leaders now face the urgent challenge of managing their institutions effectively in this digital environment [22, 30].

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However, research indicates that many lack the requisite leadership competencies to guide this transition successfully. Studies have identified deficiencies in entrepreneurship, self-efficacy, communication skills, and attitude towards digital technologies among vocational school principals. Developing these competencies is crucial as online and blended models are likely to persist even after the pandemic subsides.

Personal readiness of leaders encompasses personality traits, attitudes, motivations and abilities needed to perform roles effectively. For vocational school heads, qualities like entrepreneurship, self-efficacy, focus, positivity and social creativity are vital for managing digitally enabled institutions. However, empirical evidence reveals low levels of these attributes currently.

This highlights the need for targeted interventions to build leadership capacity. Postgraduate training programs offer a valuable mechanism to develop these competencies through continued professional education. Distance learning formats enable scale and flexibility amidst constraints on in-person interactions.

This study examines the design and delivery of a postgraduate training program to improve the personal readiness of vocational school heads for managing digital education contexts. A modular curriculum is implemented online using interactive pedagogies. Pre- and post-assessments determine the intervention's effectiveness in enhancing leadership readiness across multiple dimensions.

The findings will guide efforts to strengthen competencies needed by 21st-century vocational education heads through scalable distance education models. Building their readiness is imperative to lead institutions successfully during an era of exponential technological change.

2. Literature review

The heads' personal readiness of vocational education institutions to manage in the conditions of digitalisation of the educational space is a component of their general psychological readiness for professional activity. Effective management of a vocational education institution in today's challenging situation involves taking into account both general (due to the general specifics of management work: informative saturation, diversity of management functions, strict requirements for individual professional qualities and professionalism, etc.) and specific (due to direct conditions) institution: dependence on the impact of inconsistent decisions and recommendations of higher education authorities, a particular contingent of students, inclusive responsibility for the results of activities in the uncertainty of their evaluation criteria, the excess of emotionally charged contacts with different categories of consumers of educational services) [4, 5, 21, 26, 39].

At the same time, scientific research in vocational education is mainly aimed at the development of students. However, when it comes to training teachers, attention is focused on improving the methodology of teaching subjects [14, 18, 36, 43, 44, 46]; however, the issue of personality constituents is not well covered, although in our opinion, they are decisive.

So, the psychological structure of personal readiness as a set of personal qualities of heads of vocational education that are significant for the implementation of management in the context of digitalisation of the educational space is made up of the following characteristics: entrepreneurial spirit, self-efficacy, focus on business and constructive communication, an

active-positive type of attitude towards other people, and social creativity.

Entrepreneurship, as a professionally important quality of the personality of the head of any industry, determines the effectiveness of managerial functions in changing, complex situations and is characterised by a set of such integrative psychological characteristics as the ability to take a reasonable risk, innovative position in the introduction of new technologies; creative approach to problem-solving; independence of judgments, opinions, actions; flexibility in choosing competitive management strategies; focus on achieving significant results, the desire for continuous self-development [21, 28, 33, 37], which is directly related to the introduction of the modern digital technologies in the educational process [27].

A vague indicator of the personal readiness of the heads of vocational education institutions for management in digitalisation is their self-efficacy, that is, the degree of assessment of their effectiveness, efficiency in specific activities, and their perception of their competence [3, 53].

Based on the concept of self-efficacy by Bandura [3], people who are aware of their self-efficacy make more efforts to complete complex tasks than people who have severe doubts about their capabilities. This assumption is also confirmed in the works of modern researchers, which show the relationship between self-efficacy and career success, professional self-realisation and professional and personal development [5, 11, 12, 34].

Concerning another indicator of personal readiness – personality orientation – it is worth noting that it characterises the head through his/her aspirations, beliefs, interests, values, and worldview and determines his/her active and purposeful behaviour [1, 9, 19]. That is, the orientation of the personality is a complex psychological property, which is a stable system of a person's internal motives and life goals, showing the incentive factors and the vector of its aspirations. The focus on business, communication and oneself is distinguished among the main lines of such analysis. At the same time, this hierarchy of focus determines the effectiveness of the head's activity [47].

The effectiveness of interaction in implementing digital learning technologies is primarily determined by the type of leader's attitude towards other people. Indeed, in conditions of uncertainty, constant change and high personal responsibility for the results of the educational organisation, the head must show an active-positive type of attitude toward other people (according to Gibson, Fiedler and Barrett [17]), showing respect and acceptance of the inner world of each individual, thereby providing opportunities to realise their potential.

Management activity in the context of digitalisation of the educational space is closely related to the social creativity of the individual, assumes the presence of a general ability to self-actualisation, the severity of social motivation, which reflects the individual's need for social contacts and motivational attitudes to communicate with other people; the development of social imagination, which allows to model further steps in the situation of social interaction based on feedback [41].

Thus, the professionally important personality traits of the educational organisation's heads, which make up the personal readiness to manage the implementation of digital learning technologies, are the basis of successful activities of heads of vocational education in digitalising the educational space.

The theoretical analysis of the researched problem allowed the implementation of the following empirical stage of research of the psychological characteristics of the heads' personal readiness of vocational education institutions for management in the context of the digitalisation

of the educational space and, based on it, creating the program of development of corresponding readiness in the conditions of distance postgraduate education.

3. Methods

The study involved 230 heads of vocational education institutions from different regions of Ukraine who underwent advanced training at the Central Institute of Postgraduate Education of the University of Educational Management during 2019-2020 (pre-pandemic stage).

The following methods were used: theoretical (analysis and generalisation of the results of theoretical analysis of the literature); empirical: Test for general abilities to entrepreneurship (GET TEST, adapted by Y. Pachkovskyy) [37]; Self-efficacy questionnaire (authors – M. Scherer, J. Maddux, modified by A. Boyarintseva) [48]; methods – “Determination of personality orientation” (authors – M. Kucher, V. Smekal) [35]; “Attitude to the neglected employee” (who is given the least preference) (Least Preferred Coworker, LPC, author – F. Fiedler, adapted by S. Kalishchuk) [20]; “Determination of social creativity of the individual” (adapted by N. Fetiskin, etc.) [15]; mathematical and statistical (search of primary statistics, analysis of variance ANOVA) data processing was performed using SPSS version 17.0.

The formative stage of the study was implemented in 2020 based on the Central Institute of Postgraduate Education of the University of Educational Management. 49 heads of these institutions from different regions of Ukraine took part in approving the development program of heads' personal readiness of vocational education institutions for management in the conditions of distance postgraduate education, of which 24 persons made the experimental group and 25 in the control group.

The program provided the use of modified for its tasks and adapted to the distance form of the advanced training group and interactive methods: training in a virtual learning environment, group discussions and “brainstorming” in chat, work in small groups using messengers, interactive mini-lectures, role and business games, method of incomplete sentences, analysis of managerial situations, project and individual creative tasks, etc. [8, 23, 28, 31, 49].

Statistical processing of the results of approbation of the program “The development of heads' personal readiness of vocational education institutions for management activities in the digital educational space” was carried out using the same methods as at the statement stage of the study using SPSS version 17.0.

4. Analysis of the research results

We conducted an empirical study of the psychological characteristics of vocational education institutions' heads' personal readiness for management activities in digitalising the educational space. The logic of the analysis was carried out by the selected indicators of the studied readiness: entrepreneurship, self-efficacy, focus and constructive communication, active-positive attitude towards other people, and social creativity [23].

The results of the empirical study revealed the predominance of the following entrepreneurial characteristics, significant in the context of new challenges of educational organisation management in terms of digitalisation of educational space: the need for autonomy ($M = 7.9; \sigma = 2.1$),

which is manifested in purposefulness, and sometimes in stubbornness, independence in doing the activity and decision-making; focus on reasonable, weighted risk ($M = 7.4; \sigma = 1.9$), which includes the ability to accept the consequences of their choice, see the benefits of mistakes, act in a situation of uncertainty, and the ability to be creative ($M = 7.1; \sigma = 1.4$), consisting of the sensitivity of heads to new experiences, prone to non-trivial solutions. The least represented were the needs for achievement ($M = 6.8; \sigma = 1.7$) and determination and determination ($M = 6.7; \sigma = 1.9$), which indicates a lack of self-confidence, a tendency to rely more on external factors than on their actions.

Besides, the distribution of heads of vocational education institutions depending on their ability to entrepreneurship was revealed (table 1).

Table 1

Distribution of heads of vocational education institutions by levels of ability to entrepreneurship.

Levels of ability to entrepreneurship	Number of respondents, %
Low	16.5
Average	78.3
High	5.2

Table 1 shows that most respondents have an average level of entrepreneurial ability (78.3%) and a low level – 16.5%. Instead, only 5.2% of heads have a high level of entrepreneurial skills.

At the same time, according to the results of the analysis of variance, a statistically significant relationship ($p < 0.01$) between the indicators of entrepreneurial activity and the age category of heads depending on gender, which showed that heads of the younger cohort (up to 45 years) have a more pronounced ability to entrepreneurship. Groups of senior men-heads and women, regardless of age, show reduced indicators of entrepreneurial characteristics. The presented results coincide with other studies that emphasise the predominance of male models of entrepreneurial behaviour, which negatively affects the perception of their entrepreneurial abilities in women [52].

So, the identified ambivalence and insufficient level of development of entrepreneurial characteristics of heads of vocational education institutions can negatively affect the management of innovative development of the organisation in general and the effectiveness of implementing digital learning technologies in particular.

The next stage of the study aimed to determine the characteristics of heads' self-efficacy of vocational education institutions (table 2).

Table 2

Features of self-efficacy of heads.

Types of self-efficacy	Points, on average	Σ
Activity	7.4	0.9
Social	6.4	1.3
General	6.9	0.9

According to the data of table 2, heads' level of activity self-efficacy is slightly higher than

social (7.4 and 6.4 points on average, respectively). Comparison of the results of other studies [7] allowed to state slightly lower self-efficacy indicators in the studied heads of vocational education institutions, in contrast to the heads of secondary schools.

Also, we revealed an insufficient level of self-efficacy of heads: 30.4% of respondents have a high level, 40.9% have an average level, and 28.7% have a low level, which may indicate a low assessment of their capabilities of the vast majority of heads in achieving their goals, comparing one's achievements with successes, social norms and assessments of other people.

According to the theory of self-efficacy [3], this phenomenon was considered a leading personal construct that forms a belief in the success and effectiveness of actions in one or more activities. Following the researcher, even the presence of high personal potential does not automatically guarantee the achievement of high results if a person does not have faith in the ability to influence the events of his/her own life. Conversely, a person can achieve significant success even with insufficiently high abilities but high self-efficacy. Therefore, of course, developing and maintaining confidence in the self-efficacy of heads of vocational education institutions will positively affect their psychological readiness to overcome life's difficulties, frustrations and stresses that arise during management in the digitalisation of educational space.

Further analysis of the results obtained by the method of M. Kucher and V. Smekal revealed the peculiarities of the orientation of heads.

So, it is established that in the hierarchy of orientation, on average, heads tend to focus on business (27.6 points on average), then on interaction (27.3 points on average), and then – on themselves (26.3 points on average), which coincides with the ideas of the authors of the methodology of the hierarchy of orientation, which increases the efficiency [47].

At the same time, a detailed methodology analysis showed that such a hierarchy is not common to all heads (table 3).

Table 3

The results of cluster analysis of indicators of personality orientation of heads of vocational education institutions.

Personality orientation	Clusters		
	1	2	3
For business	30	27	27
For interaction	26	25	30
For themselves	24	29	25

As follows from the data given in table 3, the first cluster (21.8%) consisted of heads with the optimal hierarchy of orientation (“for business” – “for interaction” – “for themselves”), namely a high level of personality orientation. Such leaders are interested in constructive solutions to business problems, support the teaching staff and individual employees on the way to the goal, encourage them to express their opinions and beliefs while taking responsibility for the case, try to help solve problems together, and can defend their opinions and hear the position of others to achieve a common goal.

The second cluster (39.1%) includes respondents with a predominance of self-orientation, which indicates a low level of personality orientation of heads. Such heads are focused primarily

on direct remuneration and satisfaction of their own needs, desires, and interests, regardless of the current situation and needs of the institution. In case of limitations, these opportunities may be anxiety, irritability and aggression. This category of heads is often focused only on themselves, their feelings and experiences, ignore the needs of the interests of subordinates and colleagues, try to impose their views on the team, and tend to make hasty and unfounded conclusions about others, and so on.

The third cluster (39.1%) included heads with a predominance of interaction orientation and, accordingly, with an average level of orientation of their personality. Such leaders focus primarily on effective interpersonal interaction and joint activities, the interests of the teaching staff, which may sometimes interfere with the effective implementation of production tasks. Heads with such a focus are mainly focused on social acceptance, depending on the group and team, feel the need for support and commitment of others and, as a result, may give in to pressure from the team or group of employees, regardless of their ability to problem-solving and solve production problems for the sake of maintaining friendly relations.

At the next stage of the empirical study, the peculiarities of the manifestation of the types of heads' attitudes toward vocational education institutions with other people were analysed (table 4).

Table 4

Type of installation of heads of vocational schools with other people.

Type of installation	Number of respondents, %
Situational-subjective	44.3
Functional and business	22.6
Hidden-negative	17.4
Neutral-indifferent	14.8
Active-positive	0.9

As evidenced by the data in table 4, most heads of vocational education institutions found an insufficient positive attitude towards other people.

So, the active-positive installation as a professionally important quality of specialists such as "person-person" is characteristic of only 0.9% of respondents. Representatives of this group show a friendly attitude towards others, willing to notice their positive qualities, which, in turn, creates an atmosphere of friendliness, mutual understanding and cooperation. This attitude is especially relevant in distance learning, with limited direct contact of participants in the educational process to increase psychological security in the digital learning environment.

At the same time, a significant number of heads (44.3%) are characterised by a situational-subjective type of attitude towards other people, which causes a tendency to differentiate their attitude to others depending on their emotional state and feelings of acceptance by others and also leads to sharp mood swings under the influence of situational factors and subjective factors. 22.6% of the surveyed heads have a functional-business type of attitude, manifested in a differentiated attitude towards people consistent with their usefulness when friendliness is shown only about "necessary" people. The survey stated that a neutral-indifferent attitude towards other people has 14.8% of respondents and is manifested in secrecy and lack of sincerity

to others; communication is formally polite but emotionally alienated and superficial. Heads of latent-negative orientation (17.4% of respondents) show a tendency to notice and emphasise mostly negative traits and qualities in others, intolerant of these people, and openly demonstrate their negative attitude, which creates mutual hostility and malevolence.

As the analysis of the results of the study showed the peculiarities of the type of heads' of vocational education institutions attitude to others, only 0.9 % of surveyed heads are characterised by a high level of attitude towards other people, 67.0 % – medium, and 32.1 % – low (table 5).

Table 5

Distribution of heads of vocational education institutions by levels of the type of attitude to others.

Levels of attitude towards others	Number of respondents, %
Low	32.1
Average	67.0
High	0.9

So, the attitude towards other people is one of the problem areas in the context of heads' personal readiness of vocational schools for management activities in the context of the digitalisation of educational space.

It is clear that with this type of attitude of heads, the development of motivation for staff professional development of educational organisations in general and the introduction of digital learning tools is quite problematic.

An essential indicator of heads' personal readiness of vocational schools to manage in the digitalisation of educational space following the author's approach is the heads' social creativity of vocational (professional) schools, to determine which used the appropriate method of Fetiskin, Kozlov and Manuylov [15].

According to the results of empirical research, an insufficient level of social creativity was found in a rather large group of surveyed heads (table 6).

Table 6

Levels of heads' social creativity of vocational schools.

Levels of social creativity	Number of respondents, %
Low	28.7
Average	43.5
High	27.8

As evidenced by the data presented in table 6, a low level of social creativity was found in 28.7%, average – in 43.5%, and high – in 27.8% of respondents.

Thereby, many heads of vocational education institutions are characterised by a lack of creativity in the social sphere. They have difficulty maintaining constant social contact and motivational attitudes to communicate with others. They are limited in the manifestations of social imagination, which allows predicting and modelling behaviour in situations of interpersonal interaction based on feedback, etc. This may indicate certain limitations in creating a creative digital educational environment, on the one hand, due to the specifics of virtual

interaction, and, on the other – due to the position that inhibits social interactions because heads themselves are not able to show an example of creative interpersonal interaction, to be the creative environment carrier.

Summarising the results according to all methods, we identified the levels of heads' personal readiness of vocational education institutions to manage in digitalising educational space (figure 1).

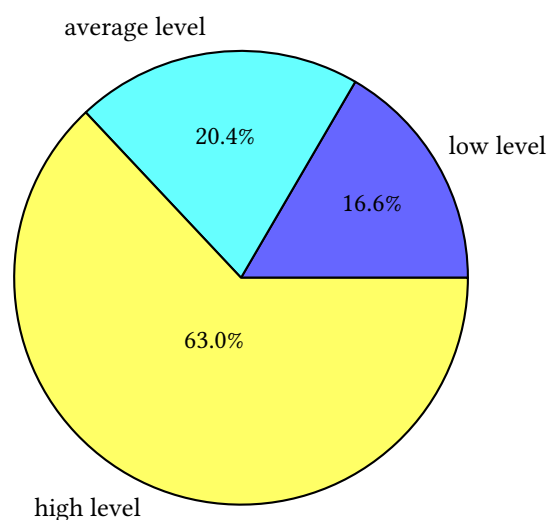


Figure 1: Distribution of heads of vocational education institutions by levels of personal readiness to manage in digitalising educational space.

Figure 1 presents that the heads' personal readiness of vocational education institutions to manage in the conditions of digitalisation of the educational space is insufficiently formed.

Hence, a high level of such readiness was found only in 20.4% of the surveyed heads, which are characterised by high levels of entrepreneurial activity, self-efficacy, social creativity, predominant focus on business and communication, and an active-positive attitude towards other people.

The average level is set at 63.0% of heads, which are characterised by the following: primarily average indicators of entrepreneurial activity, self-efficacy, and social creativity; predominant focus on interaction, situational-subjective or functional-business types of attitude towards other people.

A low level was found in 16.6% of respondents, who found low levels of entrepreneurial activity, self-efficacy, social creativity, predominant self-orientation, and neutral-indifferent or hidden-negative attitudes towards other people.

Therefore, based on the results of empirical research, an insufficient level of both indicators of heads' personal readiness of vocational education institutions for management in the context of digitalisation of the educational process and its general level were established, which actualise the need to develop and test a program for psychological support of their personal readiness in conditions of distance postgraduate education.

4.1. Distance postgraduate education

Despite the rapid pace of social changes and scientific and technological progress, it became necessary to revise approaches to postgraduate education with the practice of organising periodic courses at a specific time interval between attending refresher courses by specialists since this format limits the development of a personality that can not only perceive changes as an objective reality but also initiate innovation and training, adequately solve the problems of our time, respond to them, predict and change social reality.

Equally important is the awareness and consideration in the process of distance postgraduate education of the specific features of adult learning based on their professional experience, value attitude of listeners to reality, indicators of heads' personal readiness for managerial activity in the conditions of digital educational space [6, 13, 24, 25, 32, 42, 49].

Therefore, postgraduate education ceases to perform only the traditional function of training and retraining, and it becomes a stage of adult development aimed at improving professional activity and developing professional competence throughout life.

The specific features of adult education are a complex of systematised factors of the educational process subjects from the standpoint of the andragogical approach, which includes: the role of the subjects of learning and the peculiarities of their interaction as equal partners, organisation of the learning process based on joint activities, individualisation and self-determination; active and interactive teaching methods aimed at improving the quality of education, professional and personal growth of adults; the specifics of educational programs based on the principle of continuity, expediency, prospects; orientation of the motivation of learning to meet the practical problems of the practice of professional activity of specialists; use of life experience, etc. [2, 7, 25, 32].

The importance of postgraduate education in modern circumstances is due to the changing needs of the labour market, the content and nature of work aimed at developing professionals in the context of bringing their professional skills in line with world standards, time requirements, personal and industrial needs, improving their scientific and cultural level, stimulation and development of the creative and spiritual potential of personality [7, 32, 50].

An essential feature of postgraduate education is its prognostic nature because the learning process should, on the one hand, respond quickly to trends and prospects of education and the latest advances in science, and on the other – widely disclose practice-oriented training technologies, students to respond to challenges in professional activities.

All these aspects remain relevant during the introduction of anti-epidemic measures in our country and around the world, related to the spread of COVID-19, which encouraged educational institutions at all levels to make a mass transition to distance learning. At the same time, the active introduction of distance learning in postgraduate education necessitates the organisation of effective interaction of students in the virtual educational space as a systematic and effective joint activity based on ICT.

This helps to highlight the specific features of distance learning, among which are the following advantages: the ability to vary both asynchronous and synchronous interaction with all partners belonging to the virtual community, association of participants of interaction in joint activity on the transformation of certain objects that have for them subject-practical and cognitive value; the emergence of new motivating factors of virtual interaction, in particular,

the novelty of the proposed work forms, which creates a sense of belonging to advanced technologies, reinforces the desire to be modern.

It is also necessary to take into account the problems in the organisation of distance learning, including the following: the presence of psychological barriers in some heads (especially older people) when working with a computer; insufficient level of competence in the implementation of ICT of a significant number of teachers and students; insufficient level of psychological and pedagogical competence of the postgraduate education system teachers regarding the organisation of virtual interaction, etc.

At the same time, psychological and pedagogical developments in distance learning and distance education, the creation of virtual educational space correspond to modern issues of lifelong learning as a psychological and pedagogical condition of self-development [2, 6, 10, 49, 51].

This approach allows talking about the fundamental possibility of developing in the conditions of distance postgraduate education the heads' personal readiness of vocational education institutions for management activities in the digital educational environment.

The results of the implemented empirical study revealed an insufficient level of both indicators of heads' personal readiness of vocational education institutions to manage in the context of digitalisation of the educational process and the level of their readiness in general.

Difficulties in the manifestations of entrepreneurial activity, in assessing their effectiveness, the predominance of egocentric orientation, differentiated attitude to others concerning the subjective, situational, helpful factors, limiting the focus on forming a creative digital educational environment in a large number of researchers, which highlighted the need to develop approbation of the program of development of heads' personal readiness of vocational education institutions to management in the conditions of digitalisation of educational space in the system of distance postgraduate education.

To identify the factors that hinder the effective implementation of the process of heads' personal readiness of vocational education institutions to manage management in the digital education space, it should be noted that although the overwhelming majority of heads understand and share the importance of introducing digital management technologies, this process is sometimes chaotic, unsystematic in nature, besides, many heads have a low level of initiative, enterprise and other psychological qualities that are important for successful management activities in the context of digitalisation of the educational space.

4.2. Description of the program

The purpose of the formative stage of the experiment was to design and verify the program's effectiveness in developing the personal readiness of heads of vocational education institutions to manage in the context of distance postgraduate education.

The developed program was based on a conceptual model of promoting the personal development of specialists in the process of postgraduate education [5], according to which the development of heads' personal readiness of vocational education institutions for management in the digital education space is carried out in four stages.

1. The preparatory stage actualised the heads' desire to develop personal readiness for management activities in the digital educational environment.

So, the preparatory stage of the work included an acquaintance of group members; determining the purpose and objectives of the special course; expression by heads of expectations from participation in a special course; discussion and approval of work rules; setting up activity and improving efficiency; creating a comfortable atmosphere of interaction in a virtual learning environment.

For this purpose, at the beginning of each meeting, various forms of activity were used: self-presentations, icebreakers, voicing actual well-being and psycho-emotional state, exercises, etc.

This was achieved through the use of, for example, icebreaker exercises “I did not expect myself to...”, modified and adapted for distance learning exercises “Ball” and also exercises “Treasury of associations” and the modified variant of brainstorming “Pros and cons of digitalisation of educational space”, etc.

2. The diagnostic stage is aimed at the disclosure and awareness of heads of personal characteristics and their reflection on the results of professional activities.

At this stage, a psychological workshop was conducted using the following methods: Test for general abilities to entrepreneurship (GET TEST, adapted by Y. Pachkovskyy) [37]; Self-efficacy questionnaire (authors – M. Scherer, J. Maddux, modified by A. Boyarintseva) [48]; methods – “Determination of personality orientation” (authors – M. Kucher, V. Smekal) [35]; “Attitude to the neglected employee (who is given the least preference)” (Least Preferred Coworker, LPC, author – F. Fiedler, adapted by S. Kalishchuk) [20]; “Determination of social creativity of the individual” (adapted by N. Fetiskin, etc) [15].

3. The developmental stage, in which the development and correction of components of heads’ personal readiness for management in the digital educational space, using the following methods:
 - analysis of managerial situations, when participants consider problematic situations of managerial activity during the digitalisation of educational space, the constructive solution of which is possible provided that there is a high level of appropriate personal readiness of the heads of vocational education institution;
 - group work to actualise the desire to help improve the management of the educational institution by personal example through exercises: “My life credo”, “Who am I? What am I?”, “Portrait of the head of a vocational education institution”, etc.;
 - business game “Vocational education institution: yesterday, today, tomorrow”, which helps to comprehend the existing experience and agree per the requirements of the time;
 - role-playing games “Guess the communication style”, “Psychological strategies to achieve results during the online meeting”.
4. The prognostic stage aims to identify and develop vectors, forms, methods and ways of further development and self-development of heads’ personal readiness of vocational education institutions for management activities in the digital educational environment.

The means of implementing the final stage were particular tasks for independent work, exercise “Wish Basket” (members of the training group wished each other in the form of proposals “gifts” that provide an opportunity to improve the heads’ personal readiness of vocational education institutions to manage in the digital educational space), and also reflective analysis “What did the training give me?”.

The final stage of the program was focused on summarising the work and filling out a feedback questionnaire, which is expected to answer the following questions:

- I. Have you participated in such events before?
- II. Did your expectations for the special course come true?
- III. What did you like most about the tasks?
- IV. Did you receive new information about your personal qualities? If so, which ones?
- V. Have there been any changes with you due to participating in the special course, and if so, which ones?
- VI. Have you gained any helpful knowledge? If so, which ones?
- VII. Do you plan to use the acquired skills in your professional activity?

Hence, taking into account the results of the ascertaining stage of the study, the list of principles (professional development of heads of vocational education institutions, focus on self-knowledge and individual’ self-development, use of active group teaching methods, creative activity, partnership) and psychological conditions (creation of a special social environment of comfort and creative freedom, mutual support in the group, trust, respect, activation of adequate self-perception through reflective analysis), which contribute to the development of heads’ personal readiness of vocational education institutions to manage in the digital educational environment in distance postgraduate education.

Specific features of such a social environment in terms of distance learning are:

- 1) the organisation of virtual joint activities of heads of vocational education institutions, during which they realise themselves as creative individuals meet higher human needs; at the same time, through the organisation of joint, interdependent activity, there is an effect of group feeling of usefulness for another with the raising of self-worth;
- 2) joint formation of group norms and principles of interaction of humanistic orientation in the virtual learning environment, among which was voiced the establishment of partnerships during participation in the program, sincerity, emotional openness and trust in each other, acceptance of another person as a value; tolerance, positive attitude, lack of criticism, active involvement in the group creative process;
- 3) social and spiritual enrichment in remote joint activities, the joint experience of a sense of belonging to the peculiarities of professional culture, discussion of issues of professional self-determination, the mission of the head of vocational education, etc.;
- 4) intensification of mental, emotional and behavioural components of joint activities through collective action in the digital learning environment with a public demonstration of results, such as project activities;
- 5) establishing feedback in the process of joint activities between its participants (chats, conversations, group forms of communication, etc.) to ensure the process of self-awareness with the help of others;

- 6) implementation of a system of particular tasks that determine the acceptance and playing of a social role (head of a vocational education institution) with specific characteristics that correspond to a person focused on improving management in the digitalisation of the educational space [29].

The next task of the formative stage of the experiment was to identify and develop adequate and optimal forms and methods of work that would best meet the study's objectives and take into account the features of distance postgraduate education. Herewith, we took into account that the heads' training methods of vocational education institutions should be characterised by efficiency and practicality, encourage constructive communication, promote the ability to solve management problems in the digital educational environment, stimulate new ideas, develop heads' ability to self-knowledge and self-understanding, cultivate tolerance, respect for the individual characteristics of each person.

The choice of the most optimal forms and methods of training of heads of vocational education institutions was based on the fact that they should be characterised by efficiency and practicality, encourage constructive communication, promote the ability to solve management problems in the digital environment, be open to new ideas and active in their implementation, develop the ability of heads to self-knowledge and self-understanding, cultivate tolerance, flexibility, and respect for the individual characteristics of each person [7, 8, 23, 28].

Based on our practice and the specifics of adult education in the process of distance learning in modern conditions, we believe that it is appropriate to apply adapted to distance learning group and interactive methods: training in a virtual learning environment, group discussions in video conferences and "brainstorming" in chat, work in small groups in the created rooms of the distance learning environment, interactive mini-lectures using multimedia presentations, role and business games, method of incomplete sentences, analysis management situations and their discussion, project and individual creative tasks, etc. [5, 8, 21, 23, 28, 34].

The main form of implementation of the program of heads' personal readiness to manage in the digitalisation of educational space was chosen training, because of its focus on the practical development of material, when in the process of modelling specially set situations students have the opportunity to develop and consolidate the necessary knowledge and skills, experience and approaches used in the work, understand the state of development of personal readiness and identify its psychological problems, personal qualities, features of interaction with others. With the help of training exercises in a virtual learning environment, heads learn the features of remote perception of their personal qualities, behaviour, and managerial actions by others. Overcoming psychological difficulties, correcting restrictions, and correcting shortcomings in interactive interaction at a distance are carried out; ways of his/her personal growth are developed.

Inclusion in the program group discussions in chat capabilities used for updating the free exchange of digital learning environments thoughts, ideas and knowledge between stakeholders to provide feedback, reducing resistance to adopting the opposite position through group reflection, eliminating bias in assessing others through public statements, enabling heads to demonstrate their competence by meeting the need for respect and recognition.

The use of group discussions contributed to the development of motivation to use such a technique in managing a vocational education institution, expanding ideas about the possibilities

of interpersonal interaction and creating effective team cooperation in a virtual environment, expanding and deepening knowledge about the peculiarities of heads' personal readiness to manage of the educational institution in the context of digitalisation of the educational space, updating aspirations to improve the management efficiency of their educational institution, to strengthen the desire to implement innovative forms and methods of personality development, to understand the conditions and ways of developing personal qualities that are important in the context of the digitalisation of the educational space.

Besides, we took into account the fact that the use of group discussions in training, following the Pakhalyan [38] opinion, promotes empathy, allows noticing in each unique and original personality, changes the attitude of participants toward others through the emergence of new active social interactions, which becomes especially relevant in the digital educational environment.

To expand the variability of tasks for students in a special training course, one of the options of group discussion was used – the method of “brainstorming” as a common group way of problems-solving by generating new ideas by participants, which stimulates creative activity, creativity, enrichment of constructive experience, search and development of new, non-standard solutions, saving resources, time and energy of the team and its members.

Also, the brainstorming was carried out following the rules (unlimited number of ideas, lack of criticism and evaluative judgments, equality of participants) and contributed to developing tolerance skills and group integration in a digital environment.

The training program included a list of tasks for brainstorming in the chat: “Specifics of management of vocational education in the digital educational space”, “Basic tools for personal development of subjects of the educational process in distance learning”, “The role of creativity in entrepreneurial activity vocational education”, etc. Moving on, in addition to the joint development of group work rules in the virtual learning environment, heads had the opportunity to expand their understanding of the content and specific features of management in the digital educational space, conditions and ways of personal development of distance learning, as well as awareness of emotionally motivated orientation of management activities in the digital educational environment.

The inclusion of short interactive mini-lectures in group discussions has intensified the development of the heads' personal readiness of vocational education institutions to manage in the context of digitalisation of the educational space by expanding psychological knowledge about the advantages and problems of the virtual educational environment, the peculiarities of the attitude of leaders to distance education, to managing a vocational education institution in a distance format, in distance education services and the peculiarities of their provision, for the personal readiness of the head of a vocational education institution for management in the context of digitalisation of the educational space and its development, the features of the manifestation of its components: self-control in communication and general abilities for entrepreneurship, determining the orientation of the personality, self-efficacy, etc. [8].

Adequate, in our opinion, in the conditions of a distance postgraduate education, is a modified method of group interaction as work in small groups – for example, group work to analyse the implementation of distance learning in the educational process from the point of view of various subjects – students, parents, teachers, administration, etc., when the participants, having united within the learning environment in mini-groups, discussed the advantages and disadvantages of

distance education and developed proposals to improve the effectiveness of the implementation of these changes.

It was also helpful to involve role-playing and business games in the process of training interaction in the form of online conferences, which contributed to modelling the system of social relations, reducing emotional stress due to the verbalisation of the existing situation, solving problem situations by teaching the ability to see and analyse the problem from different points of view, the formation of real partnerships with others based on cooperation and correction of the difficulties of personal development of leaders.

The essence of the role-playing game consisted of the fact that heads in a situation of remote interaction temporarily “assumed” a specific social role and demonstrated such behavioural models that, in their opinion, correspond to this role. Participants in the role-playing game had the opportunity to make mistakes and learn from them without much risk. They also got the opportunity to find out what other listeners see and feel and what reactions they cause in others with their attitude and behaviour. Thus, the role-playing game provided an educational function, creating models of distance interaction of listeners in conditions of equality in a dialogical partnership.

As part of our program, we used role play to improve students’ skills of effective communication and interpersonal interaction during management activities [23]. At the same time, we took into account the possible limitations of this form of conduct and the shortcomings of the method itself: an excess of visual images, an increase in the proportion of emotional rather than rational judgments, a certain artificiality of the procedure, the unrealistic scenario of the game, frivolous attitude of the participants, etc. At the training, heads were offered the following role-playing game – “Online Meeting”. Among the participants, the leader and his/her three deputies, who conditionally participated in the meeting, were elected, and other group members acted as observers. Participants were invited to discuss the institution’s plan of work in quarantine conditions, analyse its difficulties, and outline ways of increasing the efficiency of rendering distance educational services.

Besides, our program used business games as a method of finding solutions in a conditional problem situation related to the heads’ professional activities and as a method of active learning that contributes to the development of decision-making skills in the heads of vocational education institutions in non-standard situations, as well as a means of testing abilities to work out and improve existing organisational and managerial processes [28].

Thus, we have proposed a business game “Institution of Vocational Education: Yesterday, Today, Tomorrow”. The trainees were divided into three corresponding mini-groups, each combined in a virtual learning environment using Viber messenger to develop common positions. Then, the results were presented to the whole group, followed by their discussion.

The participants were offered the following instructions: 1) by creating a new group in the messenger to jointly analyse the conditions of activity of vocational education institutions and the factors of ensuring their effective activity yesterday, today and in the future; 2) determine the basic requirements for the personality of the head who successfully implemented, carries out and will manage the institution under appropriate conditions. Thus, the heads had the opportunity to realise the importance and relevance of the development of the heads’ personal qualities, apply a set of knowledge gained on the defining characteristics of the head’s personality for the successful implementation of management, as well as the skills and abilities acquired for the

development of personal readiness for management in modern conditions of distance learning.

In the training program, we used methods to develop the ability to perceive, understand and constructively evaluate ourselves and others. During training sessions, with the help of exercises specially adapted to distance conditions, such as “However, you ...”, “Who am I? What am I?” participants received verbal and non-verbal information about how other people perceive them and how these ideas coincide with their own. They also acquired the skills of deep reflection and semantic and evaluative interpretation of the object of perception.

In the program of the special course, we used exercises of a projective nature: drawing, analysis of managerial situations, etc. Projective methods as components of training work stimulated a thorough study of their resources in the heads of vocational education institutions, as the process of creating any creative product is based on such psychological functions as productive imagination, active perception, fantasy and symbolisation. Therefore, we considered the projective image as a projection of the head’s personality, a symbolic expression of his/her attitude to management in modern conditions, the digitalisation of the educational process, vocational education institutions, etc.

It should be noted that projective techniques contributed to an overall positive attitude, which manifested itself in interest, involvement and spontaneity. For example, students, using a drawing, created a portrait of the head of a vocational education institution, capable of balanced risk or capable of innovations, and the like.

A striking example of the use of the incomplete sentences method was our modified exercise “Creative” [28], which contributed to the creative approach in the process of communication with colleagues in the implementation of digital educational technologies, encouraging themselves and others to generate creative ideas, when participants were invited to express in the chat as many creative ideas to solve the list of proposed situations in the digital educational environment.

Also, the training program is used to analyse the situation (a detailed analysis of the problem of professional situations). Applying this method allowed participants to articulate their difficulties in mastering new types of behaviour more clearly, realise their role in this situation, and evaluate their actions. Heads had the opportunity to analyse and discuss situations they face or may face in managing a vocational education institution. They evaluated, predicted, and analysed different options for the consequences of the heads’ behaviour. In particular, the following situations were proposed:

- Your deputy expressed concern about the deteriorating mood and decreased motivation to teach in the institution’s teaching staff during quarantine restrictions. What are your actions?
- Within two to three months, not very positive reviews have been written on social networks about the specifics of organising distance learning in the institution you run. What are your actions?

The advantages of the situation analysis method include the development of the heads’ skills of vocational education institutions for a comprehensive analysis of the actual problems of the activities of the institutions they manage, taking into account many factors (the development of skills of creative and critical thinking, making balanced, collegial decisions, the development of skills of cooperation and group interaction in the digital educational environment, etc.).

The special course program included diagnostic methods used for self-diagnosis by participants and to study the program's effectiveness.

Applied exercises that contributed to the development of heads' personal readiness of vocational education institutions per our identified indicators were developed personally by the authors or modified following the purpose and objectives as well as the specific implementation of remote special course [3, 5, 16, 21, 23, 28, 34, 38].

The program includes individual tasks for independent work to enhance awareness, deepen reflective analysis and consolidate a positive attitude towards oneself, confidence in one's effectiveness, and constructive experience gained by participants in the training process. Hence, heads were asked to analyse how the head's confidence in their effectiveness in the digital education space affects the quality of management activities in the institution in which they work; write an essay on the topic "The head of a vocational education institution is the leader in the implementation of distance education in the region"; develop a plan for the digitalisation of the educational space, taking into account the specifics of the institution per year, while providing possible decision-making options; analyse their personal readiness as the head of a vocational education institution for management activities in the context of digitalisation of the educational space and draw up an individual program for its development.

The program is designed for 30 hours (including 12 hours of classroom training and 18 hours of individual work) and was implemented in the format of a special course "Development of heads' personal readiness of vocational education institutions for management in the digitalisation of education space" using the BigBlueButton platform (<http://bbb.uem.edu.ua/>).

The content of the program consisted of two training modules (Module 1. "The head's personal readiness of a vocational education institution for managerial activity in the conditions of digital educational space: essence and indicators"; and Module 2. "The development of head's personal readiness of a vocational education institution for managerial activity in the conditions of digital educational space"), which fully contributed to achieving the goal of the formative stage of the research.

Consequently, there is a need to disclose the program's content to develop heads' personal readiness of a vocational education institution for management activities in the digital education space following the selected modules.

Within the framework of the implementation of the first module "The head's personal readiness of a vocational education institution for managerial activity in the conditions of digital educational space: essence and indicators" the primary forms of group work (group communication, discussions, mini-lectures, individual tasks, diagnostic other actions) were identified, which best help solve such issues:

- actualisation of the needs of participants in improving the efficiency of management in the digitalisation of educational space;
- systematisation and deepening of the idea of professionally important head's personality traits of a vocational education institution, significant in the digital education space;
- development of heads' beliefs about their value, efficiency, controllability and managerial competence in professional life;
- improving understanding of self-regulation processes in complicated communicative situations in digital education.

Working in the virtual learning environment on the platform began with a discussion of organisational issues, namely defining the purpose and objectives of training, studying the expectations of participants, discussing the rules of group interaction, helping to adjust to constructive communication, increasing group cohesion, reduce psychological discomfort remotely, etc. For this purpose, at the beginning of each meeting, using various forms of activity (self-presentations, icebreakers, voicing the actual well-being and psycho-emotional state, psycho-gymnastic exercises), which set participants to support a positive group atmosphere, providing opportunities for individual and group reflection.

This was achieved by using, for example, icebreaker exercises, when participants took turns continuing the phrase: "No one knows that I...". Whether performing a modification of the exercise "Who am I", during which heads recorded three items and then presented the results in the form of a mini-presentation "Subordinates think I am... Students think I am... In fact, I am...". Alternatively, participation in a modified and adapted for the remote environment version of the game "The ball", in which participants, passing the conditional ball in the chat to the next, continued the phrase: "I am an effective head of a vocational education institution because...", "For me, it is important to have a team in the institution because...", "If there are difficulties in the work, I am...", etc. After each exercise, there was a discussion about the state of health and the current emotional state, which helped strengthen heads' personal and group reflection.

To explore expectations, heads were asked to answer questions in general notes: "What are your expectations from the special course?", "What questions are most relevant to you in the context of the topic of the special course?"

Actualisation of theoretical aspects of heads' personal readiness was carried out by including in the program content of a special course of mini-lectures and messages from the trainer with the subsequent group discussion and other practical tasks: "The purpose, objectives and structure of the special course", "The role of entrepreneurship in the structure of heads' personal readiness of vocational education institutions for management activities in the context of digitalisation of educational space", "Personality orientation as an important head's professional quality in a digital educational environment", etc.

To intensify the group discussion, we used the results of the method of incomplete sentences, which served as material for discussion in group discussions: "The digital educational environment of a vocational education institution is...", "The head's personal qualities of a vocational education institution in the modern digital environment are...", "Competitive strategies for managing a vocational education institution in the digital space are...", "The most important aspects in the process of interaction with the team in the digital education space are...", etc.

The answers were recorded in a chat, then highlighted on a slide in a virtual learning environment and discussed by all participants. In the course of the discussion, the facilitator received special encouragement from the answers, which emphasised the importance of personal qualities that are important in management in the digital education space.

Implementing the tasks of the first module, the program of the special course included "brainstorming" "Rules of the vocational education institution in the digital environment" with subsequent group discussion, when participants wrote in general notes all possible options to support psychologically comfortable digital space of the educational organisation which they manage. It should be noted that heads were very active and inspired to make proposals based

on their experience and finding non-standard, creative ideas for creating and maintaining a favourable digital environment.

In our opinion, the inclusion of the entrepreneurship development unit in the program contributed to the awareness of the heads of vocational education institutions of the need to develop entrepreneurial activity as a necessary professional quality of an educator in modern conditions of digitalisation of educational space. This task was achieved by group discussions in chat and audio and video presentations “The main characteristics of the entrepreneurship of the head and staff of the educational organisation”, the generalisation and discussion in an interactive mini-lecture using a multimedia presentation “The essence and importance of entrepreneurship in the activities of heads and staff of vocational education institutions”.

In particular, increased interest and active involvement were caused by the implementation of a modified version of the exercise “Identification of innovation in the process of digitisation of educational space” (work in small groups with further discussion) [28], during which participants were asked to develop a plan for innovative changes related to development digitisation of the educational environment by items: 1) The purpose of innovative change; 2) Available resources for implementation; 3) Risks of implementation; 4) Plan for the implementation of innovative changes; 5) Demonstration of innovative personality traits.

Participants in small groups formulated the goal of the jointly chosen innovative change; analysed the existing and imagined opportunities for project implementation, as well as deterrents, restrictive and inhibitory circumstances that could potentially affect the success of implementation; developed a step-by-step plan for introducing innovative change; listed the necessary head’ personality traits for the effective implementation of digital innovations in the educational process. In the end, audience members presented the results of their group’s joint work to the whole audience in a virtual learning environment; other participants acted as experts and wrote on the board the key to their joint notes, in their opinion, the position.

To increase self-confidence, develop confidence in the effectiveness of their actions, the ability to see in themselves and other positive qualities served exercise “Name differently”, which was performed individually with further discussion in the group. In the first stage of the exercise, heads were asked to make a list of 10 qualities that they did not like. The next step was to find situations where this quality would have the opposite meaning. For example, noting that the head is lazy, the phrase continues: “But I save resources.”.

The final stage of work on the program of this module contained tasks for independent work: performance of individual exercise, “Creation of “flower” of own entrepreneurship”, modified according to the purpose of a special course and adapted to conditions of distance postgraduate education [29]. Each participant of the program was asked to draw a flower, like a daisy, and on each petal to write down those characteristics of entrepreneurship of the head of a vocational education institution, which, in his opinion, are essential in the digitalisation of educational space, which served to build a personal profile of entrepreneurship. Then, if desired, participants in the learning environment presented the results, and there was a discussion and feedback.

The results of processing the above methods of the first module were used in the process of working on the second module of the program “The development of the heads’ personal readiness of a vocational education institution for managerial activity in the conditions of digital educational space”, aimed at improving the personal qualities of heads in the field of vocational education, necessary in the context of improving management following the requirements of

today's digital educational environment by solving the following tasks:

- improving skills of effective interaction in a virtual learning environment, creating a favourable environment by establishing positive feedback;
- systematisation and deepening of perceptions about the role of entrepreneurship in the management of vocational education, the possibility of using a creative approach in solving difficult life and professional situations;
- expanding the repertoire of constructive management actions through the use of flexible competitive strategies in the context of the digitalisation of educational space;
- development of skills to receive and provide feedback and support in difficult professional management situations.

To consolidate and develop constructive personal innovations of the program participants within this module's framework, various interactive training forms (group discussion, work in small groups, role-play, exercises, etc.) were envisaged.

Consequently, the search for internal resources to overcome complex management situations, increase the variability of effective self-regulatory strategies, as well as the development of skills to adequately express their emotional states, and thus the development of a reflective attitude towards others, helped the method of incomplete sentences: "I am inspired by...", "I am happy...", "I am glad...", "I soothing...", "I am worried about...", "I am concerned...", "I am sad from...", etc.

The training exercise in our modification "How entrepreneurship manifests itself in the work of the head of a vocational education institution" [28] aimed to deepen the understanding and importance of the main characteristics of entrepreneurship of the education head, such as following: persistent motivation and persistence in achieving goals, activity, initiative, independence and innovation in the personal, social and professional aspects of life. So, the participants in the general chat wrote or, in an audio or video address, talked about the actions of an enterprising person to demonstrate these qualities in life and suggested ways to develop them.

To develop a reflective position, self-understanding, conscious modelling and design of management activities of heads of vocational education institutions used a modified exercise "Technique of personality development" [16], in the process of which the following instructions were given: 1) split the sheet in half, write on the left the personality traits they would like to get rid of (preferably at least five), on the right write the opposite trait they would like to get; 2) identify the traits that participants would like to acquire in the first place, analyse what can be done immediately to get closer to the ideal state, how to behave.

To improve the ability to creatively use available resources in the interaction process in the digital education space, following the objectives of the second module was the inclusion in the program of a special course of business and role-playing games "Online Meeting", the essence of which is given above.

Analytical work in small groups on the joint project "Portrait of a successful head of a vocational education institution in the digital educational space" [5] helped to summarise the experience of significant characteristics of the personality of the head in the digital educational space, skills to tolerantly express their thoughts and approach to solving problems, maintaining

partnerships, friendly relations, opportunities to show their talents and creativity. To do this, rooms were created for group work in a virtual learning environment, where participants had the opportunity to discuss and identify common key positions, record and edit them in a common chat room, and then present the results of their projects to the whole group and discussed the results.

They were completing the special course program to gain a positive experience from participating in the training and creating a situation of success. A modified exercise, "Wish Basket" [5], was proposed and implemented in two stages. In the first stage, each participant in the chat prescribed wishes to others, putting them in an imaginary basket. In the second stage, each head chose a number from 1 to 23 (according to the number of participants), and the trainer read inspiring phrases of the following content:

- Life is preparing something delightful for you!
- Love yourself as you are!
- Make yourself a gift. You deserve it!
- You will be lucky soon!
- You are unique. Just believe in it!
- You can achieve much more!
- You will be lucky! Etc.

At the same time, the generalisation of the gained experience, conscious living of one's personal achievements in the training process, isolation and transfer to real managerial situations of key skills of interaction with subjects of educational process in digital space was facilitated by group discussions to determine the most vivid impressions of the training, the main conclusion of the program; questionnaire to provide feedback to the trainer on the quality of content, level of organisation and usefulness in practice.

4.3. The results of the analysis of the effectiveness of the program implementation

The developed program for the development of heads' personal readiness of vocational education institutions to manage in the context of digitalisation of educational space was based on a combination of educational, training and developmental aspects, observance of the basic rules of group work, carrying out of rituals at the beginning and the end of each employment, verbalised reflection that created favourable conditions for the development of aspects of the person to a context of the researched problem.

This program was approved in 2020 based on the Central Institute of Postgraduate Education of the University of Educational Management in the form of a special course. The special course program covered 47 heads of vocational education institutions from different regions of Ukraine, of which 23 people formed an experimental group and 24 a control group. The homogeneity of the experimental and control groups according to the initial data on the development of personal readiness and socio-demographic characteristics was ensured.

In the experimental group, the implementation of the program of heads' personal readiness of vocational education institutions for management activities in terms of digitalisation of

educational space was carried out holistically, systematically, under psychological conditions, principles provided by specific methods, techniques and techniques of training. Forming experiment ended control testing.

In the control group, classes were conducted under the traditional curriculum of heads' professional development of vocational education institutions, with only two diagnostic sections before and after the formative experiment.

Statistical processing of the results of approbation of the program "The development of heads' personal readiness of vocational education institutions to management in the digitalisation of educational space" was carried out according to the same methods as at the ascertaining stage of empirical research using SPSS software package, version 17.0 for Windows.

Analysis of the program's implementation results for the development of psychological readiness of heads of vocational education institutions for management activities in the context of digitalisation has shown its effectiveness in developing the heads' personal readiness in this category (table 7).

Table 7

Quantitative indicators of levels of heads' personal readiness of vocational education institutions before and after the formatting experiment (* – differences are statistically significant at the level $p < 0.01$).

Levels of personal readiness	Groups (number of respondents, in %)			
	before the formatting experiment (1st cut)		post the formatting experiment (2nd cut)	
	experimental group	control group	experimental group	control group
Low	16.0	16.7	8.0	4.2*
Average	60.0	62.5	68.0	41.7*
High	24.0	20.8	24.0	54.1*

So, the criterion χ^2 revealed that the participants of the experimental group between the results of the first and second sections recorded statistically significant differences in the levels of heads' personal readiness for management in terms of digitalisation of educational space compared with participants in the control group ($p < 0.05$).

Also, among the participants of the experimental group, between the results of the first and second sections on the G-criterion of signs were recorded statistically significant differences in the levels of personal readiness: an increase in the number of subjects with a high level of development from 20.8% to 54.1%, and a decrease the number of respondents with a low level from 16.7% to 4.2% ($p < 0.01$).

The control group participants did not show such positive dynamics in the readiness indicators. So, as can be seen from table 7, the control group participants, according to the results of the first and second sections, recorded statically insignificant differences in the levels of personal readiness. In particular, the number of surveyed heads with a low level of 16.0% to 8.0% decreased, but these differences are not statistically significant.

It is noteworthy that the leaders – members of the experimental group after the formative experiment have changed the severity of the focus on the case compared with the control group participants (figure 2).

Figure 2 shows that the level of heads of the experimental group focus on the case is higher than the heads of the control group ($p < 0.05$).

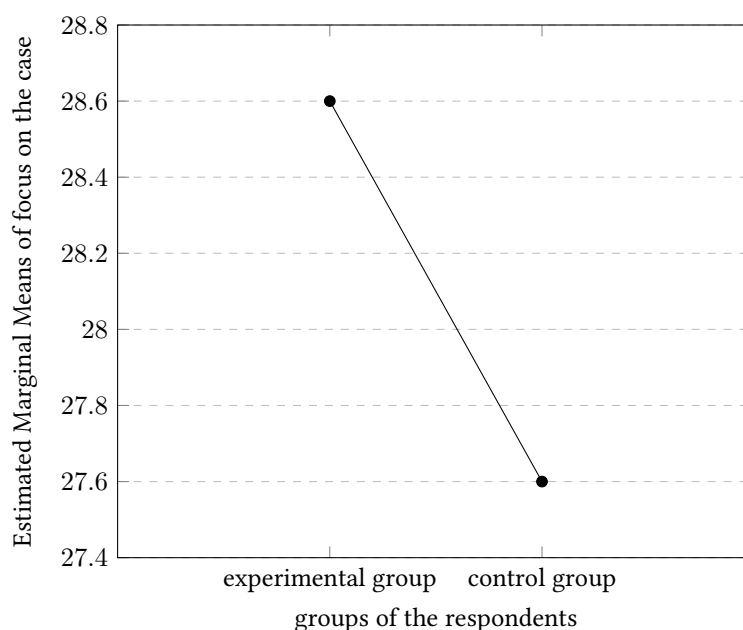


Figure 2: Peculiarities of the expression of focus on the case in the participants of the experimental and control groups of heads of vocational education institutions after the formative experiment ($p < 0.05$).

Besides, along with the growth of entrepreneurial skills, social creativity, etc., according to the participants in the final questionnaire, the ability to better understand the qualities of education heads is vital in the context of the digitalisation of educational space and positive attitude towards other people.

Indeed, heads who participated in the program of personal readiness for management in the digitalisation of educational space had a pronounced ability to have a more positive vision of others and a greater awareness of the peculiarities of interaction in the digital educational environment compared with the control group.

The effectiveness of the program for the development of heads' personal readiness for management in the digitalisation of the educational space is also evidenced by the results of the generalisation of the feedback questionnaire conducted at the end of the special course. Specifically, 91.7% of respondents in the experimental group rated their effectiveness level due to participation in the program on theoretical and practical achievements as high, and 8.3% – as average.

Responding to the questionnaire, the respondents said that participation in the program helped them expand their theoretical knowledge about the development of personal readiness as a professionally important quality necessary for the successful digitalisation of educational space in the institution, a better understanding of themselves, developed skills of self-control and constructive communication.

In response to questions about establishing successful interpersonal interactions in the digital learning environment in the experimental group, 95.8% of respondents noted its high level, and 4.2% – medium.

All respondents in the feedback questionnaire unanimously stated that they plan to use in their professional activities the knowledge gained through participation in the program of development of their personal readiness to digitise the educational space in the future.

So, during the approbation of the conditions of distance postgraduate education, the efficiency of the development program of heads' personal readiness of vocational education institutions to managerial activity in the system of digital educational space is confirmed.

5. Conclusions

This study makes several key contributions to research on developing leadership competencies for digital education management:

- It identifies specific leadership attributes like entrepreneurship, self-efficacy, focus, positivity and social creativity as critical dimensions of personal readiness needed by vocational school heads.
- Empirical assessments revealed insufficient levels of these competencies among current vocational education leaders. This establishes the need for targeted professional development.
- A modular training curriculum was designed leveraging interactive pedagogies suited for online delivery through distance postgraduate education.
- Quantitative pre/post analyses of experimental and control groups demonstrated the effectiveness of the distance program in significantly enhancing personal readiness.
- Entrepreneurship and focus on business showed notable improvements, highlighting the benefits of the training.
- The study provides an exemplar for scaling leadership development through online platforms. This can expand access and lower costs compared to in-person programs.
- It adds to limited empirical research on strengthening school leadership, especially regarding managing digital transformation.
- The findings guide policy and practice for building critical personal capacities vocational education heads need to lead in the digital era.
- Future research can further optimise distance training models and expand them across educational leadership roles and contexts.

In conclusion, developing personal readiness is imperative for vocational education heads to manage digitally enabled institutions successfully. This study provides robust evidence for the value of targeted online training programs to build these leadership capacities. The distance learning modality enables cost-effective and scalable competency enhancement to equip heads for the 21st century.

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