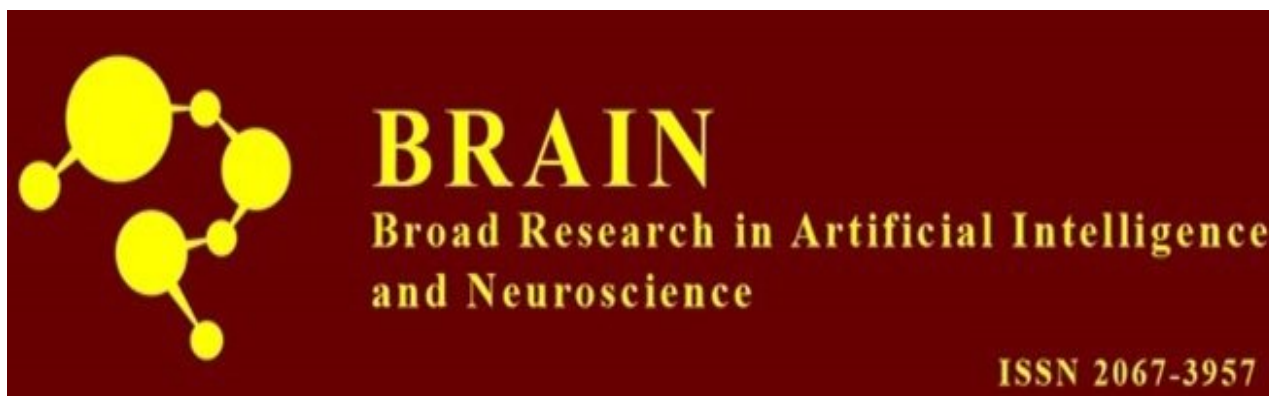




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The Use of Innovative Technologies in the Process of Forming the Competence of Future Elementary School Teachers as a Requirement of Postmodern Development of Society

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Abstract: *The problem deserves special attention, given the urgent need to improve the process of forming the professional competence of future elementary school teachers associated with the need to optimize the components of the educational system in accordance with the needs of students, employers and conditions of postmodern social development. The analysis of the available developments allowed us to determine that the use of innovative learning technologies aimed at the development of the personality of future elementary school teachers is considered promising. The content of professional competence of future elementary school teachers has been analyzed. It was found out that there is no unified approach to the definition of its structure, but the necessary elements are reflexive, operational, methodical, motivational. The development of mobility, creativity and formation of individual pedagogical style are considered necessary for a future teacher. The directions for improving the professional training of future elementary school teachers have been proposed. In particular, they include the definition of ways of forming students' motivation to master the future profession and further continuous professional development, as well as updating the content and structure of professional training in view of the features of postmodern education. The introduction into the educational process of such innovations as methods of active and intensive learning, cooperative learning and coaching technology, which showed positive results in the process of their use, was substantiated. Further research on this aspect consists of the development of methodological recommendations for updating educational programs for training elementary school teachers in the conditions of postmodern development of education and experimental testing of the effectiveness of the proposed approach.*

Keywords: *postmodern; vocational training; institutions of higher education; improvement of the educational process; pedagogical professionals; primary education.*

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Introduction

Professional training of future teachers in comparison with other specialties has specific features. In particular, they must not only acquire the knowledge and skills outlined in the educational program, but also to form a willingness to effectively carry out educational activities. The specificity of the work of an elementary school teacher is also the fact that they teach, educate and socialize children of primary school age, which are characterized by psychological and age specific development, attention, memory, perception, interaction, etc. Additionally, the new generation of future professionals, demonstrating a postmodern type of behavior (consumer attitude to learning, personal and social differences, etc.), forces teachers to be constantly in search of effective tools for shaping their professional competence.

It is emphasized in numerous research works that most future teachers' training education programmes are overloaded with fundamental and special disciplines, partially oriented at the acquisition of practical skills, while the so-called «soft skills» are ignored. However, social development requires improvement of all components of the educational system, in particular, its focus on the priority development of "soft skills". Respectively, nowadays the key methods of future primary school teachers' professional development and skills formation are self-education and self-improvement.

Ensuring the effectiveness of the formation of professional competence of future elementary school teachers in the stream of postmodern development of society is possible through the search and implementation of innovative educational technologies that will create conditions for the development of sustainable motivation of students to acquire knowledge and formation of personal qualities as the primary basis for their future professional growth. Given the trends in the development of higher education, there is no denying the fact that the professional training of future teachers should be not only fundamental, but also to a certain extent ahead of the curve. As numerous studies, in particular, Tualaulelei (2021), (Bekh et al. 2021) and others show, only this approach allows to ensure the desired result: preparation of a highly qualified teacher, competent and responsible, able to perform professional tasks effectively and to systematically improve his/her professional level.

At the same time, implementation of the competency-based approach in the professional training of future teachers is considered paramount to support the effectiveness of learning outcomes. After all, the

main requirements for a graduate of a pedagogical institution of higher education who begins professional activity is the ability to activate and realize the creative potential (both their own and students), to be mobile, to be able to adapt to the educational environment of the institution, in accordance with current trends in pedagogy, psychology and society as a whole.

Consequently, the relevance of the identified focus of research is determined by the existing contradictions between:

- the requirements of the postmodern development of society to form the professional competence of the new generation of teachers and the existing methods of their training, which do not fully achieve the goals;
- the need to ensure the quality of professional training of future elementary school teachers as a key requirement of consumers of educational services and insufficient implementation of innovative technologies in this process.

The purpose of the article - to analyze the features of the formation of professional competence of future elementary school teachers and justify the conditions of its improvement in accordance with the requirements of postmodern development of society through the introduction of innovative learning technologies in the educational process.

The content of future primary school teachers' professional competence. The main stimulus for the economy development in any country are well-qualified professional workers. Moreover, there is the biggest demand for competent professional workers, combining qualification (ability to perform professional duties), desired social conduct, self-regulation and reflection.

At present, the competency-based approach is fundamental to higher education. Savage (1993, p. 15) sees its advantages over other methodological approaches in the fact that it focuses on the formation of appropriate personal traits of a future specialist, rather than the mechanical mastery of a certain amount of information. Professional competence is underlined as the dominant feature of the future teachers' personality in the education standards of pedagogical workers' vocational training.

Scientists consider the concept of competence as a certain integral quality of a person, the ability to successfully solve professional and problematic situations. (Ostrovska et al. 2019, p. 183) believe that the competence of a specialist is conditioned not only by acquired knowledge and skills in a certain area of activity, but also formed on the basis of available motivation to carry out professional activity, abilities and inclinations of a person, readiness to achieve the outlined results. We agree

with the statement that professional competence is formed on the basis of acquired knowledge and skills, but we believe that in parallel it is necessary to develop the individual pedagogical style of the future teacher.

The analysis of the scientific-methodological literature proves the existence of various points of view on the understanding of the essence and structure of the primary school teachers' professional competence. In particular, scientists distinguish motivational, practical and self-regulated structural components of the teachers' competence. According to the scholar, it suffices to provide students with the knowledge of special and fundamental disciplines, methodological skills and to form positive motivation for professional activity performance to complete the professional competence. Onyshchenko (2012, p. 98) supplemented the list of future primary school teachers' structural components with personal (altruism, empathy, tolerance, creativity, flexibility etc.) and reflexional components.

Zhang (2021, p. 56) think that essential in the future teachers' professional competence structure there are civil, digital, informational, and ecological competences. While the key requirement is the ability to make use of information technology in professional activity. In their research the efficiency of various competence assessment systems has been experimentally proved.

Other approaches to the problem of forming the content of professional competence of future teachers are described in the publications of (Carretero et al. 2017), (Ren et al. 2018), Packiam & Fathima (2019) and others. Having analyzed the mentioned publications, we have that on the basis of the research conducted, scientists have identified the following main components of the professional competence of future teachers of primary classes:

- self-organization and self-actualization;
- professional culture of future pedagogical workers;
- positive motivation for professional activity performance;
- the ability to continuously develop key competencies (methodological, communication, informational, etc.);
- professional mobility;
- social activity and formation of the personal features essential for future primary school teachers.

Another interesting trend in postmodern society is the development of culturally and linguistically responsive elementary teacher preparation programs. In particular, Boyle & Charles (2011), Casinader & Walsh (2015), (Cummins et al. 2015) have done research in this area. The relevance and

efficiency of this approach has been experimentally grounded by Clark (2021). The author performed the analysis of the efficiency of six various vocational training programs for future teachers and provided recommendations in accordance with the finding of the experiment.

On the whole, it may be stated that the content of the concept future teacher's «professional competence» is worked out. However, there is the issue of the search of ways of educational process improvement to ensure the efficiency of their professional competence formation.

Additionally, it should be noted that the value of the postmodern era is individualism, which manifests itself in the increased importance of the individual's own experience, thought and a tendency to pessimism. Now students' personal opinion and consumer interest prevail over the science, experience and achievements of the teacher, the values he promotes and influences the nature of the decisions made. Such students are not attuned to daily painstaking work, are focused on their own interests and want quick results without stress, which is reflected accordingly in their academic achievements. Among the important components of the post-modern attitude towards life there is a more active role of parents in solving vital issues, including the choice of education and profession, which negatively affects the further motivation for learning.

With this in mind, we draw the attention of the scientific community to two important points that need to be taken into account in the process of improving the professional training of future elementary school teachers:

1. Identification of features of the formation of students' motivation to master the profession of a future elementary school teacher in a postmodern society as a primary condition for the formation of their professional competence and readiness to conduct educational activities in the elementary school, as well as further continuous professional development.

2. Updating the structure of professional training of future elementary school teachers, in particular, through the introduction of innovative technologies.

Let's study the above-mentioned theses in details.

Peculiarities of the formation of motivation for the education of future elementary school teachers in the conditions of postmodern development of society

We agree with Cantillon & de Grave (2012, 179) that most research on updating the professional preparation of future elementary school

teachers has focused on the search for conditions to improve the effectiveness of teaching academic disciplines. However, important points are overlooked by researchers, particularly the specifics of the social context of student learning and education, and the capacity for further development is limited by existing pedagogical knowledge and beliefs.

The current educational system is quite inert and late to respond to the requirements of consumers of educational services, which makes them turn to non-formal education, thereby leveling the professional training in universities. The postmodern development of society requires to provide students with more freedom in building an individual educational trajectory, but the responsibility for this choice should be borne by the student. Consequently, the emphasis of professional training should be shifted from the classical transfer of knowledge from a teacher to a student in the direction of providing assistance for independent mastering of knowledge and achieving the goal set by a future specialist. This requires the formation of students' motivation to acquire a profession, taking into account the characteristic features of the generation of today's students.

In this context, Taylor (2005), who characterized students in the post-modern era, is interesting. In particular, he believes that they are characterized by indifference to learning, indiscipline, inertia, orientation to entertainment and pleasure, desire to get positive grades with minimum effort, infantilism, etc.

However, according to Hossienia & Khalilib (2011, p.1307), the unconditional advantage of post-modern educational systems is the definition of the main educational goals of critical thinking development, formation of individual and social identity, independent creativity, etc. Postmodernism advocates the development of creative thinking of a specialist and refutes the rationality of modernism, which should be appropriately reflected in the system of professional training. The critical attitude towards education in a post-modern society questions existing educational hypotheses and demands a search for a new way of knowing.

In the postmodern environment, educational goals are not fixed and change in accordance with the professional development of the future specialist. Consequently, self-education and self-improvement become a priority in the system of professional training. Now in educational systems we observe the rejection of science as an absolute truth, someone else's experience and basing the educational search on the own motivation to master knowledge or the formation of personal characteristics. In this context, we agree with Kahraman's (2015) statement that the priority of post-modern education is the development of the future specialist's

personality, taking into account his or her own preferences. Consequently, the main task of higher pedagogical education is to provide motivation for learning and self-improvement. To this end, we consider it appropriate in the professional training of future elementary school teachers to ensure:

- the opportunity to gain one's own professional experience. As mentioned above, students of the postmodern era are characterized by a rejection of others' experiences and an increase in the value of their own experience. There is such opportunity for future primary school teachers, in particular, within the planned practical training (field, educational, age, pedagogical and pre-diploma). However, when teaching students often become disoriented. For future elementary school teachers, this opportunity exists, in particular, as part of the envisioned practical training (field, educational, summer, pedagogical, and pre-diploma training). Accordingly, even before the beginning of pedagogical practice it is necessary to provide an opportunity for future elementary school teachers to gain experience in psychological and pedagogical activities. Such training should begin in the first year of study, in particular through the introduction of situational modeling methods. The works by Kurlyand et al. (2007) on this issue describe the mental and pedagogical peculiarities of future teachers' pedagogical training and its organization;

Also, professional training should contain various social situations, for example, simulate the conditions of inclusive education. The improvement of education takes place in the context of post-modern philosophy, one of the features of which is the global desire for social justice and educational integration of persons with special educational needs. According to Chhabra et al. (2018), this contributes to the emergence from the civilizational crisis caused in the present-day era. Inclusion is now an integral element of primary education, but its organization has specific features, which elementary school teachers face already in the process of professional activity. It can cause them rejection or resistance, especially against the background of conflicts between students and parents. In order to avoid such moments the teacher should be ready to carry out professional activity in conditions of inclusive education, and the formation of this readiness - started at the stage of professional training. The feasibility of this approach is substantiated in (Amatori et al. 2020), (Chhabra et al. 2018) and several others.

- experiencing a different range of emotions. The importance of the emotional component in the training of the future elementary school teacher has been confirmed by a number of publications. In particular, this issue was in the focus of works by Annyenkova (2003), Barchi & Barchij (2018), Stas

(2014) and many others. The relevance of the emotional constituent in future primary school teachers' vocational training is in the fact that, junior pupils are taught by means of emotions, respectively, teachers should understand their psychology and work out techniques of emotions management. And for this, emotions need to be experienced for themselves, to feel their influence on their own consciousness, because, as was noted, students of the post-modern era prefer existing experience rather than learning theoretical algorithms for action. As (Popescu-Bradicieni et al. 2021, p. 123) argue, it is on emotions that the development of human action scenarios in each specific situation is based. Any positive emotions (hope, enthusiasm, excitement, joy, uplift) contribute to productive work on a particular task, negative ones, on the contrary, lead to a deterioration of performance. And while current society promoted the nurturing of emotion control, postmodernity recognizes the value of emotions and teaches to recognize and redefine every emotion a person experiences. Besides, there is still urgent the issue of teachers' emotional steadiness, considering the stressful conditions of professional activity, formed on the basis of the mechanisms of self-control and self-regulation. Teachers must learn to distinguish emotions, react at them adequately, manage students' emotions, this is enabled by the employment of management skills and emotions understanding on the stage of vocational training;

- systematic actualization of the acquired knowledge and successive inclusion of new elements into educational process. Knowledge and skills are efficiently employed in the professional activity when forming a holistic system in students' consciousness with the respectively established interrelations. It is only on this basis that subjects of teaching are self-organized and synergetic effects appears, which means that further professional and personal personality development is due to the shift of the system from one stage to another, rebuilding the continuous chain of transformations. The theoretical grounding for this thesis may be found in the works by Laszlo (2006), Tkachenko (2003) etc. The positive influence of this approach on the creative thinking formation is experimentally proved in the works by (Davis-Seaver et al. 2008);

- educational process intensification by active teaching technique introduction. This results not only in the acceleration of the educational process but also is the chief prerequisite of its efficiency, and facilitates interpersonal communication in the process of education, thus involving the interaction of all the participants of the educational process; The need for active learning methods in post-modern professional education has been substantiated by Beetham (2020), Whalley (2019);

- consideration of students' individual features in vocational training process. Vocational training system is now oriented at the so-called «average» students, respectively determining the content of educational programmes and the criteria of scientific achievements diagnostics. It is stated in numerous works that any educational institution is not obliged to take into account essential peculiarities of particular students. However, according to the research works on psychology most efficient teaching is achieved only on condition of the consideration of students' peculiarities, Reynvald (1987). It is also appropriate to consider the opinion of (Bekh et al. 2021) that the formation of a person's identity through educational systems is a powerful tool for his involvement in different spheres of life of post-modern society.

The problem of individualization of education is partially solved by the introduction of selective disciplines in the educational plan of training future specialists. However, we believe that compliance with this point requires determining the conditions for building an individual educational trajectory of a future specialist. Such an approach will ensure the formation of the individual reflective position of the future elementary school teacher. It is well known that pedagogical activity is impossible without reflection. On its basis there is a realization of oneself as a subject of professional activity, formation of the ability to observe, establishment of cause-and-effect relations.

It should be noted that this approach allows to ensure the formation of a generation of creative teachers, which the postmodern society needs, who are ready for creative solutions and the search for new scientific approaches to teaching and education.

The optimization of the sense and structure of primary school teachers' vocational training on the basis of the innovative technology employment

In the context of the postmodern development of society there is a renewal of professional training in accordance with the requirements of consumers of educational services and stakeholders. This process came to be known as the optimization of the educational process, comprising the vocational training objective formulation, scientific findings systematic analysis, renovation of principles, techniques, forms, means providing more qualified higher education.

In this line, the priority use of technology that promotes independent learning in future professionals, which is the main condition for

the training of elementary school teachers. The educational process optimization presupposes the combination of various teaching techniques, appropriate for certain situations. However, the information technologies are indispensable as they consolidate all the stages of education.

Information technologies are essential for the higher efficiency of vocational training. In particular, the employment of information technologies provides the formation of motivation for studying, higher efficiency of the educational process and allows to save time for various educational operations.

The issue of education informative value is one of the priorities of vocational training. We are seeing the emergence of innovative learning technologies that are based on the use of information and communication tools.

In this context it is worth considering the fact that despite the necessity of information technology employment by primary school teachers there are still no strict criteria allowing to assess their competence in this field. Such criteria have been only established for the information technology professionals while for other teachers they are quite vague (Zhang et al., 2021, p. 61).

Besides the above-mentioned priorities there are also such promising fields of information technology employment in primary school teachers' vocational training:

- interactive museums;
- edutainment – educational cartoons, oriented at education in a game form. These skills are later employed in teaching junior pupils, favoring such form of information presentation;
- computer games, oriented at developing thinking and acquiring skills in programming;
- web-quests – performing assignments in the form of search of prompts.

Among other perspective innovative technologies, introduced into the process of vocational training, aimed at forming future primary school teachers' competence and proved efficient there are:

- active learning technique. This technique is not referred to innovative, as it has been already established in educational institutions of different types and levels. However, the introduction of information means makes certain corrections and leads this technology onto the next level. In particular, there is an opportunity to build an individual educational trajectory of each student, which is a prerequisite for postmodern education. One of such means is cloud technology, allowing access for software,

servers, databases, uniting various memory storages into the holistic space with the required features. (Hasnine et al. 2020) in their publication have experimentally grounded the efficiency of active learning for training professionals in education, realized by means of information technologies. Research works on this issue by such scholars, as Saleh Al-Essa (2018), Ali El-Sayed Sobh (2018) also proved its efficiency. Active learning technology introduction via employment of information technologies not only increases the level of students' digital competence, but it allows to acquire new experience by communicating, discussing and realizing ideas, solving educational tasks, motivating for further research work;

- intensive learning, which consists in organizing the process of teaching some discipline or topic by smaller blocks according to the strict scheme. This technique follows the process of scientific research in its main stages: knowledge actualization, presentation, guided practice, feedback and independent practical work with conclusions formulating. There are fundamental achievements in learning foreign languages with the employment of this technique. In particular, Martynova (2017) suggested the technique of intensive foreign language learning, based upon synergetic interaction of the bigger and smaller values. However, it demonstrates the efficiency in mastering psychological and educational disciplines as well, as it is based upon the employment of devices, activating conscious and subconscious mental processes to form correspondences in students' consciousness, and elaborating tasks, motivating interpersonal communication and optimal organization of students;

- cooperative learning is realized by working in small groups to perform certain tasks. Mutual activity enables mutual discussion, criticism or disagreement, readiness to listen to communicators' arguments, integrate the newly acquired knowledge with the previous and generalize it. The idea of cooperative learning is based upon the findings of the research works by one of the developmental psychology founders, Vygotsky (1987). In particular, he postulated the social nature of learning. One of the essential features is mutual information processing and ideas exchange;

- coaching technologies, aimed at teaching students to logically proceed from the challenging zone to the zone of efficient decisions. They presuppose a new kind of interaction between students and a teacher, where the latter acts as a coach. The main coach's task is to help find solutions of the given problem, which in addition allows to make explicit the individual potential of each participant.

The criteria of the selection of innovative technologies to provide the efficiency of the future primary school teachers' professional competence were formulated as follows:

- ability to improve primary school teachers' vocational training according to stakeholders' requirements;
- ability to form the required professional features (organizational, communicative, reflexional etc) and personal qualities (empathy, positive attitude to students, sympathy etc) of future primary school teachers;
- ability to form positive motivation for professional activity establishment;
- ability to acquire practical experience of professional activity on the stage of studying.

Conclusion

Thus, the current change of priorities in the educational sector due to the peculiarities of the postmodern development of society has led to an understanding of the need to implement competence and personality-oriented approaches at all stages of education, including in vocational education. Nowadays there is rebuilding of future teachers vocational training on the innovative basis (variable and individual learning provision), re-inforcing the search of efficient techniques and educational means to achieve the desired effect – to build a competent teacher of a new generation.

The findings of the research postulate that primary school teachers' vocational training system improvement and the removal of controversial issues of the discrepancy in stakeholders' requirements for professional competence and its state in higher educational institutions is still an urgent challenge not only in Ukrainian, but also in the foreign professional sphere. There are certain recommendations, in particular, there are perspective ways of renovating education programs, considering the social development postmodern trends, the improvement of the sense of future primary school teachers' professional competence, methodological supplement for self-education and continuous education. Many such innovations have been put into life in the leading higher educational institutions and have proved their efficiency.

The article offers the author's approach to improving the process of forming the competence of future elementary school teachers. Based on the analysis of existing research and experience in the training of specialists in pedagogical specialties, the ways of providing motivation for learning of

future elementary school teachers in the conditions of post-modern development of society have been proposed. Among them we consider the most significant the creation of conditions for the acquisition of own professional experience at the stage of professional training, in particular with the inclusion in an inclusive educational environment, implementation of intensification of the educational process by implementing methods of active learning and building an individual educational path, as well as promoting the formation of an individual reflective school position as the basis for further development of motivation to carry out professional activity.

We adhere to the views of many scholars, focusing upon the issue of future primary school teachers' vocational training, we define as innovative as technologies as active learning technique, intensive learning, cooperative learning and coaching technologies. Besides, their introduction into the educational process is mediated by the employment of information technologies, which are simultaneously the means and the uniting factor. On this basis, were analyzed developments in this field, given examples from his own teaching experience and highlighted the criteria for selecting innovative technologies to ensure the effectiveness of the formation of professional competence of future elementary school teachers in the post-modern development of society.

Prospects for further research to develop methodological recommendations for updating educational training programs for elementary school teachers in the conditions of postmodern development of education and experimental testing of the effectiveness of the proposed approach.

Acknowledgement

The Author 1 justified the need to improve the professional training of future elementary school teachers in accordance with the conditions of postmodern development of society and identified possible ways of its updating. The scientist concluded that cultural and linguistic characteristics of students should be taken into account in the process of developing educational training programs for elementary school teachers.

The Author 2 analyzed the available scientific publications on the peculiarities of the formation of professional competence of future elementary school teachers and, based on the synthesis of information, characterized its content. The author identified the components of the professional competence of future elementary school teachers, taking into account the requirements of the postmodern society.

The Author 3 analyzed the available foreign experience of training future teachers of primary classes, found out the prospects for its use in developing countries. In particular, he found that the elementary school teachers' training effectiveness is the primary condition to find ways to form students' motivation for the future profession and readiness for further continuous professional development.

The Author 4 justified the importance of innovation in the professional training of future teachers of primary classes and described promising directions for updating the content and structure of professional training of future teachers of elementary school through the introduction of innovative technologies.

The Author 5 based on the theoretical researches of the co-authors and taking into account the peculiarities of postmodern education, the priority of which is the development of the future specialist, proposed ways to provide motivation for learning and self-improvement of students and modeled their practical implementation (the opportunity to get your own professional experience, experience a different range of existing knowledge and consistent inclusion of new elements in the learning process, as well as consideration of the individual characteristics of students in the professional training).

The Author 6 characterized promising areas of information technology in the professional training of elementary school teachers (interactive museums, edutainment, computer games, web quests, etc.) and ways of their practical implementation. Determined the criteria for selecting innovative technologies to ensure the effectiveness of the formation of professional competence of future elementary school teachers.

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