

## Conceptual Article

# Active learning methods used in nursing education

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In recent years; expectations, personality traits and learning styles vary between generations as a result of the changes in traditional lifestyle and the development of technology. In particular the members of generation Z, who start to use internet from an early age, are recommended to be educated with rather innovative teaching styles different from traditional education materials. Therefore, the nursing education system needs to encompass innovative methods. A qualified nursing education will also enhance the quality of health care.

Keywords: Nursing education; Learning methods; Active learning

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## 1. Introduction

The objectives of the training programs are to provide the students with cognitive, affective and psychomotor characteristics at the end of the teaching process. The cognitive goals indicate the mental characteristics that the students are expected to acquire. The affective goals indicate the desired emotional characteristics such as interest, desire, attitude, value and personality while psychomotor goals are features that involve mental-muscle coordination (Aslan, 2018). Similarly, nursing education aims at the acquisition of cognitive, psychomotor and attitudinal behaviors (Goris, Bilgi, & Bayindir, 2014; Korhan, Tokem, Yılmaz, & Dilemek, 2016). In particular, clinical practice training aims to improve the student's critical thinking, analysis, psychomotor, communication & management skills and to fortify the sense of self-esteem (Aslan, 2018). As a result of the rapid development of technology and the changes in traditional lifestyle, expectations, trends, personality traits and learning styles now vary between generations (Dogan, Tarhan, & Sunal, 2018; Erden, 2017). The members of Generation Z, the first generation of the digital world, are recommended to be educated with rather innovative teaching styles different from traditional education material due to the fact that 'they can focus on more than one task at the same time' (Erden, 2017). Therefore, it is important for nurses to be able to meet today's needs and cope with the problems brought by this new era (Kaya, 2016). A qualified nursing education, where innovative and active learning methods are used, will also enhance the quality of health care services (Bvumbwe, 2016; Esenay, 2013).

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In today's nursing education; two or more teaching methods are used together. Web-based teaching and innovative methods enable students and new graduates prepare for the nursing role. Active teaching methods are student-specific. Teaching methods that provide real experiences before the clinical practices, have been in use in nursing education (Kececi & Demiray, 2017). In this review; active, innovative learning methods and models, that are recently most used in nursing education, will be mentioned. These are peer-assisted learning, one-to-one mentorship model, web/computer-assisted learning and distance education, simulation-assisted learning, problem-based learning, values clarification, six thinking hats and portfolio. The aim of this review is to describe the role of these active learning methods in strengthening nursing education.

### 1.1. Peer-assisted Learning

Peer-assisted learning is a method where individuals from the same social group help each other's learning process by teaching and/or giving skills training to one another (Yava & Sutcu Cicek, 2016). In the peer-assisted learning method, students actively direct each other, share practices, actively participate in the discussion and feedback process. The pedagogical roots of this educational strategy are based on theorists like Piaget and Perry (Unver & Akbayrak, 2013; Wareing et al., 2018). With Piaget's theory, we can understand the nursing students' cognitive development, what and how they want, so we can arrange more effective education (Koc, Kiziltepe, Cinarli, & Sener, 2017). According to Perry; students change in their approach to learning as they progress through their education years (Taylor & Hamdy, 2013). One thing to be aware of in this method is that peer educators should be adequately informed and supported (Unver & Akbayrak, 2013; Wareing et al., 2018).

The use of peer-assisted learning methodology is recommended for clinical practice training of nursing students (Stenberg & Carlson, 2015). Through cognitive, psychomotor, and affective learning methods, this learning method enhances students' self-esteem and communication skills, help them with career-planning and learning the process of 'learning' (Unver & Akbayrak, 2013), contribute to their self-efficacies (Pålsson, Mårtensson, Swenne, Ädel, & Engström, 2017; Parchebafieh et al., 2018), leadership skills (Unver & Akbayrak, 2013; Wareing et al., 2018) as well as their personal and professional development (Abdullah & Chan, 2018). In some studies, conducted in Turkey, senior students became peer educators/instructors to first-year students. This method helped first-year students develop more advanced clinical skills (Dikmen et al., 2017), reduce their anxiety levels (Mete, Isbir, Tokat, & Vural, 2011) and had positive effect on the internal locus of control (Abaan, Duygulu, & Ugur, 2012). Although the number of studies involving the use of peer-assisted learning method in nursing education in Turkey has increased in the last decades, it is still not adequate. In nursing education, it is of significance to use peer-assisted learning method with other active learning methods and share the results accordingly.

### 1.2. One-to-one Mentorship Model

Due to the problems caused by the lack of teaching staff trained in clinical education, it has been seen fit that specialist clinicians be assigned to clinical applications and the mentorship models should be used (Cayir & Faydali, 2017). The American National Mentorship Institute (ANMI) has defined different types of mentorship as follows: One-on-one, team, group, peer and e-mentoring. The main aim of the mentoring is to supervise the student during the learning activities, to organize learning activities, to give constructive feedback, to determine the students' skills, attitudes and behaviors, to express concerns about the students' performances and to offer solutions (Ancel, 2013). In short, the mentor's role is to build a bond between theory and practice (Cayir & Faydali, 2017). The benefits of mentorship can be summarized as facilitating the student's learning, providing a supportive learning environment, developing a student-specific learning process, strengthening the profession, gaining professional competence, and developing a professional identity and attitude (Ancel, 2013). In a study conducted in Turkey, students stated that the contribution of clinical nurses to their education was low and that nurses did not take enough responsibility while clinical nurses reported that they supported the students adequately

and they considered themselves as a good role model for students in clinical education (Bicer, Ceyhan, & Sahin, 2015). In clinical learning, students' interaction with nurses and taking them as role models is an important part of this learning process (Sercekus & Baskale, 2016). It is suggested that nursing education should be carried out with the approach that there is integrity of academician and clinician and that of university and hospital (Sendir et al., 2018). The working nurses will be able to share their clinical knowledge and experiences with the students in the clinical environment, have knowledge about evidence-based practices and use them in care applications. In this way, the gap between theory and practice will be reduced. Academic and clinical cooperation will strengthen nursing education (Bvumbwe, 2016).

### 1.3. Web/Computer-assisted Learning and Distance Education

Technology supports an effective classroom environment and clinical learning when used appropriately and properly in nursing education. Especially the millennium generation is open to new learning methods in education (May, Wedgeworth, & Biggam, 2013). Distance education is the electronic delivery of education to a distant setting via satellite, video, audio, computer, multimedia technology, and similar tools. This method includes methods such as computer-based teaching, online teaching, and e-teaching. With this method, the educational needs of a large body of students are met wherever they are and whenever they want it. Web-assisted distance learning facilitates learning in comparison to rather traditional teaching methods (Ozturk, 2015). Distance learning is preferred by those who want to continue their studies while working. Poor internet connection, certain teaching methods applied by the teaching staff and some negative situations encountered in the time of examination are some of the challenges that can be experienced in the use of this method (Ozyurek, Begde, Yavuz, & Ozkan, 2016).

Having a clinical skill competence with strong theoretical knowledge is a prerequisite for the profession of nursing. In their randomized controlled study Bloomfield et al (2010), found that computer-based learning method is as effective as face-to-face education model in theoretical and clinical skills training of first-year nursing students (Bloomfield, Roberts, & While, 2010). The use of video-supported teaching in nursing education increases the quality of education (Korhan et al., 2016). According to Bloom's taxonomy, learning occurs through cognitive, psychomotor, and affective ways, therefore it is believed that youtube videos can contribute to learning in this respect. The teachers/instructors will be able to access these videos in the classroom environment and will be able to shoot videos and upload them to youtube (May et al., 2013). Aydin (2013) reported that web-based video-supported education has a positive effect on nursing students' abilities on arithmetic skills and drug dose gauging (Aydin, 2013). In a study conducted for the same purpose abroad, it was determined that this method did not have a significant effect on students' skills (Van Lancker et al., 2016).

According to the literature, mobile devices and applications should also be used in nursing education (Briz-Ponce, Juanes-Méndez, García-Peñalvo, & Pereira, 2016; Lee et al., 2016; O'Connor & Andrews, 2018; Sahin & Basak, 2017). Mobile learning ensures the use of up-to-date and accurate information, ensures patient safety, supports evidence-based practices (Sahin & Basak, 2017), and enhances learning motivation, knowledge level and working performance (Li, Lee, Wong, Yau, & Wong, 2018). Turac et al. (2017), in the context of Turkey, reported that the use of social media tools such as WhatsApp together with mastery learning model is useful (Turac, Caliskan, & Gulnar, 2017). In a study conducted abroad, it was found that learning based on mobile applications was more useful for students to learn (Lee, 2015). Considering the technology dependent feature of today's student generation, the use of web supported learning methods will increase the quality of nursing education.

### 1.4. Simulation-assisted Learning

It is important to combine theoretical knowledge with clinical practice in nursing education. Simulation enables nursing students to learn, practice and gain experience in a safe and structured environment without the risk of harm to the patient (Akalin & Sahin, 2019; Eyikara, 2016).

Simulation is a widely used educational tool in the field of medicine and nursing. It includes different methods such as virtual reality, high-quality human simulation and standardized patient. The aim of this course is to enable students to evaluate health and to establish therapeutic communication with the use of standardized patient (Oh, Jeon, & Koh, 2015). Three-dimensional organ models, plastic mannequins, advanced technology simulations, and virtual reality may exemplify the simulators used in health education (Goris et al., 2014).

In order for simulation-based training to be effective, they must be based on theories. Social, cognitive, experiential and constructivist learning theories, skill acquisition model, clinical decision-making model are the adult learning models used in the design, implementation, and evaluation of simulation in nursing education (Akalin & Sahin, 2019). Simulation is an active learning method that increases nursing students' self-efficacy levels (Oh et al., 2015), problem solving skills and learning motivations (Oh et al., 2015; Sari & Erdem, 2017) as well as motor skills (Sari & Erdem, 2017; Sendir & Coskun, 2016). In a study carried out in Turkey, nursing students stated that they were quite satisfied with the scenario-based simulation model and that theoretical knowledge transformed into practice and consolidated their learning (Aslan, 2018). In a systematic review evaluating the studies conducted abroad, it is reported that high quality simulation application increases student satisfaction (Warren, Luctkar-Flude, Godfrey, & Lukewich, 2016). Simulation applications can be used together with different teaching methods. It has been concluded that peer-supported teaching method has no significant effect on the students' clinical critical thinking skills in simulation training for pre- and postoperative care, yet it has an effect on knowledge levels (Park & Shin, 2015). In Turkey, Edeer and Dicle (2014) aimed to provide the students with knowledge and skill about pre-and-post operative patient care, based on information processing theory, by means of computer-assisted simulation (Edeer & Dicle, 2014). The development of such programs, which provide interactive training, will ensure the training of well-equipped health professionals, ensuring patient safety and improving the quality of care (Sendir & Coskun, 2016). Although there are many benefits of simulation, it has some weaknesses as well. A new method may increase students' anxiety, the creation of realistic scenarios requires time and workload, and it also involves providing appropriate conditions for the organization, regular maintenance and checks of the models and high costs (Goris et al., 2014).

### 1.5. Concept Map

Concept maps are a method that aims to present concrete data to the person by visualizing the relationships between information and concepts from general to specific (Bayindir, Goris, Korkmaz, & Bilgi, 2015). In a concept map, interrelated cases are indicated with shapes, lines and figures (Kaddoura, VanDyke, Cheng, & Shea-Foisy, 2016). Although it is a method that has been started to be used since the early 1980s, it was first used in nursing education in 1992 (Daley, Morgan, & Beman, 2016). This technique is used in clinical applications, case presentations and lectures in nursing education (Bayindir et al., 2015; Khrais & Saleh, 2017; Trevisani et al., 2016; Uslu et al., 2013).

One of the primary purposes of nursing education is to provide the students with critical thinking and decision-making skills (Kaddoura et al., 2016). In the studies, it has been revealed that the use of concept maps in nursing education increases the ability of students to make critical decision-making, focus on the most important information and care requirements (Kaddoura et al., 2016; Yue, Zhang, Zhang, & Jin, 2017), increase creativity and motivation, provide persistence (Dil & Oz, 2014) in learning and ensure holistic care (Bayindir et al., 2015). The use of concept mapping in case discussion facilitates the establishment of a cause-effect relationship and provides holistic patient care (Uslu et al., 2013). In a study carried out by Daley et al. (2017), students were asked to prepare concept maps to be used in diabetes and heart attack simulations (Daley, Beman, Morgan, Kennedy, & Sheriff, 2017). In studies in which student's opinions on the use of concept map are collected, students have reported that they can sort their knowledge about the subject in a certain way with the help of this method, that they could enrich their creativity and see a given subject



from a broader perspective (Rosciano, 2015), notice the relationships between certain concepts and acquire a critical perspective (Tunam, 2017).

The concept map is an innovative method that will facilitate students' learning process (El-Hay, El Mezayen, & Ahmed, 2018; Rosciano, 2015). It should be supported by instructors and students as a learning method (Jaafarpour, Aazami, & Mozafari, 2016; Khrais & Saleh, 2017). "The CMap Tools Concept" and "Mind Map Program" are also available for creating concept maps. The availability of the programs and the orientation of the users should be determined by carrying out different studies (Ferreira, Cohrs, & De Domenico, 2012).

### 1.6. Flipped Classroom Model

Flipped classroom model is a teaching method that has first been used in China since 2014 (Hu et al., 2018). This model has a student-focus and aims at the acquisition of skills such as accessing the knowledge itself rather than the theoretical knowledge and how to use it (Betihavas, Bridgman, Kornhaber, & Cross, 2016). This method in a way flips the conventional teaching methods. Prior to class, students learn the subject that is to be taught in the classroom via videos uploaded into various platforms and within the classroom, in-class activities are performed in order to re-emphasize and support what has been learned during the class (Kara & Gurpinar, 2018). Major in-class activities are the active learning methods such as case discussion under the guidance of the instructor, laboratory applications, games and simulations and videos (Hu et al., 2018). 'Case discussions' are the most preferred method in health care (Kara & Gurpinar, 2018). It is recommended that the standardized patient and case discussion method should be used in the ethics education in nursing (Baykara, Caliskan, & Karadag, 2014; Erkus, 2018). In the literature, the positive results of the flipped classroom model when applied during the courses such as pharmacology, anatomy, physiology (Njie-Carr et al., 2017), internal and surgical diseases nursing (Post, Deal, & Hermanns, 2015) are present. In some studies using this method, there was an increase in students' academic achievement, while others did not show a significant effect, yet the method enabled students to use critical thinking skills and time effectively (Betihavas et al., 2016). To make this easier learning method more applicable, it's important to support nursing trainers.

### 1.7. Creative Drama

Care is based on the humanistic values such as empathy, attention, kindness, loving oneself and others. Therefore, nursing students should learn how to integrate these values into the practice of care (Arveklev, Wigert, Berg, Burton, & Lepp, 2015). Drama method is used in nursing education in order to close the gap between theory and practice (Levitt & Adelman, 2010) and enable students to acquire professional values (Arveklev, Berg, Wigert, Morrison-Helme, & Lepp, 2018). The techniques, used in drama education are role-playing and improvisation (Bapoglu, Acikgoz, Kapisiz, & Yilmaz, 2011; Ulubey, 2018). In the studies conducted in Turkey, it was found that creative drama method developed (Bapoglu et al., 2011) students' critical thinking skills, and psychodrama application contributed (Ulupinar, 2014) to the problem-solving skills of the students. In the literature, there exist positive results such as increasing (Arveklev et al., 2015) the ethical sensitivity of communication (Arveklev et al., 2015; SmithBattle, 2012), critical thinking and quick decision making skills of nursing students with creative drama. It is reported that the role-playing method supports students' awareness of group work and supports peer-assisted learning (Vizeshfar, Dehghanrad, Magharei, & Sobhani, 2016). In a study in which students shared their experiences about creative drama, the students reported that their awareness was increased by this method, they were able to look at the problems by the eyes of the patients and that they could learn through experience (Arveklev et al., 2018). According to these data, it is important to use drama techniques in nursing education and to organize curriculum programs accordingly.

### 1.8. Cooperative Learning

Cooperative learning is a learning environment in which students work together in line with shared goals, with individual responsibility and commitment among group members. In such an

environment, students win and lose together. This differentiates cooperative learning from other group studies (Caliskan, 2018). In order to find solutions to the problems they face, the members of the group should be able to discuss together by exchanging ideas. Thus, students who are good at one subject will be helpful both to themselves and other members by undertaking a teaching role for the other members of the group. Students with low academic success receive corrective and complementary help from the group members. In this process, learning occurs and the acquired knowledge becomes permanent (Dogan, Bayrakceken, & Doymus, 2015).

The foundations of the cooperative learning approach include social commitment, cognitive development and behavioral learning theories (Caliskan, 2018). In a study conducted abroad, it was determined that this method increased the effective communication skills of nursing students during the internship practice (Baghcheghi, Koohestani, & Rezaei, 2011). In a different study, it has been reported that the cooperative learning method helps the nursing students develop the awareness of team cooperation, improve their skills for analyzing and solving problems and increase their knowledge levels (Chen & Miao, 2017). One of the techniques of cooperative learning methods used in nursing education in our country is the Jigsaw technique. The Jigsaw technique enables the creation of a positive learning environment, individualization of students and a sense of responsibility (Filiz, & Dikmen, 2017). In the literature, the number of related studies conducted in Turkey is limited.

### 1.9. Teamwork-based Learning

The foundations of teamwork-based learning are grounded in the cooperative learning method (Kim, Song, Lindquist, & Kang, 2016). It is one of the active learning methods with groups consisting of 5-7 students and is managed by the leadership of one or more instructors. The main purpose of the method is not only to provide learning of the education program. It additionally aims to train students to use the concepts they have learned to solve the problems they would be faced with in their profession. Preparation includes the show of preparedness and the stages of application. At this stage, the instructor and the student are given tasks and responsibilities. This method, which is frequently used in health education, increases clinical problem solving, questioning, discussion activities and interpersonal interaction (Altintas & Alimoglu, 2016). Teamwork-based learning not only increases the level of students' knowledge, it also contributes to the development of students' lifelong learning skills. In a study, it was found that this method increased the students' self-learning skills (Rezaee & Mosalanejad, 2015). Kim et al. (2016) used the teamwork-based learning method in which they used active discussions and feedback mechanisms in Korean nursing students' education and achieved positive outcomes such as an increase in the problem-solving skills, knowledge level and increase in clinical performance (Kim et al., 2016). In another study in which mental health nursing course is applied as a teamwork, the students reported that they had fun working in teams and it was found that there was an increase in the exam scores of the course (Harmon & Hills, 2015). Given that studies done using this method are limited in number, there is a need for more studies should be conducted in this field.

### 1.10. Problem-based Learning

Problem-based learning is a method in which students realize their own learning by using the principles of the scientific method to solve new, complex and challenging problems (Caliskan, 2018; Sharma, 2017). This method aims to provide students with critical thinking, problem-solving and research skills. In small groups, it is carried out with cooperative learning method (Yu, Lin, Ho, & Wang, 2015).

Gunusen et al. (2014) found that problem-based learning is important in terms of students' problem-solving skills and the development of internal locus of control according to traditional learning. Similarly, Yuksel and Oz (2018) reported that first-year nursing students' perception of problem-solving skills and their levels of adaptation to the university increased after the problem-based psycho-education program and that this method could be used in student counseling and mentorship services (Yuksel & Oz, 2018). Yu et al. (2015), in their semi-experimental study, found

an increase in students' academic achievement but no significant change in critical thinking skills (Yu et al., 2015). In a different study, it has been concluded that, when used in the concept map method; it enhances the ability of critical thinking as well as self-learning and increases the sharing among groups (Tseng et al., 2011). In a study aimed at determining the students' opinions on this method, it was determined that the majority of the students liked to share information and that their mutual speaking and discussion skills, self-learning responsibility, their questioning skills and their ability to work individually increased and their self-esteem increased. In the same study, more than half of the students reported that this method required a lot of time, challenged them and caused an excessive learning load (Cetinkaya, 2010).

### 1.11. Project-based Learning

From a student's standpoint, project-based learning is a learning approach for design development, planning and fictionalizing and, to instructors; it is a teaching method that ensures student effort within a project by making the student the center of focus. In this method, project product, student development, performance and cooperation processes are evaluated. These outputs are assessed by means such as portfolios, self-assessment, peer review, interview, observation, learning logs (Caliskan, 2018).

The project-based teaching method aims to provide students with the ability to work with individual and group, communicate and interact, plan, use technology, make decision, think independently and critically and creatively, solve problems, manage time effectively, mobilize self-control and self-efficacy and provides opportunity for the development of such traits. The application of this method includes the stages of group-forming, determining the work or problem to be addressed, determining the goals and objectives, collecting the information / literature review, preparing the content plan, synthesizing the information, the reporting and presentation of the project. In a study conducted in Turkey, it was found that project-based learning method does not have a significant effect on students' social skills (Senyuva, Kaya, & Bodur, 2015). In another study, it has been determined that this method supports individual and teamwork and it augments decision-making and problem-solving skills even if it challenges the students (Kaya, Senyuva, Isik, & Bodur, 2014). In studies conducted abroad, it was observed it yielded positive outcomes such the rise in the students' capacity for reflective thinking (Wanchai, Kaewsasri, Kuljoo, & Vichitkaew, 2018), and increase in their motivations, critical thinking and problem-solving (Wu, 2014) skills. The studies using this method in the literature are in scarce numbers, especially in Turkey. It is crucial to evaluate the results using this method integrated with other methods.

### 1.12. Values Clarification

Values are the beliefs that individuals create in accordance with moral principles. Individual and professional values in nursing affect nursing practices and the quality of care. With this approach, nursing students will realize their own values and beliefs and gain the basics of individual and professional values during their education. The methods used in this approach are as follows: cases that are designed or based on a true story, self-introspection exercises, small group discussions, reflection and online discussion groups (Deliktas, Körükcü, & Kabukcuoglu, 2016). In a study carried out in Turkey, Mert et al. (2011) applied the reflection method to nursing students. The examples given by the students are usually focused on patient responses, communication, care management, teamwork and ethical issues. As for the method, students reported that it contributed to their critical thinking, gave them a new perspective, enabled them to perform self-criticism and to prepare an action plan. In accordance with the positive results, it was decided to use this method in clinical practice and student evaluation (Mert, Bilik, Yildirim, & Ustun, 2011). In another study, it was stated that reflection allows students to review their positive or negative experiences in clinical practice and to improve their critical thinking skills positively during patient care (Tanrikulu, Erol, & Dikmen, 2016).

### 1.13. Six Thinking Hats Method

This is a method of problem-solving. Hats represent the way of thinking, and thoughts and suggestions are expressed in a systematic way. Six group members wear one of the hats in a different color (can choose voluntarily, can also wear the color given by the instructor) and say their opinion in the manner represented by the hat. If there are fewer participants, they can wear more than one hat in turn (Ulupinar, 2016). This technique allows one to look at the subject from six different perspectives and achieve the most accurate results by making a versatile evaluation. With the six-hat thinking technique, instead of focusing on a single point in the solution of problems, different opinions come forward (Yilmaz, Arici, & Dilber, 2017).

In a study, the researchers used this method to learn the students' thoughts about the care of breast cancer patients. Through this activity, students are encouraged to develop their creative thinking abilities, but also to help develop their empathic skills (Karadag & Erginer, 2008). In another study, spinal cord trauma and transplantation nursing courses were used. The majority of the students were able to empathize with the patient, to see the patient in a holistic manner, and to look at an event from a positive and negative point of view (Karadag, Saritas, & Erginer, 2009). In a study conducted abroad, it was found that the use of six hat thinking method together with the case-discussion method had a positive effect on students' learning (Yang & Guo, 2014). Compared to the traditional methods, the literature on this method which provides students with critical thinking and empathy skills is insufficient and more studies are needed in theoretical and clinical practice.

### 1.14. Portfolio

A portfolio is defined as a collection of various documents in learning products or their storage in the virtual environment in order to evaluate the development of students' abilities and academic success. A structured portfolio can be used as a tool for evaluation, education and management (Demirtas & Gogus, 2013).

It is important to evaluate the acquired knowledge and skills since the aim is the acquisitions of professional knowledge and skills in nursing education. Current assessment and evaluation approaches are assessed by assessment instruments based on behavioral learning theory. These are multiple choice, pairing, true-false type tests and do not provide the student with the opportunity to see their successes and deficiencies. In this respect, the portfolio enables the students to evaluate themselves and their level of learning and to realize their responsibilities (Demirtas & Gögüs, 2013). The use of portfolio is seen as a tool for mentoring to nursing students (Mollahadi, Khademolhoseini, Mokhtari-Nouri, & Khaghanizadeh, 2018). In a study in which an electronic portfolio (e-portfolio) was used, it was concluded that this method is more preferable in the home environment and might be time-consuming in the clinic. It was found that it supports self-learning and provides a constructive mentor-student relationship (Nielsen, Pedersen, & Helms, 2015). With the use of the portfolio, students can reinforce their self-learning through their past experiences and motivate themselves for success and development (Yalabik & Musal, 2017). It is been reported that this method improves active learning in clinical settings, develops critical thinking, helps the assessment of professional competence, yet its objective evaluation is difficult (Karahan & Kav, 2018).

## 2. Conclusion

In Turkey, active learning methods and models are frequently used in educational sciences. Although the use of these methods in nursing education has increased recently, the number of studies is insufficient. Study results in this review indicate that using active learning methods in nursing education provides positive cognitive, affective and psychomotor outcomes for nursing students. Therefore academicians and nursing students should be supported for the use of these methods. Also, more studies are needed in theoretical and clinical practices.



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