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Original Article

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Characteristics of Different Methods of Training in Mastering the Specialty "Pharmacy"

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ABSTRACT

The objective data about traditional, interactive, and distance learning methods in the specialty «Pharmacy» their characteristics, advantages, and disadvantages are limited. To analyze the characteristics of various teaching methods at the Far Eastern State Medical University. Sociological survey of students (n = 267) majoring in «Pharmacy» of the Faculty of Pharmacy and Biomedicine (higher education), and of the Medico-Pharmaceutical College (secondary education). The most characteristic advantages of traditional teaching methods include the availability of information (2,6), the ability of the teacher to control the student (2,51), and the objectivity of assessments (2,52). The advantages of interactive methods include the objectivity of the teacher's assessments, the ability to demonstrate creativity (2,31) and thematic training (2,27). The advantages of distance learning methods include objectivity of the teacher's assessments (2,35), convenience, and accessibility of information (2,33). The highest scores for traditional teaching methods can be explained by their simplicity and accessibility. The benefits of interactive learning methods are underestimated by respondents, probably due to the need for systematic training, as well as the application of knowledge in a specific situation and creative problem solving. The main advantages of distance education technologies include convenience, and the availability of information since it is published in free access, as well as the objectivity of the assessment - due to the use of computer testing. Traditional learning methods have the greatest advantages. A rational combination of all teaching methods is necessary for realizing the convenience and creative approach to form communications.

Key words: *Pharmacy, Education, Traditional training, Interactive classes, Remote technologies*

INTRODUCTION

Mastering the specialty "Pharmacy" is not only the process of obtaining the necessary knowledge in specialized subjects but also the formation of communication skills with a pharmacy visitor and staff [1, 2]. To master the necessary competencies, it is most advisable to use not only traditional "classical" teaching methods, such as lectures, laboratory classes, practices, but also more modern interactive and remote. Nevertheless, opportunities for their implementation in the educational process may be significantly limited due to material and technical capabilities or lack of motivation among students, an understanding of the goals and objectives of the educational process.

Educational programs in the specialty "Pharmacy" can differ significantly depending on the labor functions and powers of specialists in different countries. For example, the American Association of Colleges of Pharmacy, the Accreditation Council for Pharmacy Education, and the Center for the Advancement of Pharmacy Education

pay considerable attention to the safety of patients, so significant importance in the preparation process is given to diagnostic safety [3]; training on patient interaction-based services [4]; patient care [5]; drug management [6]; formation of critical thinking [7]; interprofessional education [8]. In Japan, patient-centered care is of great importance [9]; in the Netherlands - competence, harmonization of tasks, compliance [10]; in the UK - human factors and ergonomics [11]; in the Eastern Mediterranean and Australia regions, competence-based approach, practical training, and support for the formation of professional identity of pharmacy students [12-14]. However, research data on the advantages and disadvantages of learning using different strategies and methods are limited [15, 16]. For example, a study of gaming methods in the United States shows that students consider them attractive and pleasant [17].

The Far Eastern State Medical University is an educational organization providing training in the specialty "Pharmacy" (higher and secondary education) for all regions of the largest federal district of the Russian Federation (about 7 million km^2). At the same time, sociological studies on teaching methods, their characteristics, and advantages were not conducted. The purpose of the study is to analyze the characteristics of various teaching methods when mastering the specialty "Pharmacy" at the Far Eastern State Medical University.

MATERIALS AND METHODS

Sociological survey of students of the Far Eastern State Medical University Faculty of Pharmacy and Biomedicine (higher education, term of study 5 years) in the specialty 33.05.01 "Pharmacy" (n = 140), as well as students of the medico-pharmaceutical college (secondary education, term of study 2 years 10 months) in the specialty 33.02.01 "Pharmacy" (n = 127). The total sample was 267 respondents. The survey was conducted using the questionnaire method using the Google Forms service (https://www.google.ru/intl/ru/forms/about/), the primary material was processed in Microsoft Excel 365, using the Data Analysis package - descriptive statistics. Statistical processing of the obtained data was carried out using IBM SPSS Statistics 25. Comparison of the two independent samples was performed using a non-parametric Mann-Whitney test. Comparison of three independent samples was carried out using the non-parametric Kruskal-Wallis criterion. The null distribution equality hypothesis deviated at an asymptotic significance of less than 0.05. The correlation of different learning methods with the level of education received was calculated using the Spearman rank correlation coefficient. The correlation was considered valid with significance (two-sided) less than 0.05. The upper and lower limits were calculated for the correlation coefficient. To assess the reliability of the questionnaire, the Cronbach's alpha coefficient was calculated. The number of items for analysis (response options) was 30. The obtained value $\alpha = 0{,}913$, which is sufficient, when conducting a sociological survey.

RESULTS AND DISCUSSION

Students were asked to evaluate traditional, interactive, and distance learning methods according to 10 parameters on a three-point scale. The following gradation of grades was used: 3 points - completely characteristic of this type of training, 2 points - partially characteristic, 1 point - not characteristic. The distribution of respondents' responses is shown in **Figures 1-3**.

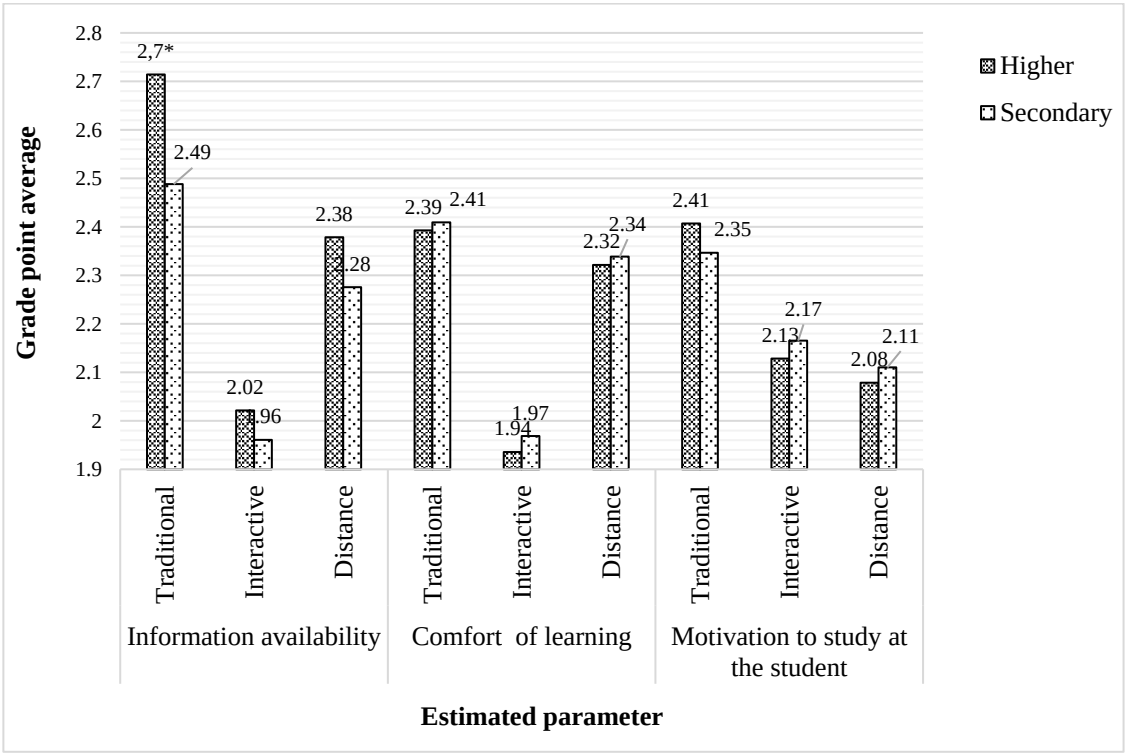

Figure 1. Assessment of different methods of training by students (Part 1)

* - p < 0,05 - differences and correlation with training level are statistically significant

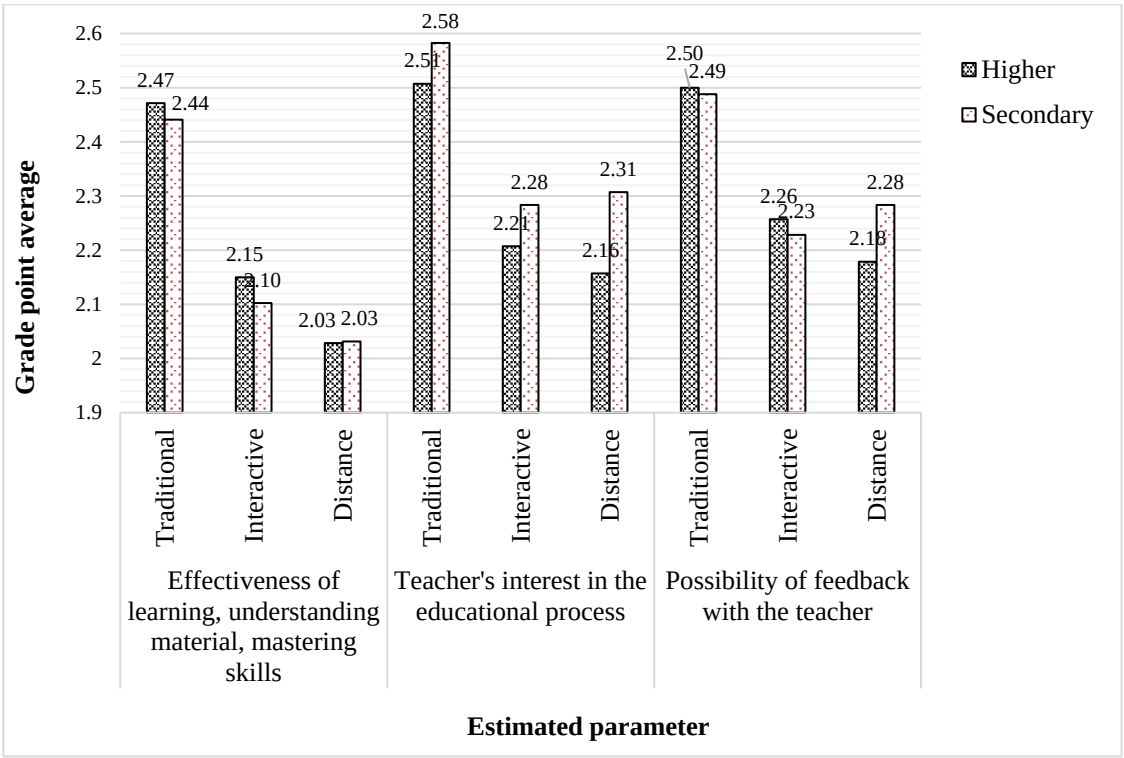

Figure 2. Assessment of different methods of training by students (Part 2)

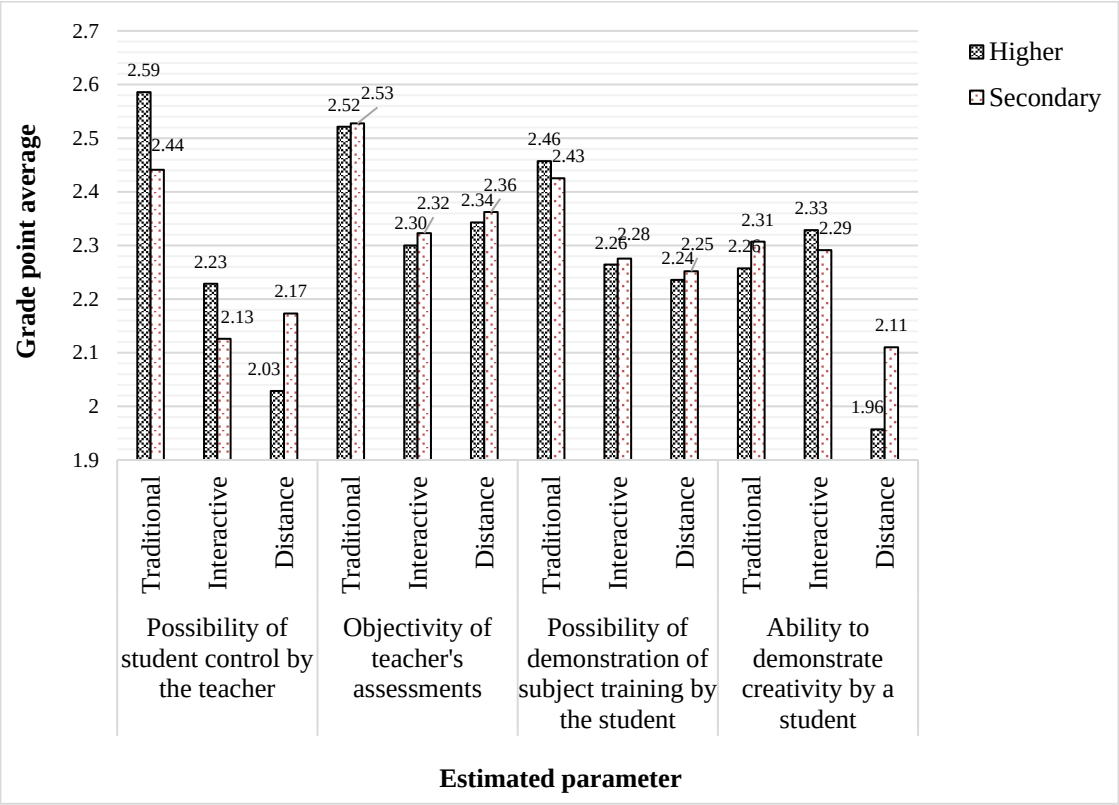

Figure 3. Assessment of different methods of training by students (Part 3)

The maximum values of the average score were observed in the information availability characteristic - more than 2,7 in students receiving higher education. However, this parameter was the only one for which there were statistically significant differences and correlations in responses between undergraduate and secondary students ($p = 0.005$; $_{0,071}0{,}189_{0{,}302}$ $p = 0.002$) The lowest information availability was when using interactive training methods (role-playing games, situation analysis). The most comfortable methods of learning, according to respondents, are traditional (2,4) and remote (2,3). The motivation of students to study is a prerequisite for the successful mastering of disciplines. The highest average score, according to this parameter, is also in traditional teaching methods (2,4), and the lowest - in remote (2,1).

The most effective method of training, according to respondents, is traditional lectures and classroom studies, practice. The average score for this parameter is more than 2,4. The least productive methods are considered distance - 2 points, that is, only partially characteristic of this type of class. The teacher's interest in the educational process, as well as the possibility of feedback, is also the greatest when using traditional methods (2,5) and the smallest in - remote (2,2).

A similar distribution of respondents' responses is observed when assessing the possibility of student control by the teacher. The maximum value (2,6) was observed in traditional teaching methods and the minimum (2) in remote ones. The objectivity of the teacher's assessment is the greatest in conducting traditional forms of classes (2,5), and the smallest in interactive (2,3).

The possibility of demonstration of the subject training by the students is maximum in traditional classes (2,4) and is equivalent in interactive and remote format (2,2). Moreover, for the ability to demonstrate creativity by a student, the most suitable is interactive classes (2,3), and the least suitable is distance classes - less than 2 points. The cumulative average score of the different learning methods is shown in **Figure 4**.

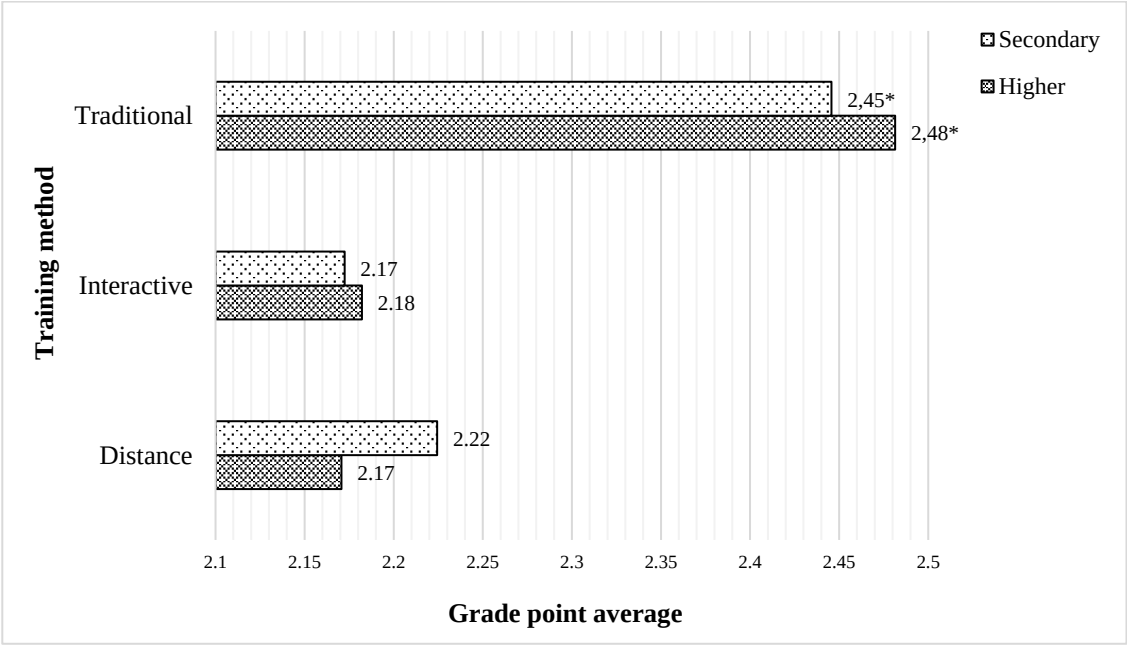

Figure 4. Total student assessment of different methods of training
* - p < 0,05 - differences and correlation with training level are statistically significant

The greatest advantages, according to students in higher and secondary education, are the traditional methods of study - over 2,4 (p = 0.001; $_{0,590}0,663_{0,725}$ - higher education; $_{0,533}0,614_{0,684}$ - secondary education). The advantages of interactive teaching methods were more often noted by respondents who receive higher education, and distance technologies - students of the medical-pharmaceutical college.
To summarize the obtained data, the average score of the estimated parameters was calculated, regardless of the form of training **(Figure 5)**.

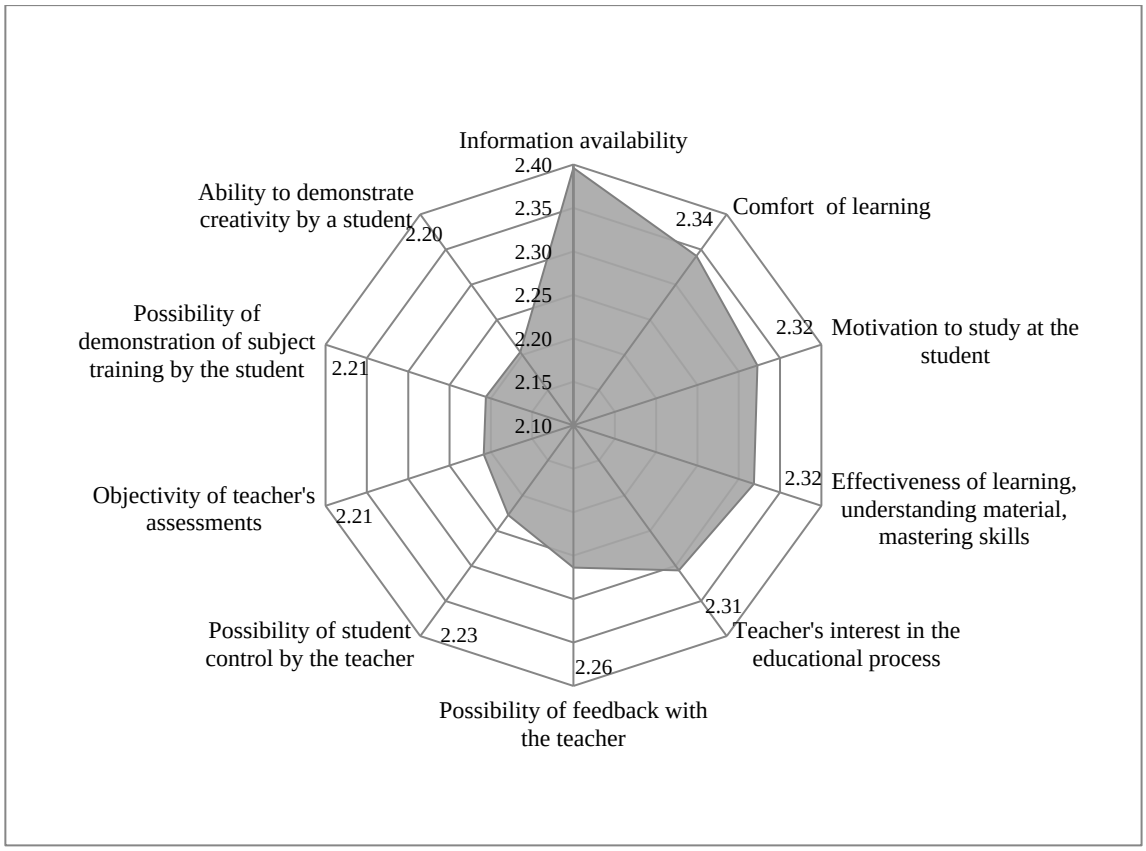

Figure 5. Total student assessment of characteristics of different methods of training

The obtained data generally characterize the process of training in the specialty "Pharmacy." The most characteristic advantages of the educational process included: information availability, the comfort of learning, and procuring of motivation to study at the student. The least characteristic parameters were the objectivity of the teacher's assessment and the possibility of demonstrating a thematic and creative approach.

The obtained significant differences between respondents' responses to the information availability can be explained by a large number of professional disciplines in higher education and a longer period of study, which are factors in the assimilation of the studied material and the formation of connections between the studied disciplines. The lack of access to information and the comfort at the use of interactive teaching methods can be explained by the need for the thorough and systematic preparation of students for classes, as well as a critical analysis of the information received, which, unfortunately, is not always implemented in the educational process. The high rates of the comfort of distance learning methods can be explained by the high proportion of working students, especially in senior courses. For working respondents, the absence of requirements for mandatory attendance at lectures at a specific time set by the schedule is certainly an advantage and increases the availability of information. At the same time, according to the totality of answers, it was distance teaching methods that were rated as the least motivating to the educational process. The data obtained can be explained by the lack of self-organization of students and the lack of understanding of the need to obtain knowledge for future activities.

The most effective teaching methods were called traditional and interactive, which can be explained by the direction that is the "contact" work of the teacher with students. The use of remote technologies, especially "in the record" does not allow for the prompt refinement of information and the receipt of explanations, but accordingly reduces the possibility of "feedback." Remote technologies also reduce the interest of teachers in the educational process, due to the lack of understanding of the reaction and the degree of assimilation of the material by the student, as well as the "depersonalization" of the audience, the lack of the ability to adapt the information and how to submit it for a particular student.

The least control of the student by the teacher is observed in the use of remote technologies, which can be explained by the possibility of using modern technologies to obtain information not only for preparing for the lesson but also during reporting and control events, as well as intermediate attestation, where the use of external sources, during the demonstration of their knowledge is prohibited.

The low score of the objectivity of the teacher's assessment in interactive training can be explained by the fact that in this case, the student demonstrates a specific section of knowledge and skills or the solution of a certain problem, which does not always reflect the totality of learned material on the subject.

The advantage of interactive training is the full opportunity to demonstrate a creative approach since it is in the conditions of interaction between the student and the teacher that communication skill is formed and implemented as an active participant in the process, which is necessary for a pharmaceutical worker.

The preference of students for traditional teaching methods is quite naturally the simplicity and accessibility of the lesson format. Interactive methods require comprehensive training and the need to speak to the audience, and remote methods prefer, as a rule, due to the flexibility of schedules.

The most highly appreciated by students' parameters of study in the specialty "Pharmacy" demonstrate the quality work of the faculty, technical capabilities, and control by the teacher. The least evaluated parameters characterize the subjectivity of assessments, which will always be the most vulnerable party in the evaluation by the teacher, as well as the lack of the possibility of demonstrating thematic and creative approaches, which is probably due to the stringent requirements of the educational standard and the material and technical base of the university.

CONCLUSION

When evaluating different methods of study during the mastery of the specialty "Pharmacy," the most preferred methods for students remain the traditional methods, which are most characteristic: information availability, the comfort of learning, motivation of students, and efficiency of study. The main advantages of interactive training are the ability to realize the creative potential of students and the formation of communications. The main advantage of distance learning, according to students, is comfort, however, this format of education is characterized by the fewest indicators: motivation, feedback, control by the teacher, and effectiveness. These parameters should be improved, in the context of the introduction of "remote" training and forced transition during the epidemic, which became relevant in 2020.

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