

Investigation Report on the Application of Online and Offline Seamless Learning Mode in Obstetrics and Gynecology

Jiaoyan He^{1,*}, Weihong Jiang¹, Kegang Hou¹

¹Department of Gynaecology, Zhuji People's Hospital of Zhejiang Province, Zhuji, China

*Corresponding author: hejiaozihfj@163.com

Abstract: To assess the effectiveness of an integrated online and offline learning paradigm for obstetrics and gynecology instruction, 80 clinical medical students were polled using a questionnaire. As a consequence, the majority of students are capable of mastering the online-offline seamless learning mode; half of students prefer the online-offline seamless learning mode, and a small percentage of students accept it. The use of online and offline seamless learning modalities in obstetrics and gynecology education can help students develop their capacity for active learning, train their clinical thinking and operating abilities, and enhance learning effects. The mix of online and offline seamless learning modes, as well as conventional mode, produces an atmosphere and circumstances for learning at any time in obstetrics and gynecology. "Clinical" learning maximizes students' primary involvement, develops their capacity for active learning, improves students' clinical thinking and clinical operating abilities, considerably increases the learning effect, and creates a solid basis for future clinical work.

Keywords: Online and Offline; Obstetrics and Gynecology; Seamless Learning

1. Introduction

People's education, lives, and jobs have altered dramatically throughout the Internet age. Mobile intelligent terminal teaching, as a revolutionary teaching approach, simplifies teaching and learning and introduces a new mobile teaching experience. The conventional teaching paradigm is mostly dependent on instructor instruction and excludes student involvement. Students rely heavily on assimilating teacher-taught knowledge in order to pass tests and show little interest in actively investigating knowledge and clinical reasoning. This online and offline hybrid teaching model combines the advantages of traditional and online teaching and requires teachers to use information technology to optimize teaching design throughout the teaching process, so that "online" (online learning) and "offline" (classroom teaching) organically combine. By emphasizing the teacher's leading role in the classroom, this model improves students' primary position in learning (Safiah, 2020).

COVID-19 became available in all nations worldwide from the start of 2020. To halt the spread of the pandemic on campus and to guarantee the safety and health of instructors and students, the Ministry of Education issued a notification seeking the postponement of the spring semester of 2020. Major colleges and universities arranged the largest online teaching session in history in record time to comply with the Ministry of Education's mandate that "classes be suspended without halting learning and teaching be suspended without halting courses" during the pandemic. Additionally, students learned a variety of platforms at a breakneck pace—online learning abilities. With the pandemic abating, prominent schools and institutions have progressively reintroduced classroom instruction. However, the majority of them are still in seamless online and offline learning mode. Medicine is a field of study that demands an ideal balance of theory and practice. Simultaneously, obstetrics and gynecology are critical subspecialties of medicine, tightly integrating scientific and clinical knowledge (Gitlin, 2004). Additionally, owing to the unique nature of obstetrics and gynecology, patients have strict privacy needs, doctor-patient relationships are stressful, and the student population is enormous. During the learning process, no student is permitted to undertake gynecological examinations or associated procedures. Students now have fewer opportunities for clinical experience, putting obstetrics and gynecology training to the test. With the fast advancement of mobile communication, smart terminals, cloud computing, and the Internet, the learning paradigm of "everyone, everything, anytime, and everywhere" is gaining traction—and garnering increasing attention. In 1996, George kuh pioneered

the notion of seamless learning. It refers to "the synthesis of previously regarded independent and different experiences. (Kuh, 1996)" (e.g., in-class and out-of-class, academic and non-academic, in-course and out-of-course, in-school and out-of-school) are linked together in order to maintain the integrity or continuity of learning". By incorporating an online and offline seamless learning mode into obstetrics and gynecology education, we may improve obstetrics and gynecology instruction.

2. Research objects and research methods

2.1 Research objects

According to the overall sampling method, 80 students from classes 1 and 2 of nursing major were randomly selected as the experimental group, including 20 boys and 60 girls, aged 17 to 21 years old. 80 students from classes 3 and 5 were selected as the control group, all of them were girls; they were 17-22 years old. All are three years. There were no significant differences in gender, age, entrance scores, and basic course scores between the two groups (all $P > 0.05$). Both groups were taught by the same group of teachers.

2.2 Research methods

2.2.1 Teaching methods

Control group: teaching according to the traditional teaching model.

Experimental group: The online and offline mixed "golden class" teaching model was adopted, and the materials required for the class were prepared in advance one month before the class. One week before the class, the theoretical teaching courses of clinical practice courses, common clinical diseases, and operation specifications of basic clinical skills are made into courses suitable for clinical practice teaching of obstetrics and gynecology. In order to make it easier for students to repeatedly watch the knowledge points they do not understand, we cut the video into a video of about 15 minutes according to the teaching content. Students can interact with teachers through the WeChat platform if they encounter a knowledge point they do not understand while watching the video before class. Teachers can review the questions raised by the students before the class, comprehensively analyze the problems and knowledge points encountered by the students before the class, and on the day of the class, answer the incomprehensible knowledge points and common errors encountered by the students in the pre-class study and test, by This allows for more in-depth analysis and explanation of the key points and difficulties in the knowledge points and the problems that students cannot understand. For the practical operation of basic clinical skills, because the students have already previewed and performed preliminary operations before the class, the students can be divided into two groups in the class. First, the teacher will explain, and then the two groups of students will operate separately and evaluate each other. In this way, the standardization and proficiency of basic clinical operations can be improved. Teachers can introduce clinical case analysis in teaching and use the flipped teaching model. Guide students to better understand the steps, indications, contraindications, and precautions of clinical operations.

2.2.2 Evaluation method

(1) App online theoretical assessment. After the end of the semester course, the online assessment will be conducted in the form of unified propositions, unified invigilation, and unified marking by the teaching teachers. The final exam is assessed in a separate way of teaching and examination. For standardized tests, students fill in answer sheets and grade them through a marking machine, using a percentile system.

(2) At the end of the course, a questionnaire survey is used to evaluate and understand the online and offline seamless learning mode. The specific survey contents are mastery of online and offline seamless learning mode, degree of love, learning situation, learning video situation, learning video content.

2.2.3 Statistical methods

SPSS 17.0 statistical software was used for statistical analysis of the data, and the measurement data were tested by two independent samples t-test, and the test level was $\alpha = 0.05$.

2.3 Research results

2.3.1 Comparison of the theoretical examination scores of obstetrics and gynecology nursing between the two groups

The test score of the experimental group was (84.92±0.60) points, and that of the control group was (78.78±0.5) points, and the difference was statistically significant (see Table 1).

Table 1: Comparison of the two groups of obstetrics and gynecology nursing theory test score

group	number of people	test scores
test group	80	84.98±0.6
control group	80	76.78±0.5

2.3.2 Comparison of teaching satisfaction between the two groups

Compared with the control group (Table 2), the experimental group was superior to the control group in terms of learning interest, mastery of theoretical knowledge, comprehensive problem analysis ability, self-learning ability, and exploration ability ($P < 0.01$), and the difference was statistically significant. Interviewed with other teachers, it is believed that under the blended teaching, students have the confidence to complete the task, and the learning enthusiasm is high, which is conducive to the smooth development of teaching.

Table 2: Comparison of teaching effect of two groups of teaching methods [n (%)]

Project	Control Group (%)	Test Group (%)	X2 Value	P Value
Helps To Increase Interest In Learning	54	63	5.056	0.023
Helps To Improve Language Skills	56	72	5.287	0.016
Helps To Improve Self-Learning Ability	43	80	9.894	0.024
Satisfied With This Teaching Method	52	78	11.92	0.001

3. Discussion

3.1 Benefits of seamless online and offline learning mode

Before the epidemic outbreak, in my country's medical education and even in the entire higher education, very few people used the online and offline seamless learning model, and a small number of them used online learning courses, most of which were also elective courses. Mobile platform learning. To better cultivate students' study habits and learning methods, we tried to use the online and offline seamless learning mode in the whole obstetrics and gynecology study. It was found that the students showed a high degree of cooperation with the change of this teaching mode, and the effect was satisfactory. Therefore, using the online and offline seamless learning mode in the obstetrics and gynecology learning process can improve students' learning effect, promote the learning of theoretical knowledge by combining theory with practice, and strengthen the basic training of clinical operation and surgical operation skills—self-learning ability (Reinertsen, 2018).

Stimulate learning interest and promote theoretical knowledge learning. Most students like the seamless online and offline learning mode. They believe that this model can improve learning interest and make the abstract basic theoretical knowledge of obstetrics and gynecology three-dimensional and vivid (such as reproductive system anatomy, Normal childbirth mechanism); can integrate multiple knowledge points (such as amenorrhea, abnormal uterine bleeding); video can be watched and learned repeatedly to deepen understanding and memory. In the clinical probationary stage, using a multimedia teaching case database can provide students with the medical history, signs, and auxiliary examinations of typical cases more vividly, strengthen students' autonomous learning ability and cultivate clinical thinking ability.

The seamless online and offline learning model allows students to learn anytime and anywhere when they have time and curiosity, not limited to the classroom. It realizes the perfect combination of

in-class and out-of-class, online and offline, real-time and non-real-time learning, and students can control their learning progress according to their schedule (Mason, 2019). With the rapid development and wide use of the Internet, it is convenient for students to consult and review. Therefore, it has great potential and space for college teaching and can fully mobilize students' subjective initiative and enthusiasm (Jian-Hua, 2012). In addition, teachers can sort out the records of students' interaction and communication, homework completion, and test results from the online learning platform in the later stage, and put forward targeted suggestions according to each student's situation, which can also be used as one of the final course assessment standards. Communication between teachers and students is also possible through the Internet and electronic devices, and students are motivated to learn when and where they are curious. Based on traditional teaching, better use the network for learning, and dialectically unify and seamlessly combine the two to stimulate students' interest in learning, give full play to their subjective initiative, break through the key points and difficulties of teaching, and better improve their practical ability and innovation capabilities.

3.2 Teaching Mode

During online courses, teachers focus on transforming teaching materials into digital resources that support learning. The teaching content of Obstetrics and Gynecology Nursing is rich in pictures, animations, and videos, which can vividly display normal pregnancy, childbirth, and various gynecological diseases, which are easy to understand and remember; focus on the design of interactive platforms, and focus on learning communities and learning communities. The construction of the platform, special personnel is responsible for the interactive work of the platform (Zhang, 2019), to normalize the interaction and form a good learning "community culture"; pay attention to using the platform to record the learning process of students and grasp the learning status of learners in real-time. Online courses can make accurate evaluations through data and discover the weak points, key points, and difficulties of knowledge teaching when studying real-time data of students' learning status, which is beneficial for teachers to optimize teaching and evaluation methods. This course emphasizes the construction of teaching resources based on knowledge points to make full use of the "fragmented" time to study. Small study units are also conducive to giving full play to students' learning choices. They can construct their learning options according to personal interests and needs—knowledge units and combinations.

Obstetrics and gynecology is a highly practical clinical subject with high requirements for operation skills. However, many clinical operations and examinations cannot be completed under direct vision due to the hidden operation site. Accumulation often requires a lot of practice to master. However, it is impossible and unreasonable for students to train clinical skills through operation and practice on real patients as before. Therefore, the clinical training of obstetrics and gynecology under the new situation requires the improvement of the teaching model. Focusing on basic clinical physical examination and common operations, such as gynecological examination, posterior fornix puncture, diagnostic curettage, etc., find or shoot videos for students to learn and lay a solid foundation for entering the clinic (Kruger, 2007). By watching the video repeatedly, students will find out the problems to get answers offline or later in the actual clinical practice process, which is conducive to cultivating students' clinical thinking ability and clinical operation ability.

Most medical students now grow up under the traditional exam-oriented education model. Under the teaching mode of indoctrination education, students can also master theoretical knowledge. They can also get better grades through rote memorization, but this is not good for medicine. Clinical medicine, especially obstetrics and gynecology, is a subject with high comprehensive requirements for comprehensive basic knowledge, clinical thinking, and operation skills. It is very important to cultivate students' active thinking ability, innovation ability, and clinical operation ability. Relying on the traditional teaching mode alone cannot apply what you have learned, transform theory into practice, and meet talents' needs in the new century. It is difficult to achieve the ideal teaching effect. This requires us to change the traditional teaching model to adapt to the current development of higher medical education. They are breaking the time and space limitations of students' classroom teaching and realizing a seamless learning environment that can be learned everywhere and at any time through smart device terminals. It is a supplement, expansion, and extension of teaching in school and helps to solve the difference of students' learning, and makes up for the shortage and unevenness of clinical teaching resources when a large number of students are probationary. However, seamless learning also presents new challenges for the technological environment, teachers, and students. A well-built seamless learning platform requires a lot of financial support and post-tech maintenance and can be integrated into emerging technologies at any time. In terms of teachers, the role of teachers has changed

from the disseminator of knowledge and the master of the classroom to the assistant of learning. In addition, teachers are required to skillfully use various latest seamless learning technology platforms, integrate new teaching methods and concepts into teaching, and adjust teaching content and methods at any time according to students' learning conditions. For students, self-directed learning will be the biggest challenge they face. For example, a small number of students still take task completion as the starting point and watch roughly or just use it as "background music," which does not achieve the effect of learning. This learning model mainly relies on students' self-learning ability and lacks supervision measures, which is not applicable for students with poor learning initiative (Zhou, 2020). Therefore, we can consider using a timer on the learning platform to record the time of students' learning and rank them in the class to stimulate their learning motivation and form a certain competition mechanism. In addition, a small number of students will be blindly confident, thinking that after watching the operation and operation videos, they have mastered the operation skills, which leads to ignoring the exercise of actual hands-on ability in clinical practice. Therefore, in the seamless online and offline learning model, it is necessary to combine with the traditional teaching model and clinical practice, promote each other, make up for the deficiencies, give full play to their respective advantages, and further improve the teaching effect obstetrics and gynecology.

4. Conclusion

Obstetrics and gynecology is a very important course in medical colleges and universities. Compared with other medical courses, it has more distinctive characteristics. It not only involves a deeper and wider range of knowledge but is also a relatively independent discipline as a whole. In obstetrics and gynecology, the teaching method is often adopted in the same way as other courses, which affects the students' learning effect to a certain extent. To effectively solve this problem, Jilin Medical College introduced the SPOC teaching method into the teaching process of Obstetrics and Gynecology and constructed an online and offline mixed teaching mode based on SPOC. The specific teaching process is divided into online teaching and offline teaching. Through the organic integration of each link, the two parts effectively improve the quality of students' learning.

The online teaching platform makes full use of Internet technology, aims at resource sharing, and takes the creation of high-quality digital resources as the core. Based on careful design and construction of online courses, the teachers of the course group organically combine them with classroom teaching, and implement a combination of online and offline teaching methods, showing a "teacher-led, student-centered" teaching method. Teaching mode, students' learning attitude changes from "I want to learn" to "I want to learn" this teaching method improves students' autonomous learning ability and quality.

References

- [1] Safiah, I., Degeng, I. N. S., Setyosari, P., & Ulfa, S. (2020). Design and development of seamless learning to improving learning outcome of Islamic economic course: a case study in Indonesia. *Journal of E-Learning and Knowledge Society*, 16(3), 60-67.
- [2] Gitlin, D. F., Levenson, J. L., & Lyketsos, C. G. (2004). Psychosomatic medicine: a new psychiatric subspecialty. *Academic Psychiatry*, 28(1), 4-11.
- [3] Kuh, G. D. (1996). Guiding principles for creating seamless learning environments for undergraduates. *Journal of college student development*, 37(2), 135-48.
- [4] Reinertsen, E., & Clifford, G. D. (2018). A review of physiological and behavioral monitoring with digital sensors for neuropsychiatric illnesses. *Physiological measurement*, 39(5), 05TR01.
- [5] Mason, L. L. (2019). PERCEPTIONS OF STUDENTS' TECHNOLOGY USE FOR WRITING TASKS AND BEST PRACTICE TEACHING STRATEGIES REGARDING WRITTEN EXPRESSION (Doctoral dissertation, Carson-Newman University).
- [6] Jian-Hua, S. (2012). Explore the effective use of multimedia technology in college physics teaching. *Energy Procedia*, 17, 1897-1900.
- [7] Zhang, X., Ming, X., & Yin, D. (2019). Reference architecture of common service platform for Industrial Big Data (I-BD) based on multi-party co-construction. *The International Journal of Advanced Manufacturing Technology*, 105(5), 1949-1965.
- [8] Kruger, T. F., & Botha, M. H. (2007). *Clinical gynaecology*. Juta and Company Ltd.
- [9] Zhou, L., & Li, F. (2020). A review of the largest online teaching in china for elementary and middle school students during the COVID-19 pandemic. *Best Evid Chin Edu*, 5(1), 549-567.