Golestan University of Medical Sciences

Journal of Research Development in Nursing and Midwifery
(J Res Dev Nurs Midw)
Online ISSN: 2588-3038

Comparison of the effect of teaching professional ethics codes using the two methods of the flipped classroom and short message service on the moral sensitivity of nursing students

Vida Azarkish [1], Mohammad Saeed Mirzaee [2], Mohammad Malekzadeh [3], Asadolah Mousavi [1], Mohammadlatif Rastian [1*]

1. School of Nursing, Yasuj University of Medical Sciences, Yasuj, Iran
2. School of Nursing and Midwifery, Iran University of Medical Sciences, Iran
3. Social Determinant of Health Research Center, Yasuj University of Medical Sciences, Yasuj, Iran
* Correspondence: Mohammadlatif Rastian. Nursing Instructor, School of Nursing, Yasuj University of Medical Sciences, Yasuj, Iran. Tel: +987433235140; Email: M.rastian@yums.ac.ir

Abstract

Background: Adhering to nursing professional ethics codes and being familiar with these codes enables nurses to make sound ethical decisions in challenging circumstances. Recognizing the significance of awareness regarding professional ethics codes and their continuous growth, this study was conducted to determine and compare the influence of classroom-based and short message service (SMS) training on the ethical sensitivity of nursing students.

Methods: This study employed a quasi-experimental design and was conducted in 1401 at Yasuj University of Medical Sciences in Iran. The participants included 120 nursing students who were selected using convenience sampling based on criteria such as enrollment in the bachelor's nursing program, ability to communicate effectively, willingness to participate in the study, and scoring 50 or lower on the ethical sensitivity questionnaire. The samples were randomly assigned to three groups: intervention 1, intervention 2, and control. After obtaining the necessary ethical approvals, data were collected using the Lützen Ethical Sensitivity Questionnaire. Data were collected immediately before and one month after the completion of interventions. The intervention group received a blended teaching approach, which included concept mapping, small group discussions, and role-playing sessions conducted twice a week for one month. Data analysis was performed using descriptive statistics (mean, standard deviation, frequency, and percentage) and inferential statistical methods (paired t-test, chi-square test, and ANOVA) using SPSS software version 21.

Results: There was a significant difference in the mean age of students among the three groups, flipped classroom, short message service, and control ($p = 0.047$). However, no significant difference was observed in terms of gender distribution among the three groups ($p = 0.291$). Prior to the intervention, there was no statistically significant difference in the overall mean score of ethical sensitivity among the three groups ($p < 0.05$). However, after the intervention, a significant difference was observed ($p < 0.05$). Post-hoc comparisons revealed a significant difference in the ethical sensitivity scores of students among the flipped classroom, short message service, and control groups ($p = 0.001$).

Conclusion: Based on the effectiveness of both the flipped classroom and short message service methods in enhancing the ethical sensitivity of nursing students, it is recommended to incorporate these educational approaches into the nursing curriculum for planning and implementation.

Article History

Received: 5 March 2023
Received in revised form: June 12 2023
Accepted: June 13 2023
Published online: 15 July 2023

DOI: 10.29252/JGBFNM.20.1.31

Keywords

Codes of ethics
Ethical sensitivity
Flipped classroom
Nursing students

Article Type: Original Article

Highlights

What is current knowledge?
Currently, the existing training related to professional ethics codes and enhancing the ethical sensitivity of nursing students is insufficient.

What is new here?
This study explores the effectiveness of innovative teaching methods, such as the flipped classroom approach, in increasing the ethical sensitivity of nursing students.

Introduction

Professional nursing ethics entails adhering to ethical standards within the nursing profession (1). Implementing ethically-guided nursing care leads to improved well-being and satisfaction among patients (2). Among the ethical considerations in interpersonal interactions, identifying diverse solutions for ethical dilemmas and seeking input from relevant stakeholders are vital ethical principles (3). Professional ethics codes serve as primary guidelines for nurses' ethical conduct (4). Professional ethics codes reflect individuals' ethical sensitivity, aiding in recognizing ethical conflicts, understanding and assessing moral and intellectual aspects of challenging ethical situations, as well as being cognizant of the ethical implications of decision-making (5). Ethical sensitivity encompasses an individual's awareness of ethical dimensions, such as tolerance, composure, accountability, and the importance assigned to ethical matters (6). Adhering to professional ethics codes facilitates safe and high-quality care (5, 7). Nurses often encounter unique ethical challenges in their patient care responsibilities (8). The inability of nurses to respond appropriately to ethical decision-making has resulted in moral distress (9). Nursing students are the future nursing workforce (10), and as such, it is expected that nurses demonstrate greater effort and dedication (11). Nursing students face numerous ethical challenges during their education, especially in clinical settings (12). It is crucial for nursing students, given the pivotal caregiving role they will assume in the future, to receive adequate training in ethical sensitivity (13). A lack of information in the field of ethical education has prevented the implementation of effective and practical methods for nursing ethics training (14). Among the educational approaches that have garnered increasing attention from university faculty and hold the potential to cater to diverse student populations is the flipped classroom method (15). The flipped classroom approach is considered a novel approach in medical education (16). In the flipped classroom approach, the four-step is considered a specific educational title and a subset of blended learning, in which learners acquire instructional materials in various technological formats before the class and then dedicate face-to-face class time to activities aimed at applying the learned content (17). The flipped classroom method enhances learning and leads to higher satisfaction among students (18). The flipped classroom approach guarantees learner engagement in the classroom. It promotes the cultivation of critical thinking among nursing students (19). The flipped classroom method can allow instructional changes in the classroom content (20). This approach can incorporate various methods such as virtual space, concept mapping, hands-on techniques, and small group discussions. Studies have shown a positive inclination towards the application of this method (21, 22), and the effect size of implementing this method has been reported as moderate, with a value of 0.35 between the years 2012 and 2017 (21). According to a systematic study, the performance of nursing students significantly improved after implementing the flipped classroom method (23). In an Iranian study, it was reported that 100% of nursing students preferred the flipped classroom method over other methods (24). Another technology-based method applicable in education is Short Message Service (SMS) (25). SMS is one of the services available on mobile phones (26). Proper utilization of mobile phones in educational programs can not only enhance the quality of education but also have significant potential for managing diseases in low- and middle-income countries (27). Mobile technologies, such as Short Message Service (SMS), offer unique and untapped opportunities for disease management. Considering the importance and relevance of the issue, as well as

the ethical education needs in nursing, the present research aimed to determine and compare the impact of teaching professional ethical codes using the flipped classroom method and SMS service on the ethical sensitivity of nursing students at Yasuj University of Medical Sciences.

Methods

The present study employed an intervention and experimental design. The research population consisted of nursing students at the School of Nursing at Yasuj University of Medical Sciences in the year 2022. The participants included 120 nursing students who were selected using convenience sampling. The selected samples were randomly allocated into one of three groups: Intervention 1 (flipped classroom, 1st-semester students), Intervention 2 (SMS service, 5th-semester students), and Control (3rd-semester students). The sample size was calculated considering parameters of $\alpha = 0.05$, $\alpha\text{-}1 = 0.95$, $z_{(1-\alpha/2)} = 1.96$, $\beta = 0.20$, $\beta\text{-}1 = 0.80$, $z1\text{-}\beta = 0.85$, $s1 = 8.63$, $s2 = 7.56$, $\mu1 = 84.29$, and $\mu2 = 71.09$ based on a similar study (13). By substituting the above values into the formula, a sample size of 22 participants was calculated for each group. Since there were three groups (two intervention groups and one control group) in the study and considering the need for increasing the sample size due to the multiple comparison phenomena and with the use of the sample size correction formula, considering a 10% probability of dropout and rounding off the number, a total of 40 participants were included in each group, making a total of 120 participants in the study.

$$n = \frac{2(z_{1-\alpha/2} + z_{1-\beta})^2 (s_1^2 + s_2^2)}{(\mu_1 - \mu_2)^2}$$

The inclusion criteria for participation in the study were as follows, enrollment in the Bachelor of Nursing program, being in the 1st and 3rd semesters due to taking the professional ethics course, and being in the 5th semester due to the proximity of their academic semester to the professional ethics course and their recent entry into the hospital. Other criteria included the ability to establish communication, willingness to participate in the study, scoring 50 or lower on the ethical sensitivity questionnaire (indicating low ethical sensitivity), and the exclusion criteria included receiving similar training in the past 6 months and unwillingness to continue participating in the study. After obtaining the necessary ethical permissions, data were collected using a tool consisting of a demographic information form and the Lutzen Ethical Sensitivity Questionnaire. This questionnaire consists of 25 items across 6 dimensions: respect for the patient's autonomy, awareness of how to communicate with patients, professional knowledge, experience of ethical problems and conflicts, application of ethical concepts in decision-making, and honesty and benevolence. Each item was scored on a 5-point Likert scale ranging from 4 (completely agree) to 0 (completely disagree). To calculate the score for each of the mentioned dimensions, the scores for the corresponding items of that dimension are summed together. To calculate the overall score of the questionnaire within a range of 0-100, the scores for each of the dimensions are added together (28). A higher overall score indicates a higher level of ethical sensitivity. The content validity of the questionnaire was confirmed in the study by Hasan pour et al., and its reliability was reported using a Cronbach's alpha coefficient of 0.81 (29). In the present study, Cronbach's alpha coefficient for the ethical sensitivity questionnaire for nurses was obtained as 0.75 for the entire questionnaire. The questionnaire was collected before and 1 month after the completion of the interventions. The intervention process was as follows: initially, individuals were assigned to three groups consisting of intervention 1 (reverse class), intervention 2 (short message service), and control. Prior to the intervention in each group, in the pre-group formation stage, discussions were held with individuals who met the desired conditions regarding the research objectives, group rules, and regulations, location and timing of sessions, number of sessions, duration of each session, as well as the responsibilities and tasks of the individuals. The flipped classroom interventions were carried out by the researcher and the research collaborator in groups while adhering to health protocols. The participants were categorized into groups of 5 to 10 individuals. In the flipped classroom groups, the topic for each session was determined in coordination with the students. The educational content included recorded lectures for each session, accompanied by slides, images, instructional videos, and concept maps designed using X-mind software version 10, which were made available to e-learning specialists for verification. Consequently, electronic content was prepared for each session and made accessible to the learners. At the same time, files comprising written ethical codes, links to instructional videos, and articles were sent to the representatives of each group through the WhatsApp messaging app. Students were required to complete their information, and study, and raise any questions they had with the research team before the next session. Prior to each session, learners had the opportunity to view and study the corresponding electronic content. In fact, the study of electronic content consisted of homework assignments for learners to complete before attending the session. In the sessions, the instructor first delivered a brief lecture on the session's concepts. Following that, a quiz comprising 3 to 5 questions was administered. At the end of the session, the instructor provided a short summary of the main concepts. In some sessions, groups were asked to prepare and perform a role-play scenario based on one of the ethical codes, while other students engaged in analyzing and critiquing the role-play. This educational program included 8 sessions, each lasting 1 hour, held twice a week for a total of 1 month, following the protocol outlined briefly as follows, the working method in the messaging group was as follows, initially, a group was formed consisting of students on the WhatsApp platform. Then, the researcher developed the ethical professional nursing domains in the form of text messages. Prior to sending the text messages, the presence of all students was ensured through coordination with the class representative. Subsequently, students were asked to simultaneously send a confirmation message in the group to verify the receipt of the messages. Short messages were sent to the students on a daily basis during the 8 sessions within a specific hour. The group-based training started simultaneously, and the groups had no communication with each other regarding the educational content. The duration of the intervention period was based on a similar study (13). It should be noted that no interventions were performed in the control group. Additionally, the educational content was the same for both interventions, with only the teaching method being different. Next, the data were analyzed using SPSS software version 21 through statistical analysis with a 95% confidence level. To select the appropriate test for testing the research hypotheses, the normal distribution of the study variables was examined using the Kolmogorov-Smirnov test. The chi-square test was used to compare the frequency distributions of nominal variables, and the independent t-test and ANOVA were used to compare the means of quantitative and between-group variables. The paired t-test was employed for within-group comparisons. In this study, blinding was conducted in a single-blind manner, where blinding was carried out for the statistical analyst.

Results

In this study, 152 students were initially enrolled to determine the eligible individuals. Out of these, 32 individuals were excluded from the study due to criteria for dropout and high ethical sensitivity scores. The remaining 120 students were randomly allocated into three groups (40 students in the flipped classroom group, 40 students in the short message service group, and 40 students in the control group) using block randomization. It is worth noting that there was no sample attrition in this study. In terms of the mean age of students among the three groups (flipped classroom, short message service, and control), there was a statistically significant difference ($p = 0.047$) (Table 1). Regarding gender, no significant difference was observed among the three groups (flipped classroom, short message service, and control) ($p = 0.291$). Similarly, there was no significant difference observed among the three groups in terms of marital status ($p = 0.875$) (Table 1). Within-group comparison of pre-test and post-test ethical sensitivity scores of students in each group showed that the mean and standard deviation of ethical sensitivity scores of students in the flipped classroom group were 35.625 ± 7.678 in the pre-test and 79.725 ± 5.583 in the post-test, indicating a significant difference ($p < 0.001$). Similarly, the mean and standard deviation of ethical sensitivity scores of students in the short message service group was 36.550 ± 8.186 on the pre-test and 62.55 ± 6.876 on the post-test, indicating a significant difference ($p < 0.001$). However, there was no significant difference in the mean and standard deviation of ethical sensitivity scores of students in the control group, with scores of 35.250 ± 8.251 on the pre-test and 35.825 ± 7.372 on the post-test ($p = 0.087$). The results of the between-group comparison of ethical sensitivity scores of students in the flipped classroom, short message service, and control groups showed that there was no significant difference in the pre-test scores among the three groups ($p = 0.759$). However, there was a significant difference in the post-test scores among the three groups ($p < 0.001$). To compare the means, a post hoc Tukey test was used to determine the differences between groups in the post-test stage. The results of this test indicated that the mean ethical sensitivity of the flipped classroom group was higher than that of the short message service and control groups (see Table 2). Based on the results, the level of ethical sensitivity of students in the three groups was different in the post-test stage.

Table 1. Comparison of demographic information of nursing students in three groups, flipped classroom, SMS service, and control

Variable Group	Sex		Marriage		Age
	Man	Woman	Single	Married	Mean ± SD
Flipped classroom	20	20	37	3	21.425 ± 2.570
SMS	17	23	37	3	22.150 ±1.442
Control	24	16	38	2	22.850 ± 3.270
p-value	*0.0291		*0.875		**0.047

* K-squared test, ** ANOVA

Table 2. Determination and comparison of between-group and inter-group moral sensitivity in nursing students in the three study groups before and after the intervention

Group	N	SD ± Mean		** Inter-group
		Pre-test	Post-test	
Flipped classroom	40	35.625 ± 7.678	79.725 ± 5.583	t=27.229 pv = 0.0001
SMS	40	36.550 ± 8.186	62.55 ± 6.876	t=14.546 pv = 0.0001
Control	40	35.250 ± 8.251	35.825 ± 7.372	t=1.753 pv=0.087
* Between-group		F=0.277 pv = 0.759	F=442.193 pv = 0.0001	* Paired T-test ** ANOVA test

Discussion

In this study, the impact of professional ethics training using two methods, flipped classroom and short message service (SMS), on the ethical sensitivity of nursing students was compared. The results of the current study indicated that both the flipped classroom and SMS interventions were effective in enhancing the ethical sensitivity of the students compared to the control group. It should be noted that the flipped classroom intervention had a more significant influence on the ethical sensitivity of the students. The results of the present study demonstrated a significant difference in the overall ethical sensitivity scores of nursing students in the flipped classroom, SMS, and control groups in the post-test conducted one month after the research interventions ($p < 0.05$). Oliván Blázquez et al. (2019) examined the use of flipped classrooms as an active learning approach to academic performance in social work. They conducted a randomized trial at a university. The results showed that the flipped classroom teaching method was demonstrated to be a more effective tool in terms of academic performance, both quantitatively and qualitatively, compared to the traditional lecture-based learning approach, specifically in the context of social work education at the university level (30). Ali-Pour et al. (2014) investigated the use of SMS as part of continuous education for employed nurses in teaching breast cancer screening. The results indicated that SMS-based education served as a suitable alternative to traditional face-to-face instruction for the continuous education of nurses (31). The results of the current study showed that one month after the completion of the research interventions, there was a significant difference in the mean overall ethical sensitivity scores of nursing students in the flipped classroom group between the pre-test and post-test ($p < 0.05$). Lin et al. (2019) examined the effects of margin annotations, and question-based summarization in flipped learning approach on nursing skills, learning progress, and learning perception of nurses. The results indicated that the approach of margin annotations, and question-based summarization in flipped learning not only improved nursing skills, learning progress, and learning perception of nurses but also significantly increased their self-efficacy and inclination towards critical thinking (32). The results of the present study demonstrated that one month after the completion of the research interventions, there was a significant difference in the overall ethical sensitivity scores of nursing students in the SMS group between the pre-test and post-test ($p < 0.05$). Chuang et al. (2013) investigated the enhancement of medication knowledge in nursing students through the use of educational materials delivered via SMS. The results showed that providing educational materials through SMS can significantly increase medication knowledge in nursing students (33). Saeed and Javidi-mohammabadi (2022) examined the impact of mobile phone-based education on the learning, concentration, and academic satisfaction of students. The results demonstrated that mobile phone-based education can be an appropriate method for teaching various educational topics to students due to its accessibility, portability, and easy application, allowing individuals to access learning content anytime and anywhere. Mobile phone-based learning also enables individuals to access valuable educational materials that can enhance their learning quality and academic satisfaction. With the high flexibility of this type of education, students can engage in learning based on their own circumstances and mental readiness, which reduces distractions and intervention factors in concentration (34). Jiang et al. (2018) examined the intervention of SMS messaging to improve infant feeding practices in Shanghai, China. The results showed that the SMS intervention was effective and beneficial in bridging gaps in the delivery of healthcare services and promoting healthy infant feeding practices in environments with limited personal contact (35). Rahmani-Bilandi et al. (2019) investigated the impact of relaxation training using SMS messaging on anxiety in pregnant women. The results demonstrated that sending SMS messages as an implementable and effective intervention can reduce anxiety scores in pregnant women (36). Akhu-Zaheya and Wa'ed (2017) studied the effect of SMS reminders on adherence to a healthy diet, medication, and smoking cessation in adult patients with cardiovascular diseases. The results showed that SMS messaging was effective in improving adherence to a healthy diet and medication. SMS messaging can be a promising solution for managing chronic diseases (37). The results of these studies are in line with the current study and are consistent with it. One limitation of this study could be the potential lack of cooperation and adherence to the implementation of practical programs by participants due to the existing conditions and challenges in their living environment. The researcher addressed this limitation by choosing the appropriate time and place for implementing the intervention.

Conclusion

Based on the findings of this study, it can be concluded that implementing professional ethics training using both flipped classroom and short message service (SMS) methods leads to significant statistical changes in the ethical sensitivity scores of nursing students. Therefore, implementing these interventions contributes to the enhancement of ethical sensitivity among nursing students, enabling them to acquire more knowledge in patient care, as well as the process and framework of nursing responsibilities. Additionally, since effective communication between the client and the nurse is a fundamental topic in the nursing profession, it is recommended that faculty members and instructors in nursing universities incorporate these teaching methods into the curriculum of nursing students and make use of them. The findings of this study can have implications in the areas of education, research, management, and nursing care, allowing nurses to play a significant role. It can contribute to increasing the awareness of nursing students in providing better and more effective patient care. It can pave the way for further research in this field and help advance nursing knowledge in the realm of ethical sensitivity. Therefore, educational planners, including the Ministry of Health and faculty members of nursing schools, can have a broader perspective in selecting appropriate teaching methods within the nursing curriculum. This can be a step towards improving nursing care in this area.

Acknowledgement

We are acknowledgment to all those who helped us in this study. The present article was extracted from the master's thesis in the field of internal surgical nursing.

Funding source

This study has financial support from Yasuj University of Medical Sciences.

Ethical statement

This study has received ethical approval with the code IR.YUMS.REC.1401.140 from the Research and Technology Deputy of Yasuj University of Medical Sciences in Iran. The participants were informed about the main objective of the research, and they were assured of their right to withdraw from the study at any stage, as well as the confidentiality and protection of their information.

Conflict of interest

The authors did not declare any conflict of interest in this study.

Author contributions

The idea of the study and its guide was M.L.R. Study design was carried out by M.S.M and A.M. The researcher who conducted the research process and interventions were V.A.K. Data analysis was done by M.M.Z.

References

1. Johnstone M-J. Bioethics: a nursing perspective. Elsevier Health Sciences; 2022. [View at Publisher] [Google Scholar]
2. Butts JB, Rich KL. Nursing ethics: Across the curriculum and into practice: Jones & Bartlett Learning; 2022. [View at Publisher] [Google Scholar]
3. Grace PJ, Uveges MK. Nursing ethics and professional responsibility in advanced practice: Jones & Bartlett Learning; 2022. [View at Publisher] [Google Scholar]
4. Linton M, Koonmen J. Self-care as an ethical obligation for nurses. Nurs Ethics. 2020;27(8):1694-702. [View at Publisher] [Google Scholar] [DOI] [PMID]
5. Hemberg J, Bergdahl E. Ethical sensitivity and perceptiveness in palliative home care through co-creation. Nurs Ethics. 2020;27(2):446-60. [View at Publisher] [Google Scholar] [DOI] [PMID]
6. Spekkink A, Jacobs G. The development of moral sensitivity of nursing students: A scoping review. Nursing ethics. 2021;28(5):791-808. [View at Publisher] [Google Scholar] [DOI] [PMID]
7. Pajakoski E, Rannikko S, Leino-Kilpi H, Numminen O .Moral courage in nursing–An integrative literature review. Nursing & health sciences. 2021;23(3):570-85. [View at Publisher] [Google Scholar] [DOI] [PMID]
8. Haahr A, Norlyk A, Martinsen B, Dreyer P. Nurses experiences of ethical dilemmas: A review. Nurs Ethics. 2020;27(1):258-72. [View at Publisher] [Google Scholar] [DOI] [PMID]
9. Morley G, Bradbury-Jones C, Ives J. What is 'moral distress' in nursing? A feminist empirical bioethics study. Nursing Ethics. 2020;27(5):1297-314. [View at Publisher] [Google Scholar] [DOI] [PMID]
10. Rodríguez-García MC, Gutiérrez-Puertas L, Granados-Gámez G, Aguilera-Manrique G, Márquez-Hernández VV. The connection of the clinical learning environment and supervision of nursing students with student satisfaction and future intention to work in clinical placement hospitals. J Clin Nurs. 2021;30(7-8):986-94. [View at Publisher] [Google Scholar] [DOI] [PMID]
11. Honkavuo L. Ethics simulation in nursing education: Nursing students' experiences. Nursing ethics. 2021;28(7-8):1269-81. [View at Publisher] [Google Scholar] [DOI] [PMID]
12. Poorchangizi B, Borhani F, Abbaszadeh A, Mirzaee M, Farokhzadian J. The importance of professional values from nursing students' perspective. BMC Nurs. 2019;18:1-7. [View at Publisher] [Google Scholar] [DOI] [PMID]
13. Namadi f, Hemmati Maslakpak M, Moradi Y, Ghasemzadeh N. The effect of professional ethics education through case-based method on moral sensitivity in nursing students: a clinical trial study. Nursing and Midwifery Journal. 2018;16(6):423-31. [View at Publisher] [Google Scholar]
14. Maffoni M, Argentero P, Giorgi I, Hynes J, Giardini A. Healthcare professionals' moral distress in adult palliative care: a systematic review. BMJ supportive & palliative care. 2019;9(3):245-54. [View at Publisher] [Google Scholar] [DOI] [PMID]

15. Han E, Klein KC. Pre-class learning methods for flipped classrooms. Am J Pharm Education. 2019;83(1). [View at Publisher] [Google Scholar] [DOI] [PMID]
16. Kang HY, Kim HR. Impact of blended learning on learning outcomes in the public healthcare education course: a review of flipped classroom with team-based learning. BMC Med Educ. 2021;21(1):78. [View at Publisher] [Google Scholar] [DOI] [PMID]
17. Buil-Fabrega M, Martínez Casanovas M, Ruiz-Munzón N, Filho WL. Flipped classroom as an active learning methodology in sustainable development curricula. Sustainability. 2019;11(17):4577. [View at Publisher] [Google Scholar] [DOI] [PMID]
18. Martínez-Jiménez R, Ruiz-Jiménez MC. Improving students' satisfaction and learning performance using flipped classroom. The International Journal of Management Education. 2020;18(3):100422. [View at Publisher] [Google Scholar] [DOI]
19. Sosa Díaz MJ, Guerra Antequera J, Cerezo Pizarro M. Flipped classroom in the context of higher education: Learning, satisfaction and interaction. Education Sciences. 2021;11(8):416. [View at Publisher] [Google Scholar] [DOI]
20. Tsai MN, Liao YF, Chang YL, Chen HC. A brainstorming flipped classroom approach for improving students' learning performance, motivation, teacher-student interaction and creativity in a civics education class. Thinking Skills and Creativity. 2020;38: 100747. [View at Publisher] [Google Scholar] [DOI]
21. Jang HY, Kim HJ. A meta-analysis of the cognitive, affective, and interpersonal outcomes of flipped classrooms in higher education. Educ Sci. 2020;10(4):115. [View at Publisher] [Google Scholar] [DOI]
22. Wozny N., Balser C. & Ives D. Evaluating the flipped classroom: A randomized controlled trial. The Journal of Economic Education. 2018;49(2):115-29. [View at Publisher] [Google Scholar] [DOI]
23. Özbay Ö, Çınar S. Effectiveness of flipped classroom teaching models in nursing education: A systematic review. Nurse Educ Today. 2021;102: 104922. [View at Publisher] [Google Scholar] [DOI] [PMID]
24. Tohidi S, Karimi Moonaghi H, Shayan A, Khalili Z, Ahmadinia H. Evaluation of nursing students' satisfaction with teaching through flipped classroom method during internship at Hamadan University of Medical Sciences: A short article. DSME. 2021;8(4):49-56. [View at Publisher] [Google Scholar]
25. Kes D, Ozduran B, Celik S, Cetin E. The effectiveness of short text messages on nurses' arrhythmia interpretation skills. Nurs Crit Care. 2023;28(3):362-69. [View at Publisher] [Google Scholar] [DOI] [PMID]
26. Moradi A, Alavi SM, Salimi M, Nouhjah S, Shahvali EA. The effect of short message service (SMS) on knowledge and preventive behaviors of diabetic foot ulcer in patients with diabetes type 2. Diabetes Metab Syndr. Clin\ical Research & Reviews. 2019;13(2):1255-60. [View at Publisher] [Google Scholar] [DOI] [PMID]
27. El-Sofany H, El-Haggar N. The effectiveness of using mobile learning techniques to improve learning outcomes in higher education. International Journal of Interactive Mobile Technologies. 2020;14(8):4-18. [View at Publisher] [Google Scholar]
28. Lützén K, Nordström G, Evertzon M. Moral sensitivity in nursing practice. Scandinavian journal of caring sciences. 1995;9(3):131-8. [View at Publisher] [Google Scholar] [DOI] [PMID]
29. Hassanpoor M, Hosseini M, Fallahi Khoshknab M, Abbaszadeh A. Evaluation of the impact of teaching nursing ethics on nurses' decision making in Kerman social welfare hospitals in 1389. IJMEHM. 2011;4(5):58-64. [View at Publisher] [Google Scholar]
30. Oliván Blázquez B, Masluk B, Gascon S, Fueyo Díaz R, Aguilar-Latorre A, Artola Magallón I, et al. The use of flipped classroom as an active learning approach improves academic performance in social work: A randomized trial in a university. Plos One. 2019;14(4):e0214623. [View at Publisher] [Google Scholar] [DOI] [PMID]
31. Alipour S, Jannat F, Hosseini L. Teaching breast cancer screening via text messages as part of continuing education for working nurses: a case-control study. Asian Pac J Cancer Prev. 2014;15(14):5607-9. [View at Publisher] [Google Scholar] [DOI] [PMID]
32. Lin HC, Hwang GJ, Hsu YD. Effects of ASQ-based flipped learning on nurse practitioner learners' nursing skills, learning achievement and learning perceptions. Computers & Education. 2019;139:207-21. [View at Publisher] [Google Scholar] [DOI]
33. Chuang Y-H, Tsao C-W. Enhancing nursing students' medication knowledge: the effect of learning materials delivered by short message service. Computers & Education. 2013;61:168-75. [View at Publisher] [Google Scholar] [DOI]
34. Saeid N, Jadidi Mohammadabadi A. The effect of mobile learning on students' learning, concentration and academic satisfaction. Technology of Education Journal (TEJ). 2022;16(3):439-50. [View at Publisher] [Google Scholar] [DOI]
35. Jiang H, Li M, Wen LM, Baur LA, He G, Ma X, et al. A short message service intervention for improving infant feeding practices in Shanghai, China: planning, implementation, and process evaluation. The Journal of Medical Internet Research mHealth and uHealth. 2018;6(10):e11039. [View at Publisher] [Google Scholar] [DOI] [PMID]
36. RahmaniBilondi R, Najafi S, Banafsheh E, Abdolazimi Z, Tavafi M, RahmaniBilondi M. The effect of Relaxation Training Using Short Message Service on pregnant women's anxiety. IJNR. 2019;14(1):42-9. [View at Publisher] [Google Scholar]
37. Akhu-Zaheya LM, Shiyab WY. The effect of short message system (SMS) reminder on adherence to a healthy diet, medication, and cessation of smoking among adult patients with cardiovascular diseases. Int J Med Inform. 2017;98:65-75. [View at Publisher] [Google Scholar] [DOI] [PMID]

How to Cite:

Azarkish V, Mirzaee M.S, Malekzadeh M, Mousavi A, Rastian ML. Comparison of the effect of teaching professional ethics codes using the two methods of the flipped classroom and short message service on the moral sensitivity of nursing students. *J Res Dev Nurs Midw.* 2023;20(1):31-4.