

Characteristics of Various Training Methods in the “Pharmacy” Specialty

Mariia Sergeevna Soboleva^{1*}, Ekaterina Efimovna Loskutova², Irina Vladimirovna Kosova²

¹ Department of Pharmacy and Pharmacology, Faculty of Pharmacy and Biomedicine, Far Eastern State Medical University, Khabarovsk, Russian Federation.

² Department of Organization and Economics of Pharmacy, Medical Faculty, Peoples' Friendship University of Russia, Moscow, Russian Federation.

*E-mail ✉ martimser@mail.ru

Abstract

The available data on previous distant learning models and interactive methods in the field of “Pharmacy,” detailing their features, pros, and cons, are limited. This study aims to examine the components of different educational methods used at the Far Eastern State Medical University. A survey was conducted among 267 students enrolled in the “Pharmacy” program at the Faculty of Pharmacy and Biomedicine (higher education) and the Medico-Pharmaceutical College (secondary education). Key advantages of traditional methods include easy access to information (2.6), teacher's control over students (2.51), and objective assessments (2.52). Interactive methods were noted for the objectivity of teacher evaluations, opportunities for creativity (2.31), and thematic focus (2.27). Distance learning methods excelled in the objectivity of assessments (2.35), convenience, and information accessibility (2.33). The high ratings for traditional methods probably stem from their simplicity and accessibility. The value of interactive methods was often underestimated, possibly due to the demand for consistent training and application of knowledge in practical situations. The main strengths of distance learning technologies are convenience, availability of information, and objectivity of assessment, thanks to computerized testing. A balanced combination of all methods is essential for fostering convenience and creativity in communication.

Keywords: Pharmacy, Education, Traditional methods, Interactive classes, Distance learning technologies

Introduction

Acquiring proficiency in the specialty of “Pharmacy” extends beyond simply gaining theoretical knowledge in subjects; it also involves developing essential communication skills for interacting with pharmacy visitors and colleagues [1, 2]. To cultivate the important competencies, it is crucial to integrate conventional teaching strategies, such as laboratory sessions, lectures, and practical training, alongside remote learning methods and modern interactive. However, the effective

incorporation of these approaches within the educational framework may be constrained by factors such as material and technical resources, student motivation, and their comprehension of educational goals and objectives. Pharmacy education programs vary significantly across different countries due to differences in professional roles and responsibilities. For instance, institutions such as the American Association of Colleges of Pharmacy, the Accreditation Council for Pharmacy Education, and the Center for the Advancement of Pharmacy Education emphasize patient safety as a core component of training. Consequently, educational programs place a strong focus on diagnostic safety [3], service-oriented patient interactions [4], pharmaceutical care [5], management of drugs [6], critical thinking development [7], and interprofessional education [8]. In the country of Japan, the primary emphasis is on patient-centered care [9], whereas in the Netherlands, pharmacy training prioritizes

Access this article online

<https://smerpub.com/>

Received: 20 January 2021; **Accepted:** 27 March 2021

Copyright CC BY-NC-SA 4.0

How to cite this article: Soboleva MS, Loskutova EE, Kosova IV. Characteristics of Various Training Methods in the “Pharmacy” Specialty. J Med Sci Interdiscip Res. 2021;1:14-20. <https://doi.org/10.51847/WcY0cpTbpW>

professional competence, task alignment, and regulatory compliance [10]. The UK model integrates human factors and ergonomics into its curriculum [11], while in regions such as the Eastern Mediterranean and Australia, a competency-based framework, hands-on practical experience, and fostering professional identity in pharmacy students are central to educational strategies [12-14]. Despite the increasing adoption of diverse teaching methodologies, research evaluating their effectiveness, benefits, and limitations remains scarce [15, 16]. For instance, studies exploring game-based learning in the USA suggest that students find such methods engaging and enjoyable [17].

The Far Eastern State Medical University serves as a key institution offering pharmacy education at both higher and secondary levels, catering to all regions within the largest federal district of the Russian Federation, covering approximately 7 million km². However, no sociological research has been conducted to examine the characteristics, advantages, and effectiveness of various teaching methods used in pharmacy education within this institution. The objective of this study is to explore different instructional approaches employed in training pharmacy students at the Far Eastern State Medical University and assess their impact on the learning process.

Materials and Methods

A sociological survey was conducted among students enrolled in the Faculty of Pharmacy and Biomedicine at the Far Eastern State Medical University, specifically those pursuing higher education in the specialty 33.05.01 “Pharmacy” (duration: 5 years, $n = 140$), as well as students from the medico-pharmaceutical college undertaking secondary education in the specialty

33.02.01 “Pharmacy” (duration: 2 years 10 months, $n = 127$). Samples comprised 267 participants.

The survey was administered through a structured questionnaire using the Google Forms platform, and the collected data was initially analyzed in Microsoft Excel 365, employing the Data Analysis package for descriptive statistics. Statistical evaluation was calculated using IBM SPSS Statistics 25. For comparing two independent samples, the non-parametric Mann-Whitney test was applied, while the Kruskal-Wallis test was used to analyze three independent samples. The hypothesis of equal distribution was rejected when the asymptotic significance was < 0.05 .

To determine the relationship between different teaching methods and the education level, the Spearman rank correlation coefficient was computed. The correlation was deemed statistically significant when the two-sided significance level was < 0.05 , with both upper and lower confidence intervals established for the coefficient. Additionally, the reliability was assessed using the Cronbach's alpha coefficient. With 30 response items included in the analysis, the obtained Cronbach's alpha value was 0.913, confirming the questionnaire's adequacy for conducting a sociological study.

Results and Discussion

Participants were asked to assess traditional, interactive, and distance learning approaches based on ten distinct criteria using a three-point rating scale. The scoring system was structured as follows: a score of 3 indicated that the characteristic was fully applicable to the given teaching method, a score of 2 suggested partial applicability and a score of 1 signified that the characteristic did not apply. The distribution of responses provided by the students is illustrated in **Figures 1–3**.

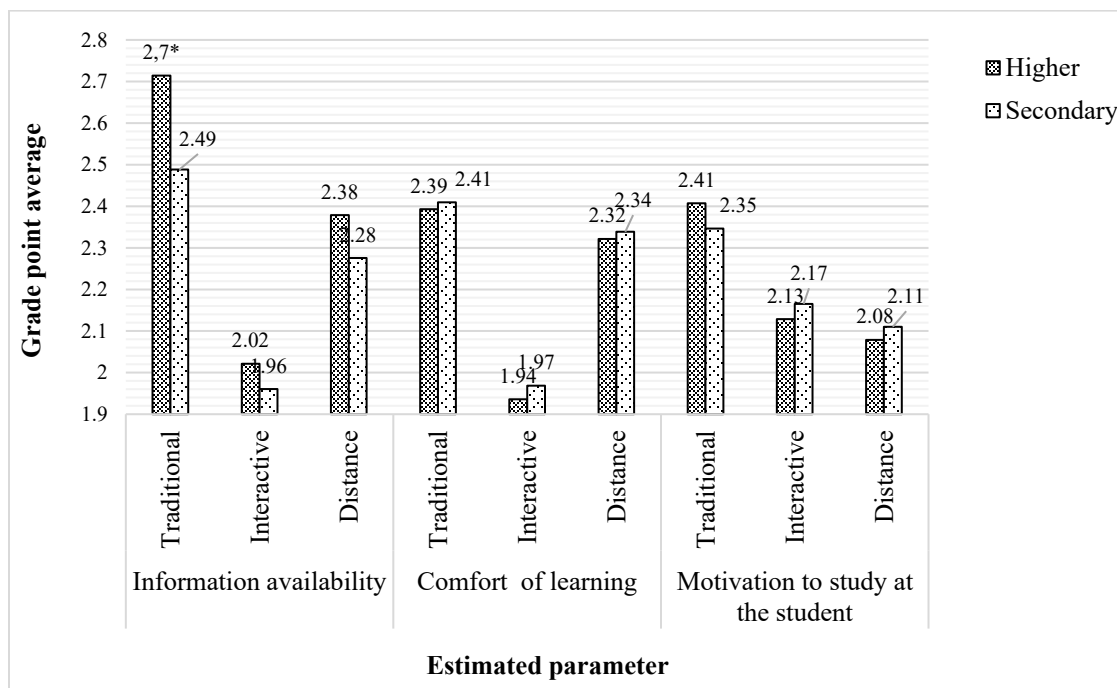


Figure 1. Assessment of different methods of training by students (part 1)

* $P < 0.05$ - differences and correlation with training level are statistically significant

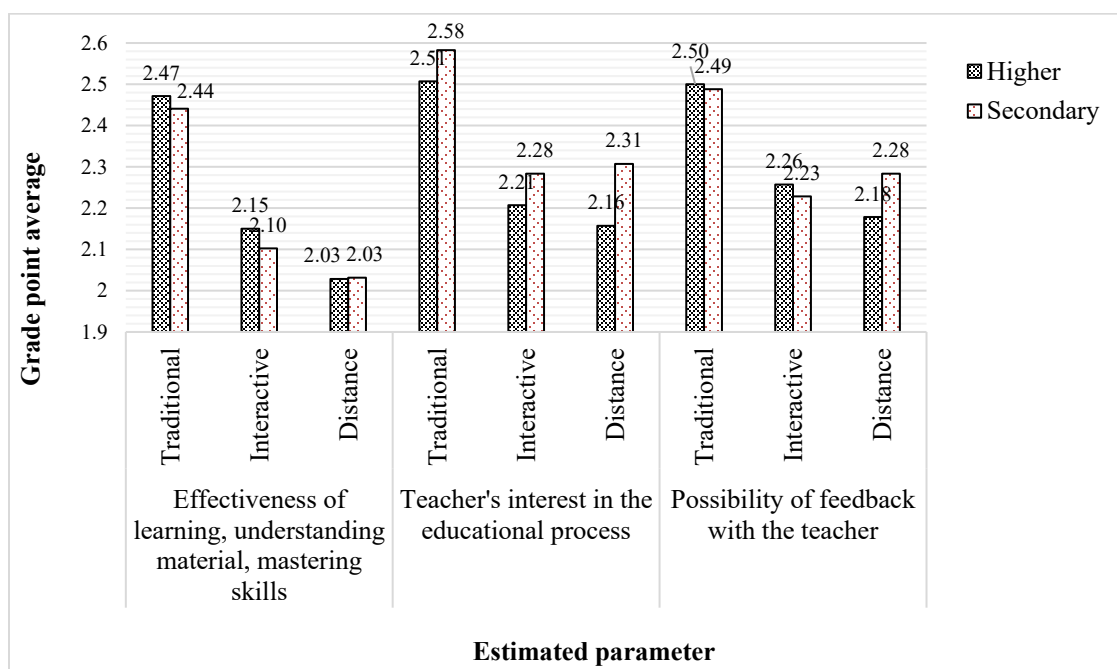


Figure 2. Assessment of different methods of training by students (part 2)

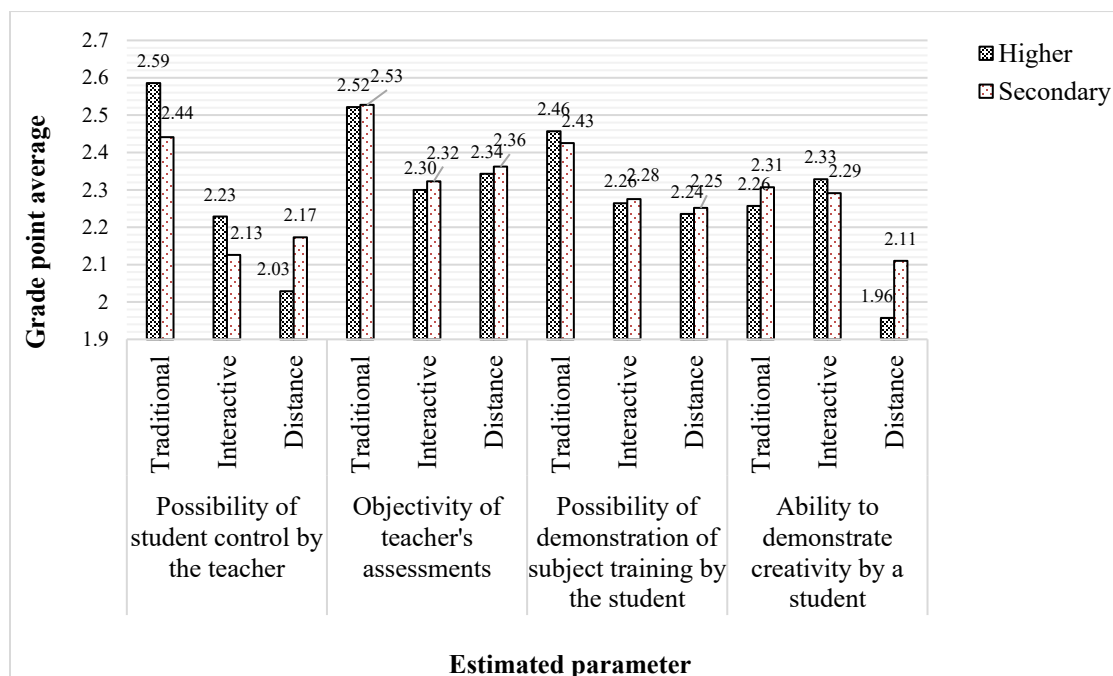


Figure 3. Assessment of different methods of training by students (part 3)

The highest average rating among the evaluated parameters was known in the “information availability” characteristic, exceeding 2.7 among students pursuing higher education. Notably, this was the only parameter that demonstrated statistically significant differences and correlations between responses from undergraduate and secondary education students ($P < 0.05$). Interactive teaching methods, such as role-playing games and situational analysis, had the lowest ratings in terms of information accessibility.

When considering comfort level, respondents identified remote (2.3) and traditional (2.4) learning methods as the most convenient. Motivation plays a crucial role in effective learning, and traditional teaching methods received the highest average score (2.4) in this category, while remote learning had the lowest (2.1).

In terms of effectiveness, students rated traditional lectures, in-person classroom sessions, and practical training as the most successful teaching strategies, with an average score exceeding 2.4. Conversely, distance learning was perceived as the least effective, receiving an

average score of 2, indicating only partial applicability. The level of teacher engagement in the learning process, along with opportunities for feedback, was rated highest for traditional methods (2.5) and lowest for remote learning (2.2).

A similar trend was noted in the evaluation of student supervision by instructors, where traditional methods had the highest score (2.6) and remote methods were the lowest (2.0). The fairness of teacher assessments was also considered highest in traditional classroom settings (2.5) and lowest in interactive formats (2.3).

Regarding the ability of students to demonstrate subject mastery, traditional methods scored the highest (2.4), while interactive and remote methods received an equivalent rating of 2.2. However, when assessing opportunities for creative expression, interactive classes were rated the highest (2.3), whereas distance learning received the lowest rating, falling below 2 points.

A cumulative comparison of the average scores for various teaching methods is presented in **Figure 4**.

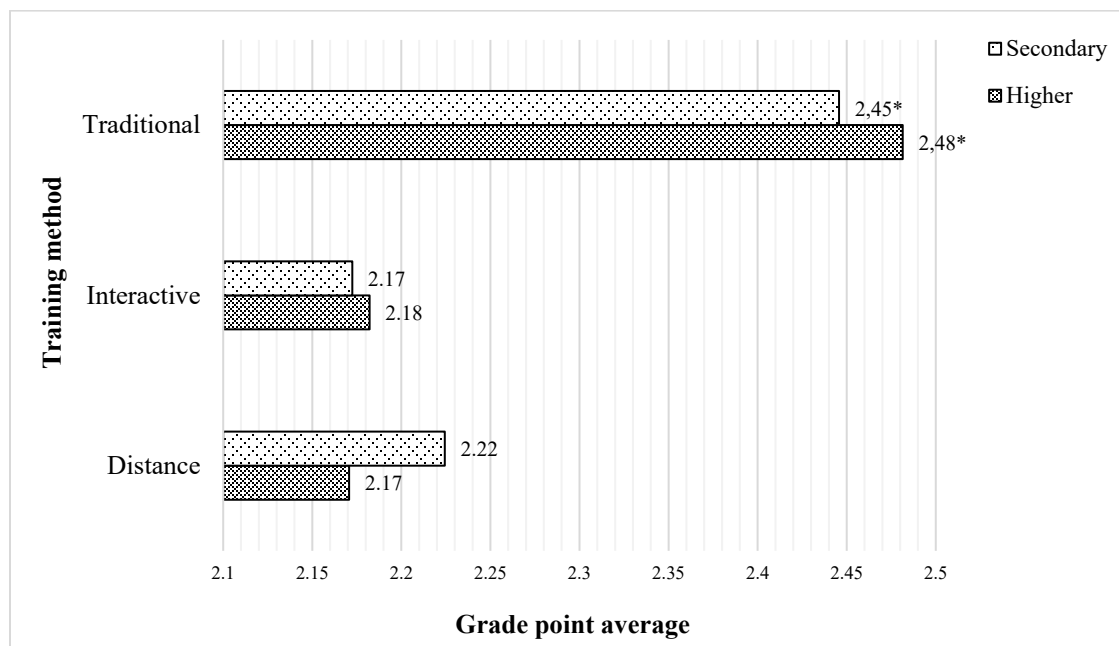


Figure 4. Total student assessment of different methods of training

* $P < 0.05$ - differences and correlation with training level are statistically significant

Based on student feedback from both higher and secondary education, traditional learning methods were rated as the most beneficial, with scores exceeding 2.4 ($P = 0.001$; 0.5900,6630,725 for higher education; 0.5330,6140,684 for secondary education). Respondents pursuing higher education were more likely to recognize the benefits of interactive teaching models, while

students from the medical-pharmaceutical college showed a greater preference for distance learning technologies.

To provide a comprehensive overview of the findings, an average score was calculated for all assessed parameters, regardless of the specific mode of instruction (**Figure 5**).

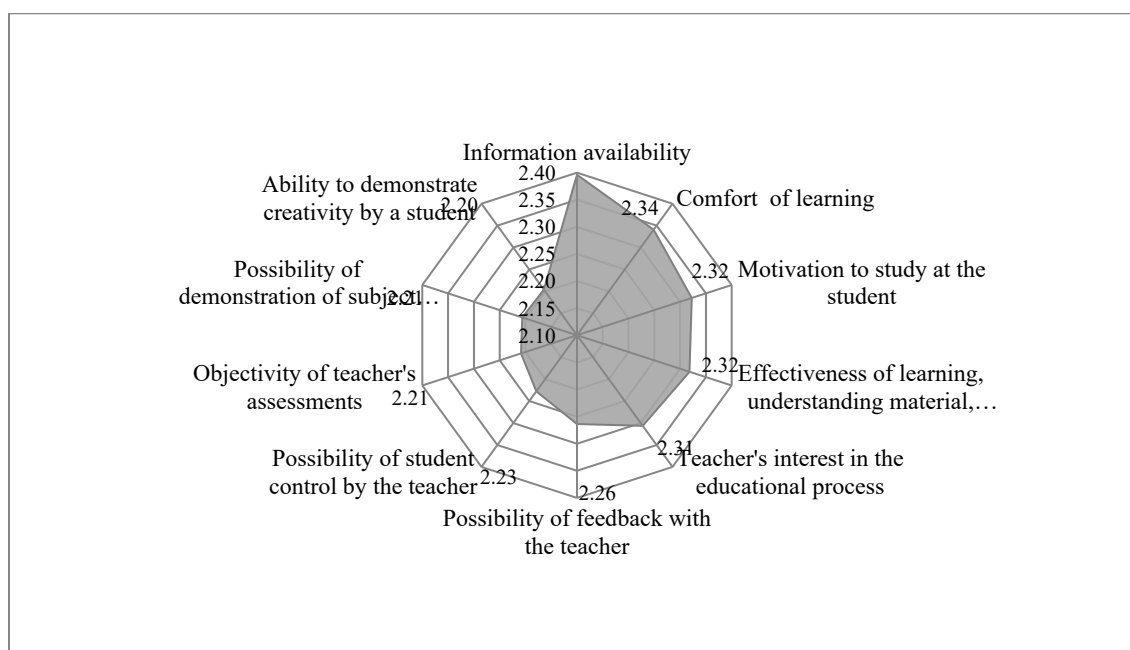


Figure 5. Total student assessment of characteristics of different methods of training

The findings provide an overall perspective on the learning process within the “Pharmacy” specialty. Among the most valued aspects of education were access to information, learning comfort, and motivation to study. On the other hand, the least rated parameters included the objectivity of teacher assessments and opportunities for students to demonstrate creativity and a thematic approach.

The notable differences in responses regarding information accessibility can be attributed to the extensive number of professional subjects in higher education and the longer duration of study. These factors contribute to a deeper understanding of the material and stronger connections between disciplines. The lower accessibility of information and reduced comfort in interactive learning methods may stem from the necessity for students to engage in thorough preparation and critical analysis, which are not always effectively integrated into the process of education.

The high comfort levels associated with distance learning can be shown by the significant proportion of working students, particularly those in senior courses. For these students, the flexibility of not being required to attend lectures at specific times enhances accessibility. However, despite this advantage, distance learning was rated as the least motivating, likely due to students' struggles with self-discipline and a lack of knowledge about the importance of acquiring knowledge for future professional practice.

Traditional and interactive methods were considered the most effective, likely due to their emphasis on direct interaction between instructors and students. Remote learning, particularly pre-recorded sessions, limits opportunities for immediate clarification and feedback, reducing engagement. Additionally, the lack of real-time interaction diminishes instructors' ability to gauge student comprehension, adapt teaching strategies, and maintain engagement, leading to a sense of detachment. Student supervision was rated lowest in remote learning, which can be linked to the use of modern technologies that facilitate information access not only for class preparation but also during assessments. This raises concerns about academic integrity in knowledge demonstration and evaluation processes.

The lower perceived objectivity of assessments in interactive learning may result from students being evaluated on specific topics or problem-solving exercises, which may not fully reflect their overall

knowledge of the subject. However, interactive learning stands out for allowing students to express creativity, as it fosters direct communication between students and instructors, a crucial skill for future pharmaceutical professionals.

Students' preference for the traditional teaching model is likely due to the straightforward and familiar structure of these classes. Interactive learning requires extensive preparation and public speaking, while distance learning is often favored for its flexible scheduling.

Overall, the highest-rated aspects of the “Pharmacy” education program reflect the faculty's quality, the availability of technical resources, and instructor oversight. The lowest-rated parameters highlight concerns about assessment subjectivity and limited opportunities for thematic and creative expression. These limitations may be linked to rigid educational standards and the material and technical constraints of the university.

Conclusion

In assessing various learning approaches within the “Pharmacy” specialty, traditional methods emerged as the most preferred among students. These methods were rated highest in terms of information accessibility, learning comfort, motivation, and overall effectiveness. Interactive learning, while less favored overall, was valued for fostering creativity and enhancing communication skills.

Distance learning, on the other hand, was primarily appreciated for its convenience. However, it was found to be the least effective in areas such as student motivation, instructor feedback, supervision, and overall educational impact. Given the increasing integration of remote learning—especially during the widespread transition prompted by the 2020 epidemic—there is a need to enhance these aspects to improve its effectiveness as an educational approach.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

References

1. Faller EM, Hernandez MT, Hernandez AM, Gabriel JR. Emerging Roles of Pharmacists in Global Health: An Exploratory Study on their Knowledge, Perception, and Competency. *Arch Pharm Pract.* 2020;11(1):40-6
2. Bledzhyants GA, Mishvelov AE, Nuzhnaya KV, Anfinogenova OI, Isakova JA, Melkonyan RS, et al. The Effectiveness of the Medical Decision-Making Support System" Electronic Clinical Pharmacologist" in the Management of Patients Therapeutic Profile. *Pharmacophore.* 2019;10(2):76-81.
3. Graber ML, Grice GR, Ling LJ, Conway JM, Olson A. Pharmacy education needs to address diagnostic safety. *Am J Pharm Educ.* 2019;83(6):7442. doi:10.5688/ajpe7442.
4. Gonzales AD, Harmon KS, Fenn III NE. Perceptions of service-learning in pharmacy education: A systematic review. *Curr Pharm Teach Learn.* 2020;12(9):1150-61. doi:10.1016/j.cptl.2020.04.005.
5. Urick BY, Meggs EV. Towards a greater professional standing: Evolution of pharmacy practice and education, 1920-2020. *Pharmacy.* 2019;7(3):98. doi:10.3390/pharmacy7030098.
6. Knoer SJ, Eck AR, Lucas AJ. A review of American pharmacy: education, training, technology, and practice. *J Pharm Health Care Sci.* 2016;2(1):32. doi:10.1186/s40780-016-0066-3.
7. Persky AM, Medina MS, Castleberry AN. Developing critical thinking skills in pharmacy students. *Am J Pharm Educ.* 2019;83(2):7033. doi:10.5688/ajpe7033.
8. McCutcheon LRM, Alzghari SK, Lee YR, Long WG, Marquez R. Interprofessional education and distance education: A review and appraisal of the current literature. *Curr Pharm Teach Learn.* 2017;9(4):729-36. doi:10.1016/j.cptl.2017.03.011.
9. Hirai M. Contributions to the establishment and promotion of pharmacy education reform. *Yakugaku Zasshi.* 2019;139(7):963-8. doi:10.1248/yakushi.19-00085.
10. Koster A, Schalekamp T, Meijerman I. Implementation of competency-based pharmacy education (CBPE). *Pharmacy.* 2017;5(1):10. doi:10.3390/pharmacy5010010.
11. Vosper H, Hignett S. A UK perspective on human factors and patient safety education in pharmacy curricula. *Am J Pharm Educ.* 2018;82(3):6184. doi:10.5688/ajpe6184.
12. Croft H, Gilligan C, Rasiyah R, Levett-Jones T, Schneider J. Current trends and opportunities for competency assessment in pharmacy education-a literature review. *Pharmacy.* 2019;7(2):67. doi:10.3390/pharmacy7020067.
13. Bajis D, Chaar B, Penm J, Moles R. Competency-based pharmacy education in the Eastern Mediterranean Region-A scoping review. *Curr Pharm Teach Learn.* 2016;8(3):401-28. doi:10.1016/j.cptl.2016.02.003.
14. Noble C, McKauge L, Clavarino A. Pharmacy student professional identity formation: a scoping review. *Integr Pharm Res Pract.* 2019;8:15-34. doi:10.2147/IPRP.S162799.
15. Pires C, Cavaco A. Scoping pharmacy students' learning outcomes: where do we stand? *Pharmacy.* 2019;7(1):23. doi:10.3390/pharmacy7010023.
16. Yasuhara T. Current status and issues in basic pharmaceutical education. *Yakugaku Zasshi.* 2017;137(4):407-12. doi:10.1248/yakushi.16-00242-3.
17. Sera L, Wheeler E. Game on The gamification of the pharmacy classroom. *Curr Pharm Teach Learn.* 2017;9(1):155-9. doi:10.1016/j.cptl.2016.08.046.