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Explaining Nursing Students' Experiences of a Flipped Classroom

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Abstract

Background & Objective: Nursing education requires the use of student-oriented learning techniques, such as flipped classes, to foster creative students with the ability to think critically. Given the new emergence of the educational method of the flipped classroom in the education of medical sciences, there is inadequate information about the nursing students' experiences of learning in a flipped classroom in the world, especially in Iran. This study aimed to explain the nursing students' experiences of a flipped classroom in order to provide proper strategies for nursing instructors.

Materials and Methods: This qualitative study had a conventional content analysis and was conducted on 18 second-semester nursing students, who passed the nursing unit of orthopedic diseases by attending a flipped classroom. Data were collected via semi-structured in-depth interviews, and data analysis was performed using conventional content analysis method by Graneheim and Lundman.

Results: The main theme of the study was "the effectiveness of theory teaching", which encompassed three classes of "experience of a new approach in education", "control over learning" and "interactive participation: a different experience".

Conclusion: According to the results of the study, electronic contents help students learn theoretical knowledge to solve the problems of hypothetical patients. Therefore, our findings can be used by nursing instructors to obtain positive consequences by applying the flipped classroom method.

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Introduction

Despite being criticized by the majority of education experts, traditional lectures are still the main training method in universities (1). In addition to the fast decrease in the attention and participation of learners, use of lectures might not be a suitable method for all students and there might be a low level of memorizing the contents presented (2-4). Traditional training techniques are applied in most nursing education programs, where nursing instructors play the role of transferring knowledge to students. The limitation of these teaching methods is that learners are not actively engaged in processing the information and are not able to develop the necessary insights for translating knowledge into practice (5).

In order to overcome the limitations of traditional teaching methods, instructors have turned their attention to learner-oriented methods and involvement of students in the education process as active learners (6). With the advancement of educational technologies, the desire to use online teaching methods and blended learning, which are considered as student-oriented approaches, has increased (7). Blended learning is defined as the application of different forms of technology to improve the active learning of students. In this regard, a flipped classroom is a type of blended learning and is considered as a specific educational framework, where studentslearn the materials in different forms of technology before class, followed by face-to-face communication in class to use the contents learned in various activities (8).

In the flipped classroom method, the teacher provides electronic contents containing his own or other instructors' pre-recorded lectures to students, who are obligated to review the electronic contents and be prepared for the class. In addition, students are expected to actively cooperate with and participate in different activities provided by the instructor. Therefore, a flipped classroom has the potential for focusing on different learning techniques by students (1). In this method, the role of instructors is modified since instead of having the only active role in the teaching-learning and knowledge transfer processes, they will have an interactive role in the class. In fact, instructors act as a facilitator and guide providing feedbacks to individuals and managing the education process in a collaborative manner (9).

The flipped classroom method has been widely used in other medical sciences,

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including medicine and pharmacy. Studies show that the flipped classroom method improved the academic performance of pharmacy (10, 11), medical (12, 13), and dental (14) students. In addition, there is evidence of the ability of a flipped classroom to create an opportunity for fostering critical thinking skills (15) and using the students' learning time optimally (16). However, some studies have shown the negative effects of this method on students' satisfaction (17), demonstrating the lack of obtaining better learning achievements, compared to other active learning methods (18).

In the qualitative studies carried out in this field, researchers have introduced themes such as the advantages and disadvantages of a flipped classroom, the negative factors affecting the flipped classroom (e.g., quantity and quality of educational materials), and the role of the instructor in engaging students in a comprehensive learning process and emphasizing the use of knowledge (19, 20). Little research has been conducted on the use of the flipped classroom method for nursing students. Most studies conducted outside of Iran have examined the effect of the flipped classroom method on academic performance and nursing student scores (9, 18, 21). Only two quantitative studies in the country have been conducted on the use of a flipped classroom in nursing education, in which the mentioned education technique led to the strengthening of the nursing students' critical thinking skill, and learners had a positive attitude toward using this method and preferred it to traditional methods (e.g., lectures) (22, 23).

Given the lack of qualitative research on the flipped classroom method in Iran, the present study aimed to explain the nursing students' experiences of a flipped classroom to better understand their experiences and provide appropriate strategies for nursing instructors.

Materials and Methods

This qualitative research had a conventional content analysis method (24), which provides the opportunity for explaining the classes of raw data without using pre-defined categories (25). The purpose of this method is to achieve a rich description of the phenomenon under study (26). In addition, the conventional content analysis method was selected due to the lack of sufficient contents and theories on this subject (25). This research was conducted on 18 second-semester nursing students, who had passed the nursing unit of

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orthopedic diseases by attending a flipped classroom. Subjects were selected via purposeful sampling, for which students who were eager to participate in the research and had proper communication skills to share their experiences, were selected and interviewed. Efforts were put into selecting subjects with maximum diversity regarding gender, type of residence (with family or in dormitories) and GPA of the last semester to provide a more comprehensive explanation of students' descriptions of their experiences of using the flipped classroom approach. Sampling continued until saturation of the classes.

To hold the flipped classroom, the lecturers recorded their voice in each class session, which was then provided to an expert in e-learning area along with educational slides, images, and videos. The electronic content of each session was provided using Articulate Storyline software and was provided to learners in the form of a CD. Before attending the class, the students were obligated to observe and study the electronic content related to that session. In addition, they were required to review the relevant contents in the Brunner & Suddarth's textbook of medical-surgical nursing. In fact, reviewing the electronic content and the textbook was the home assignments of the students that must have been done before attending the flipped classroom.

At the beginning of the class, the lecturer gave a short lecture about the concepts of the session. After that, a test consisting of three-five items was taken, and the instructor presented some previously prepared clinical cases to the students with the aim of applying the learned concepts in practice and according to class time. After that, questionswere raised regarding the problems ofthehypotheticalpatients. Then, the students were divided into three-four-member groups based on their personal inclination to discuss the test questions and clinical cases with their classmates. At the end of the class, the instructor gave a brief lecture summarizing the main concepts of the session.

Data were collected using semi-structured in-depth interviews carried out in Islamic Azad University, Rasht Branch, Rasht, Iran in 2016. The interviews were initiated with a general question about the students' experience of the flipped classroom. During the interviews, the students were asked to compare the flipped classroom method to the traditional teaching methods (e.g., lectures) and explain about the advantages and disadvantages of a flipped classroom and matching of the flipped classroom

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method with their learning style. Probing questions, such as "what do you mean of...", "can you explain more about...", "why", and "how", were used to clarify the responses of students and gain a deeper understanding of their experiences.

It is notable that all interviews were performed in a private room in the nursing-midwifery school of Islamic Azad University, Rasht Branch. In total, 22 interviews were carried out with 18 participants. In some cases, the researcher planned a second interview in case of a need after the analysis of the first interview. The interviews lasted 30-60 minutes and were recorded using a digital audio recorder.

Data analysis was performed using the conventional content analysis method by Graneheim and Lundman (2004). The content of each interview was transcribed immediately after the interview, and each text was reviewed several times to achieve a comprehensive understanding of the interview. Following that, the units of meaning were defined in the form of sentences and paragraphs, and the original codes were assigned. Finally, these codes were categorized in subclasses and classes based on their similarities and differences (24). After initial coding of each interview, the second researcher re-assessed the codes and made the necessary corrections if required. In the next stage, the researchers explained the classes and subclasses separately and reached census after several meetings.

The long-term engagement with the subject under study and sampling with maximum variation were the techniques used to ensure the credibility of the research. Moreover, two faculty members of Gilan University of Medical Sciences performed peer check to confirm credibility. In addition, member check method was exploited to ensure the dependability of the results. To ensure the accuracy of the data, students reviewed and confirmed the text of the interviews and assigned codes. In order to increase the transferability of the results, it was tried to describe the field, the participants' characteristics, sampling, and the process of collecting and analyzing the data.

It is worth noting that the research was approved by the ethics committee of Islamic Azad University, Rasht Branch, with the code of IR.IAU.RASHT.REC.1395.8. The researcher explained the research objectives to the participants, and a written informed consent was obtained from the subjects prior to the research. In addition, the students were ensured of the confidentiality terms regarding their personal information since the researcher promised that the results of the

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participantswouldbepublishedanonymously.

Results

In this research, the age range of the participants was 18-26 years (mean=19.83 years). In total, 12 students (66.7%) were female and six participants (33.3%) were male. In terms of marital status, 15 (83.3%) and three (17.6%) subjects were single and married, respectively. Regarding the type of residence, 10 students (55.6%) were living with their families, whereas eight participants (44.4%) were living in dormitories. Furthermore, 15 students (83.3%) were unemployed while three subjects (16.7%) were self-employed. In terms of GPA, two students (11.1%) had a GPA ≤13.99 (out of 20) and 12 subjects (66.7%) had a GPA within the range of 14-16.99. In addition, four students (22.2%) had a GPA equal or above 17.

The main theme of "the effectiveness of theory teaching" was obtained from three main classes and 10 subclasses. The three main classes were "experience of a new approach in education", "control over learning" and "interactive participation: a different experience" (Figure 1).

Experience of a New Approach in Education

This class had five subclasses of "moving from subject orientation to problem orientation", "developing critical thinking", "electronic contents as a readiness factor for classroom activities", "a step toward professionalism", and "challenges of learning by the flipped classroom method".

Moving from subject orientation to problem orientation

According to the participants, the flipped classroom was an unfamiliar approach at the beginning of the semester, and the students were required to study a large volume of materials and be prepared for the class while having difficulties understanding the purpose of the method. Over time and by being acquainted with clinical cases in the classroom and learning how to apply the knowledge gained in practice, the students moved toward anagogical learning and were turned into learners who rethink the issues in a problem-oriented manner. The statements of the participants demonstrated their moving from pedagogical learning to anagogical learning. "I had no idea what to do on the first session. After a few sessions, I understood the actual meaning of nursing, which is not just memorizing the contents and involves actual using of our knowledge to solve the problems of patients."

Developing critical thinking

This subclass shows that the educational

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method of flipped classroom encourages nursing students to think comprehensively so that they could analyze the cases by considering all care aspects and through contemplation. According to the participants, the flipped classroom helped the students think differently, critically and deeply and attain the capability of defending their ideas. The following quotes show how the learners used critical thinking as a framework to understand the complexity of cases:

"We were able to more deeply analyze each case, determine the reason for taking specific measures for the patient, understand whether it was more appropriate to perform other interventions or not, and what would be their consequences".

Electronic contents a readiness factor for classroom activities

This subclass discusses how to use electronic contents in a flipped classroom as a method for preparing and acquiring the necessary knowledge for attending the classroom for nursing students. Learners preferred electronic contents to a reference book due to the comprehensibility of the contents. According to learners, viewing and studying electronic contents in different ways prepared them for active participation in the classroom. The study of electronic contents made the class attractive to the students, and they were prepared mentally to learn about the clinical cases and be able to more properly organize the information related to the cases. The following quotes confirm this claim:

"When I reviewed the contents before the class, I had a higher self-confidence and was eager to ask different questions about the topic."

"Review and study of the contents before the class helped me better understand the practices in the classroom since the content of the book is difficult to understand."

A Step toward professionalism

Learners argued that lessons learned in the classroom would be useful to their professional activities in the future. They believed that the activities inside the classroom prepared them for patient case and employment in the nursing profession. According to the participants, application of methods such as a flipped classroom would contribute to the growth and improvement of their social role, preparing them for entering the nursing profession. "Even though it is only on papers, I think that by working on clinical cases in the classroom, we are actually in clinical situations. In this way, when we start working as a nurse, everything becomes more tangible."

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Challenges of learning by the flipped classroom approach

Students faced various challenges when learning through the flipped classroom method. The majority of learners expressed the large scale of the electronic contents and the time-consuming nature of pre-class activities. "The volume of some contents was significantly high, and we had limited time." "I do not believe that this much work isrequiredfora class that onlyhas one credit." Some students pointed out the stress caused by attending the classroom. "We had to take quizzes and participate in discussions in each session, which was stressful." In addition, some students faced technical problems when studying electronic contents. "My DVD drive did not read the DVD. Therefore, the professor gave me another one." "I had problems with my electronic contents. Then I realized that it would not work without a Flash Player. Therefore, I installed the program on my computer." In addition, learning by this method was difficult for some dormitory students. "This method is hard for those who live in dormitories and must go to the IT center of the university due to lack of access to a computer."

Control over Learning

The class of "control over learning" encompasses three subclasses of "study at the desired time and place", "self-provocation in learning", and "taking responsibility".

Study at the Desired Time and Place

The majority of students enjoyed their control over the review and study of the electronic contents. The possibility of repeating one or more parts of the contents, re-reading, interrupting and restarting the review were among the benefits expressed by learners. "I usually study the contents for 30 minutesandthen rest for a while. However, you are forced to listen to the professor for one hour and a half in the class."

Self-provocation in learning

Learners realized that "how to learn" was more important than "what to learn". The flipped classroom approach encouraged students to be active in the education-learning process instead of being passive recipients. In this method, students face several challenges in a way that is not experienced in traditional classes. According to the statements of the participants, they were able to move towards self-directed learning and spontaneity by attending flipped classrooms during the semester. The following quote shows how a flipped classroom can positively create spontaneity

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in students: "sometimes, terms were expressed in electronic contents that were unfamiliar, and we had to search the term in books or on the internet, which was good since it forced us to search more about the topic."

Taking responsibility

Students understood that taking responsibility was an essential part of the learning experience in a flipped classroom. It is notable that this term involved both students and their classmates. The statements of the learners demonstrated that they took the responsibility of learning over time. The following quote shows the relationship between the accountability of students and instructors: "In this method, I think the students must be responsible for their learning. The professor is not there to answer our questions but to guide us to find the answers ourselves."

Interactive Participation: a Different Experience

Education via the flipped classroom method led to a different experience of interaction with classmates and professors by nursing students. The subclasses of this concept included "consolidation of relations and receiving support "strengthening team work".

Consolidation of Relations and Receiving Support

A flipped classroom is an opportunity to receive support from classmates and instructors and strengthen the interactions between these individuals. These quotes show that the flipped classroom method was able to improve the support structure of students and strengthen their interactive skills: "interacting with classmates was valuable to me. I felt that I was not alone and we were able to solve the problems with each other." "Using the opinions and experiences of teammates in answering the questions of clinical cases significantly helped me to learn better."

Strengthening teamWork

Students regarded the flipped classroom technique as a factor for strengthening work in small groups formed to carry out active learning activities in the classroom. Learners understood the meaning of working as a member of a group. "It was really interesting to work with my classmates in groups. We usually do our home assignments alone. However, we solved cases with the help of each other in this course." "We were in a kind of a competition with other groups. We tried to provide the best answers and arguments with the help of our group." In terms of the effect of environmental factors

on group work in this type of classroom, one of the participants expressed: "for group work, we had to change the place of our chairs to work next to each other."

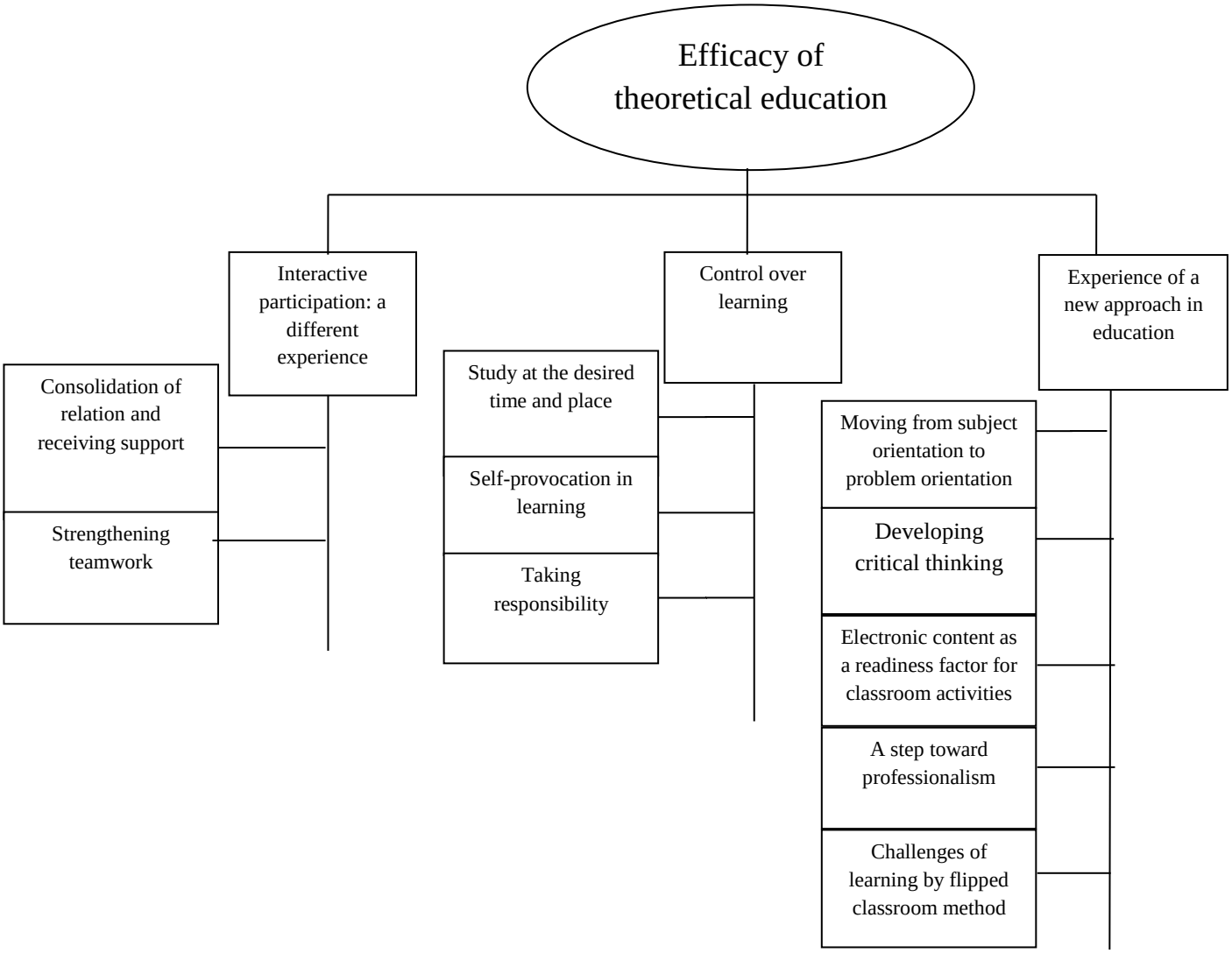

Figure 1: Categories and Subcategories of Nursing Students' Perceptions of Using the Inverse Classroom Learning Method

Discussion

The present study provided deep and rich descriptions of the perception of nursing students of a flipped classroom, which is an inseparable part of evidence-based training. According to the results, students experienced "a new approach in education", "control over learning" and "interactive participation: a different experience" by attending a flipped classroom. In the current

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research, students were familiarized with a new approach in education that directed them from subject orientation to problem orientation. In this regard, our findings are in line with the studies conducted on the flipped classroom method (27). While the students were unaware of the method at the beginning of the course, they were familiarized with the technique after a few sessions and understood its advantages. This is mainly because students resist new teaching methods since they are accustomed to traditional methods (e.g., lectures). Therefore, some studies have reported the lack of satisfaction of students with the flipped classroom method (28).

In the present study, students were somehow dissatisfied with the learning method, most important of which was the large volume of the electronic contents and time-consuming nature of pre-class activities. In this regard, Post et al. (2015) introduced the topic of time management in a qualitative research on nursing students using the flipped classroom method. In the mentioned study, the students considered watching videos of lectures of professors in addition to studying the book and taking notes during watching the video to be extremely time-consuming (20). Nursing students believed that the flipped method developed critical thinking skills in individuals. This method persuaded the nursing students to think deeply and critically. One of the objectives of training through the flipped classroom is focusing on the use of knowledge and having critical thinking skills (29). This type of classroom enables learners to practice deep thinking by linking the concepts of the course to their clinical application (30).

The learners of the present study considered the use of electronic contents in various ways as a factor for preparing for participation in class activities and even considered the importance of electronic contents for this preparation to be superior to the book. This finding shows the valuable role of electronic contents in the learning of students. In this respect, Mikkelsen evaluated the experiences and perceptions of nursing students of a flipped classroom in a quantitative research. According to the results of the study above, two-thirds of the students regarded the role of videos in their learning to be more important, compared to the book (9). However, most students complained about the length and frustrating nature of the electronic contents and the extensive time dedicated to pre-class studying. Therefore, the instructor should inform the learners about the need for more work and effort in this course and prepare

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Them for this educational method (17).

In the current research, the students pointed out the opportunity provided by the flipped classroom method to study the contents at their desired time and place. One of the subjects of the qualitative research by Hansom was "pause and replay" since it allowed students to study and take notes independently at their own pace (30). Our learners also introduced various forms of activities in the training-learning process. They even considered the absence of the professor during the study of the electronic contents as a factor for their independent learning. Meanwhile, Post et al. introduced the subject of "frustration" in their research since learners complained about pre-class learning and lack of ability to answer the relevant questions raised by the instructor during the class (20).

In the present study, implementation of a flipped classroom provided an opportunity for interactions, support, and group work of nursing students. According to our results, the flipped classroom method has the potential to strengthen group work and interpersonal communications. In other qualitative studies, the flipped classroom has not been introduced as a method for strengthening group work in nursing students. However, only in the study by Jensen et al. (2015), 14.3% of the students were satisfied with group work when asked about the benefits of the flipped classroom method (18). According to the results of the present study, the knowledge learned by students can be used in practice and to nurture critical and holistic thinking in a flipped classroom, as expressed by the participants.

Some of the negative aspects of the method pointed out by the participants can be helpful as well. Considering the length of some of the electronic contents, which took almost one hour and led to the dissatisfaction of students with the method, it is suggested that the length of the contents be reduced. It is better to familiarize students with this educational method at the beginning of the semester. Learners need to know that they must put extra work in this classroom to take advantage of the method. Otherwise, the flipped classroom will have the same result as the traditional class.

Another issue that contributes to the optimal implementation of this approach is the attention of the instructors to the learning activities of the small groups and the dynamics of the group. In addition, attention to environmental factors, including the physical space of the class and the possibility of forming small groups with the

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correct arrangement, helps to achieve positive outcomes. Similar to other qualitative studies, one of the major drawbacks of this research was the small sample size and problem in the generalizability of the results. Another limitation of the study was conducting interviews with the participants by the relevant instructor, which might have affected the responses of the learners due to the fear of the impact of negative ideas on their course grade. Therefore, the interviews were carried out at the end of the semester and after the final exams and announcing of the students' grades to control this issue to some extent.

Conclusion

Experiences of the flipped classrooms by nursing students showed that observing and studying the electronic contents before the class prepared the learners for classroom activities, enabling them to solve clinical cases with an open mind using a holistic approach. The flipped classroom method helped students apply theoretical knowledge to solve the problems of hypothetical patients. In addition, the method led students to feel less isolated and be more involved in small groups with their classmates, exchange experiences and discuss the answers to questions.

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