

Medico-pedagogical aspects of preventing negative learning experiences as a factor in preserving students' health under martial law

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ABSTRACT

Aim: This article aims to analyze the medico-pedagogical aspects of negative learning experiences among university students during martial law in Ukraine, particularly in relation to personal initiative and cooperation; to explore the impact of these experiences on students' health and well-being; and to identify preventive teaching strategies aimed at reducing traumatization and supporting students' subjective well-being.

Materials and Methods: A total of 1650 participants took part in the study. The participants were future professionals studying at the bachelor's and master's levels of higher education at Bogomolets National Medical University, Borys Grinchenko Kyiv Metropolitan University, and Volodymyr Vynnychenko Central Ukrainian State University. The study was conducted over a period of three and a half years under the conditions of ongoing military aggression by Russian troops on the territory of Ukraine. The analysis incorporated the results of a 3.5-year study examining interaction styles among future professionals during learning under conditions of ongoing military aggression by Russian troops on the territory of Ukraine, with particular attention paid to the significant increase in passivity during group work. Correlation analysis was conducted to determine the relationship between increasing passivity in group activities during learning and increasing stress indicators.

Results: The findings indicate that learning may have both positive and negative effects on students' health, including sleep disturbances, eating disorders, decreased immunity, and exacerbation of chronic conditions. The negative effects of personal initiative were identified at three levels: self-perception, perception by others, and evaluation of outcomes. Negative experiences in collaborative activities were associated with rivalry, dominance, and neglect within group interactions.

Conclusions: Preventing negative learning experiences in higher education, particularly in the areas of personal initiative and collaboration for sustainable development, requires teaching approaches that support students' well-being, encourage conscious and balanced participation, and minimize the risks of traumatization and retraumatization during the educational process.

KEY WORDS: GreenComp, subjective well-being, health-preserving education, traumatization

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INTRODUCTION

The contemporary socio-political, socio-economic, and socio-cultural context highlights the growing importance of purposeful actions aimed at achieving sustainable development. In this regard, particular attention has been paid to the European Competence Framework for Sustainable Development (GreenComp), which identifies four key areas of competence development [1]. The present study focuses on the "Action for Sustainable Development" domain of GreenComp,

which has become the conceptual basis of this research [1–4]. According to GreenComp, this domain includes three core competencies, two of which — cooperation and personal initiative — constitute the primary focus of the present study.

The selection of these competencies is explained by their potential influence on the psychological well-being and health of individuals involved in collaborative activities or demonstrating personal initiative during the educational process (Table 1).

Table 1. Competencies and descriptors within the “Action for Sustainable Development” domain were examined in this study

Competencies	Descriptors	Objects of our research
Political agency	Ability to navigate political systems, identify responsibility for unsustainable behavior, and advocate for effective sustainable development policies	No
Cooperation	Ability to promote change through collaboration with others	Yes
Personal initiative	Ability to recognize one’s own potential in sustainable development and actively contribute to improving societal and environmental prospects	Yes

Source: compiled by the authors based on [1]

Previous studies [5, 6] define cooperation as a form of interaction based on mutual influence, interdependence, and coordinated activity between participants. Cooperation is viewed as an integrating factor that supports coherence in collective actions aimed at achieving shared goals.

Within the context of collaborative interaction, particular attention should be paid to its psychological dimension. Interaction during collaboration involves mutual influence, the development of shared approaches to joint activity, the exchange of ideas, knowledge, skills, and values, and the establishment of constructive interpersonal relationships. Such forms of interaction contribute to reducing rivalry and dominance within group work.

Researchers [6, 7] also describe personal initiative as an important competence that includes the ability to act independently, demonstrate creativity and responsible risk-taking, propose original ideas, recognize new opportunities, and consistently implement one’s ideas despite potential difficulties.

According to previous studies [6, 8], personal initiative is associated with originality and the ability to address social or individual needs. It may be expressed both individually and collaboratively, particularly in situations where successful implementation depends on support from others and effective cooperation within a group.

AIM

The aim of this study is to examine the medico-pedagogical aspects of negative learning experiences among university students under martial law in Ukraine, using personal initiative and cooperation as examples; to determine the impact of these experiences on students’ health; and to identify preventive teaching strategies aimed at reducing traumatization and supporting students’ subjective well-being.

MATERIALS AND METHODS

A total of 1650 participants took part in the study. The participants were future professionals studying at the

bachelor’s and master’s levels of higher education at Bogomolets National Medical University, Borys Grinchenko Kyiv Metropolitan University, and Volodymyr Vynnychenko Central Ukrainian State University. The study was conducted over a period of three and a half years under the conditions of ongoing military aggression by Russian troops on the territory of Ukraine.

The study employed a combination of general scientific methods, including analysis, comparison, systematization, and generalization, as well as empirical methods, including observation, individual interviews, anonymous questionnaires, and the interaction style identification method [9].

The anonymous questionnaire consisted of seven questions:

1. How does learning affect your health?
2. When do you notice a positive impact of learning on your health?
3. When do you notice a negative impact of learning on your health?
4. Under what conditions does demonstrating personal initiative during learning negatively affect your health?
5. Under what conditions does demonstrating personal initiative during learning positively affect your health?
6. Under what conditions does cooperation during learning negatively affect your health?
7. Under what conditions does cooperation during learning positively affect your health?

The interaction style identification method [9] was used to determine participants’ tendencies toward specific interaction styles, including directive, collegial, business-oriented, and non-interference styles during cooperation. The method includes 20 statements that respondents evaluate according to how often they personally behave in the described manner during interaction with others.

Examples of the statements included:

1. I tell others what to do.
2. I listen to the opinions of others.
3. I give others the opportunity to participate actively in decision-making.

4. I give others the opportunity to act independently.
5. I persistently explain to others how they should act.
6. I teach others how to work.
7. I ask others for advice.
8. I do not interfere with the work of others.
9. I indicate when work needs to be completed.
10. I take into account the achievements of others.
11. I support initiative.
12. I do not interfere in activities and allow others to act independently.
13. I demonstrate how actions should be performed.
14. Sometimes I allow others to participate in discussing a problem.
15. I listen carefully to other participants.
16. If I interfere in a situation, I do so in a business-like manner.
17. I do not share the opinions of others.
18. I make efforts to resolve contradictions.
19. I try to take different points of view into account.
20. I believe that everyone should use their talents to the fullest extent possible.

Responses were evaluated using a five-point scale, where 5 indicated "always" and 1 indicated "never". To interpret the results, the following groupings were applied:

1. Statements 1, 5, 9, 13, and 17 indicated a tendency toward a directive interaction style.
2. Statements 3, 7, 11, 15, and 19 indicated a tendency toward a collegial interaction style.
3. Statements 4, 8, 12, 16, and 20 indicated a tendency toward a non-interference interaction style.
4. Statements 2, 6, 10, 14, and 18 indicated a tendency toward a business-oriented interaction style.

Each group could receive a maximum score of 25 points. Scores between 70 and 80 points indicated a tendency toward active interaction with others. Scores between 30 and 40 points indicated a tendency toward passivity in group activities. Scores of 20 points or more within a particular category indicated a pronounced tendency toward a specific interaction style, while scores between 12 and 14 points indicated that an individual was capable of demonstrating only that specific interaction style.

The analysis incorporated the results of a 3.5-year study examining interaction styles among future professionals during learning under conditions of ongoing military aggression by Russian troops on the territory of Ukraine, with particular attention paid to the significant increase in passivity during group work. Correlation analysis was conducted to determine the relationship between increasing passivity in group activities during learning and increasing stress indicators.

ETHICS

In this study, the authors adhered to the Ethical Principles for Medical Research Involving Human Subjects outlined in the World Medical Association's Declaration of Helsinki (WMA, 1964) and its subsequent amendments, as well as current Ukrainian regulations. The research protocol, which included anonymous questionnaires and interviews with 1650 students, was approved by the relevant institutional ethics committees (or scientific councils) of the participating universities: Bogomolets National Medical University, Borys Grinchenko Kyiv Metropolitan University, and Volodymyr Vynnychenko Central Ukrainian State University. All participants took part in the study voluntarily and were informed about the purpose of the research.

RESULTS

Analysis of the survey results revealed that training affects the health of future teachers both positively and negatively. Future professionals associate the positive impact of training on their health with obtaining positive results. They attributed the following to positive results (Fig. 1): 1) Learning outcomes that are directly reflected in the completion of a certain process (successfully passed exams and tests). 2) Learning outcomes that are perceived as personal changes (increased self-esteem; development of intelligence, thinking, stress resistance, knowledge, and skills; broadening of worldview). 3) Learning outcomes that are associated with positive feelings (a sense of progress, a sense of belonging to the educational community, and a sense of self-worth and self-realization). 4) Learning outcomes that are associated with pleasant mental states (states of elation, confidence, a surge of energy, and a positive mood). 5) Learning outcomes associated with enthusiasm.

Future professionals also emphasized that the positive impact of learning on health is connected not only with educational outcomes but also with the learning process itself. According to respondents, this occurs when lecturers demonstrate enthusiasm in teaching, provide practically meaningful knowledge and skills, stimulate interest in learning, explain new material in an engaging manner, support students' understanding of educational content, and use non-standard teaching approaches that help shift students' attention away from anxious thoughts toward the analysis and comprehension of new information.

The analysis of the survey results also identified the conditions under which future professionals perceive learning as non-harmful to their health. According to 100% of respondents, such conditions include the

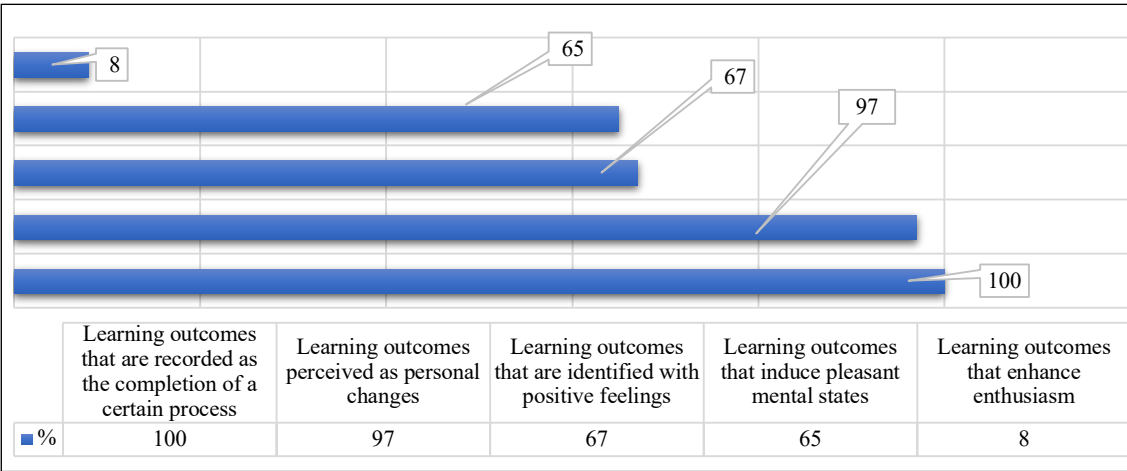


Fig. 1. The positive impact of learning on the health of future professionals in the context of positive learning outcomes
Picture taken by the authors

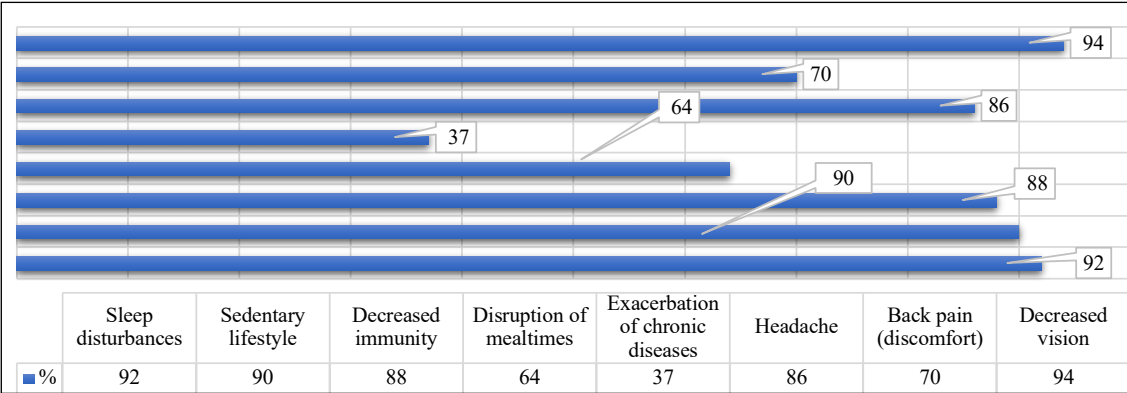


Fig. 2. Manifestations of negative influence on the learning of future professionals
Picture taken by the authors

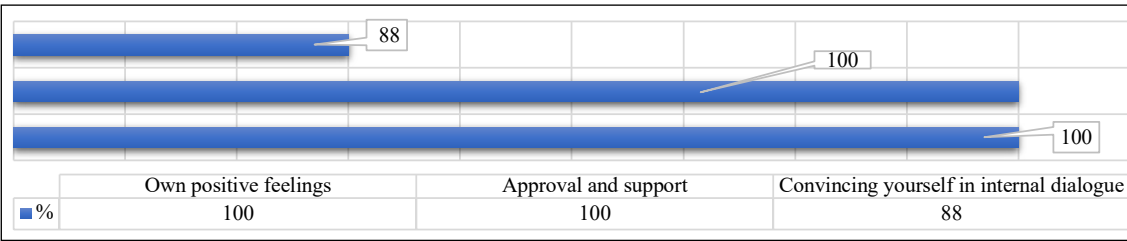


Fig. 3. Factors positively influencing personal initiative during learning without harming the health of future professionals
Picture taken by the authors

availability of favorable learning conditions and necessary educational resources, the prior clarification of assessment criteria, and the implementation of fair assessment practices. In 92% of cases, respondents emphasized the importance and value of the information being studied, while in 68% of cases, respondents indicated that lecturers ensured continuous exposure to new knowledge and learning experiences.

The findings suggest that health-preserving education is closely connected to the social well-being of future professionals. This includes:

- the degree of satisfaction with material well-being

[10], nutrition, and the availability of resources necessary for learning;

- the degree of satisfaction with interaction with others, which depends on the perceived value of educational information, the acceptance of assessment criteria, and the implementation of fair assessment practices.

At the same time, learning may also negatively affect the health of future professionals (Fig. 2). Analysis of the survey data identified several factors contributing to the negative impact of learning on students' health. These factors include combining studies with employment,

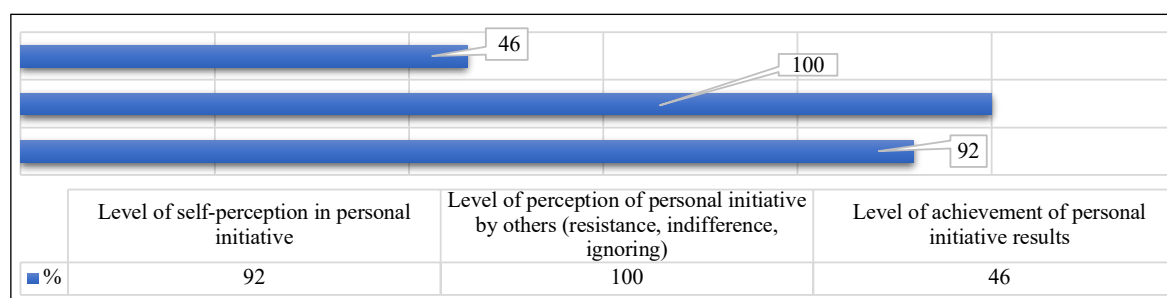


Fig. 4. Levels of manifestation of the negative impact of personal initiative on the health of future professionals during learning
Picture taken by the authors

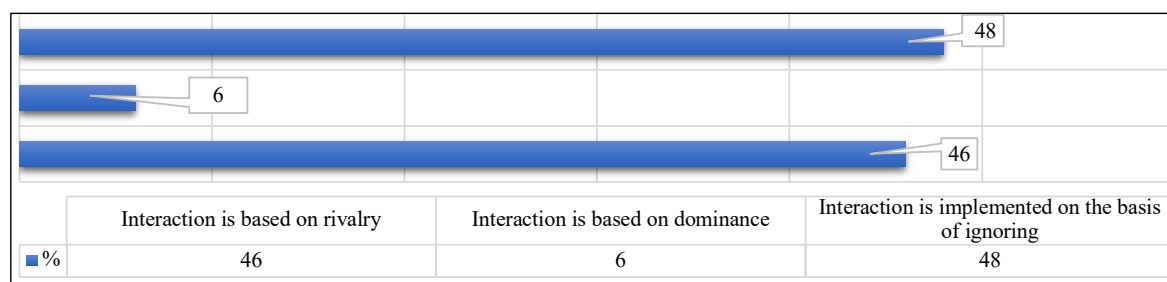


Fig. 5. Forms of interaction during collaboration associated with negative effects on the health of future professionals during learning
Picture taken by the authors

prolonged computer work and sedentary behavior, excessive intellectual workload combined with deadlines, stressful situations associated with failure, fear of evaluation, or personal and family-related difficulties, as well as sleep disturbances, irregular eating habits, decreased immunity, and exacerbation of chronic diseases.

Further analysis of the data presented in Fig. 2 showed that future professionals experience the negative impact of learning on their health during different stages of the educational process, in particular:

1. During face-to-face and distance learning. Respondents reported accumulated fatigue caused by combining studies with work, business trips, or volunteer activities. They indicated an imbalance between study and rest. In cases involving overly complex educational material, large numbers of assignments, or difficulties completing tasks, respondents experienced headaches. Prolonged computer work also caused back pain and physical discomfort. Students additionally reported emotional tension associated with unfair assessment or uncertainty regarding task completion.
2. At the beginning of examination periods. Before examinations or assessment sessions, respondents reported strong emotional tension accompanied by headaches. In 2% of cases, respondents described severe stress reactions accompanied not only by headaches but also by nervous tics, including involuntary physical reactions such as eye twitching or discomfort in the throat. Respondents also indicated

that this period often coincided with the onset or exacerbation of illnesses, while continuous involvement in the educational process delayed recovery or rehabilitation.

3. During examination periods. Future professionals reported poor sleep quality, irregular eating habits, and constant nervous tension.

The study also examined how actions related to sustainable development implemented during learning affect the health of future professionals. In this context, particular attention was paid to personal initiative and cooperation.

According to respondents, demonstrating personal initiative during learning may have both positive and negative effects on health.

Personal initiative during learning was perceived as non-harmful to health only under the following conditions:

1. The initiative is recognized and supported by lecturers and other students.
2. The initiative contributes to positive thoughts, the emergence of new opportunities and skills, obtaining scholarships, participation in desired events, and the achievement of meaningful results. Respondents also emphasized that personal initiative should serve as a source of inspiration without overloading daily routines or disrupting the balance between studies, work, and rest.
3. The initiative is associated with positive emotional experiences, including internal motivation rather

Table 2. Results of research on the interaction style of future professionals during learning in conditions of aggressive military actions of Russian troops on the territory of Ukraine

Predisposition of the manifestation of inclination	Years			
	2022	2023	2024	2025 (until April)
Predisposition to interact with others while learning in various ways	89%	77%	64%	52%
Predisposition to be passive in group work while learning	11%	23%	36%	48%
Predisposition to a collegial style of interacting with others during learning	72%	84%	90%	86%

Source: compiled by the authors of this study

than coercion, a sense of unity, self-realization, success, personal growth, achievement of specific results, recognition from lecturers or scientific supervisors, and confidence in one's own abilities.

4. The initiative receives approval and support from others.
5. Individuals can regulate their internal dialogue, particularly negative expectations, memories of previous negative experiences, self-criticism, accusations, and negative emotions (Fig. 3).

The negative impact of personal initiative on students' health was identified at three levels (Fig. 4):

1. At the level of self-perception in personal initiative. Future professionals reported taking on excessive responsibility, including organizing events, implementing projects, and participating in additional educational activities. Respondents indicated that they often failed to realistically assess their own resources, awareness, family circumstances, workload, or time management abilities. Many participants described attempting to manage too many responsibilities simultaneously, turning personal initiative into what they referred to as a "personal catastrophe". Respondents also reported perfectionism, fear of criticism and condemnation, constant comparison with others, inability to refuse additional responsibilities, and excessive self-pressure to perform all tasks perfectly.
2. At the level of perception of personal initiative by others. Respondents indicated that personal initiative was sometimes not appreciated or supported by other participants in the educational process. Instead, it was accompanied by resistance, indifference, or being ignored by others. Under such conditions, personal initiative became an isolated burden of responsibility without support, often accompanied by conflict situations and the shifting of responsibility among participants.
3. At the level of the outcomes of personal initiative. Respondents associated negative experiences with situations in which personal initiative failed to produce positive results and was accompanied by unrealistic expectations regarding oneself and one's actions.

Like personal initiative, cooperation during learning may also have both positive and negative effects on the health of future professionals. According to the survey results, learning was perceived as health-preserving under the following conditions:

1. Humanization of relationships. During cooperation, future professionals emphasized mutual support, respect, trust, understanding, cohesion, motivation, mutual assistance, and the exchange of ideas and opinions within a supportive atmosphere characterized by a sense of synergy.
2. Teamwork. Respondents highlighted the importance of a clear distribution of responsibilities and tasks among participants. Positive experiences were associated with a supportive working atmosphere in which no participant felt overloaded compared to others, ideas were discussed collectively, all participants had the opportunity to express and discuss opinions, and responsibility for achieving planned outcomes was shared among group members.

At the same time, future professionals also identified situations in which cooperation negatively affected their health (Fig. 5).

Negative effects were reported when interaction during collaboration was based on rivalry, characterized by a lack of mutual understanding and agreement among participants, the emergence of misunderstandings and conflicts, and feelings of anxiety or tension caused by uncertainty in collective work and unfair distribution of responsibilities.

Negative experiences were also associated with dominance during collaboration, particularly in situations involving dishonesty, irresponsibility, or passivity among participants. Respondents described situations in which some participants performed tasks irresponsibly or only imitated participation, forcing others to complete the work on their behalf.

In addition, respondents reported negative effects when collaboration was based on ignoring, including the absence of active participation by certain group members and disregard for the time, resources, and capabilities of other participants.

Using the method for identifying interaction styles [9], we found that during the experimental study,

which lasted nearly 3.5 years, quantitative indicators underwent significant changes: the tendency to interact with others during learning decreased from 89% (2022) to 52% (2025); the tendency toward passive behavior in group work during learning increased from 11% (2022) to 48% (2025); and the tendency toward a collegial style of interaction with others during learning increased from 72% (2022) to 86% (2025) (Table 2).

DISCUSSION

Analysis of the results of the study examining interaction styles among future professionals during learning under conditions of ongoing military aggression by Russian troops on the territory of Ukraine revealed a significant increase in passive behavior during group work, reaching 48% of cases. These findings were compared with the results concerning the negative impact of cooperation on the health of future professionals (Figure 5). The analysis demonstrated that respondents experienced irritation when other participants remained inactive during collaborative activities. Such inactivity was often perceived by future professionals as ignoring collective responsibilities, which contributed to negative emotional reactions toward passive participants.

To develop preventive measures [11] to prevent the formation of negative learning experiences among future professionals, particularly in the context of personal initiative and collaboration related to sustainable development practices, the study also examined prior scientific research on the reasons for students' inactivity during educational activities.

Previous studies [12–14] indicate that psychological trauma caused by the stressful and destructive consequences of war continues to affect students until these traumatic experiences are processed and overcome. During this period, future professionals experience depressive states in 99% of cases, sudden mood changes in 92% of cases, increased irritability in 52% of cases, aggressiveness in 11% of cases, and outbursts of anger in 7% of cases [15].

Researchers also found that future professionals most frequently reported a constant desire to sleep in 97% of cases, a tendency to postpone educational tasks perceived as overly difficult in 79% of cases, and a desire for isolation and withdrawal in 56% of cases. The direct or indirect activation of psychological trauma during learning, particularly under conditions of high emotional tension and negative psychological states, contributes to various adverse effects on the health of future professionals [16].

Another study found that nearly half of the students participating in the research experienced anxiety [17],

which significantly increased the risk of burnout. Up to 50% of students were either in the initial stage of burnout or had already progressed beyond it [18].

Comparative studies examining the pre-war period and the period of military operations on the territory of Ukraine [3] demonstrated a substantial increase in stress prevalence among Ukrainian students. In 2012, the prevalence of stress was 45%; in 2016, 50%; in March 2022, 53%; after the first year of the war, 80%; and after the second year of the war, the prevalence of stress reached 96% [19].

Based on the analysis of previous studies [1–19], it can be concluded that inactivity among future professionals during educational activities is largely associated with psychological trauma caused by prolonged military aggression by Russian troops on the territory of Ukraine and by the tragic consequences of war, including the destruction of cities and villages, the loss of relatives and friends, and constant shelling and insecurity.

Prospects for further research include the experimental investigation of factors that should be considered by lecturers when organizing health-preserving education for future professionals.

CONCLUSIONS

Preventing the formation of negative learning experiences among future professionals, with particular attention to personal initiative and cooperation in the context of sustainable development practices, should involve several important actions by lecturers during the organization of the educational process.

Lecturers should discuss students' subjective well-being and explain that effective personal initiative during learning depends on multiple factors, including external circumstances, workload, and individual resource capacities such as time management, level of awareness, personal resilience, planning skills, the ability to refuse excessive responsibilities, tendencies toward self-comparison, sensitivity to criticism and condemnation, and perfectionism.

It is also important to support the development of students' ability to recognize and evaluate their own potential in the field of sustainable development. Future professionals should be involved in forms of cooperation that minimize the risks of traumatization and retraumatization and instead promote positive experiences of self-realization through collaborative activities. Such cooperation should take into account the individual's available physical, emotional, and psychological resources.

Lecturers should also explain that passivity or lack of activity during cooperation may be associated with

internal psychological changes resulting from traumatic experiences. Understanding the psychological consequences of prolonged exposure to traumatic events may contribute to more supportive and health-preserving educational practices.

Overall, the organization of the educational process should be based on the principles of health-preserving education aimed at supporting students' psychological well-being under conditions of ongoing social stress and military conflict.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest.

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