A comparison of the cooperative learning and traditional learning methods in theory classes on nursing students' communication skill with patients at clinical settings

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**Abstract**

The purpose of this study was to compare the effect of traditional learning and cooperative learning methods on nursing students' communication skill with patients. This was an experimental study in which 34 nursing students in their 2nd semester of program participated. They were divided randomly into two groups, a control group who were taught their medical/surgical nursing course by traditional learning method and an experimental group, who were taught the same material using cooperative learning method. Before and after the teaching intervention, the students' communication skills with patients at clinical settings were examined. The results showed that no significant difference between the two groups in students' communication skills scores before the teaching intervention, but did show a significant difference between the two groups in the interaction skills and problem follow up sub-scales scores after the teaching intervention. This study provides evidence that cooperative learning is an effective method for improving and increasing communication skills of nursing students especially in interactive skills and follow up the problems sub-scale, thereby it is recommended to increase nursing students' participation in arguments by applying active teaching methods which can provide the opportunity for increased communication skills.

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**Introduction**

Communication is the process of exchanging information and the process of generating and transmitting meanings between two or more individuals. The ability of communication is basic to humans, functioning and well-being (Taylor et al., 2008).

During the last 20 years, the importance of communication skills in medicine has been increasingly stressed. Effective communication is a core clinical skill that underpins every aspect of diagnosis, treatment, and care (Walsh et al., 2008). Florence Nightingale defined nursing as an art and a science that would take charge of the personal health of the person. She emphasized the importance of the interrelationship between the individual and the environment, astute observation, proper communication skills, and accurate record keeping (ENA, 1991a,b). Communication is an important part of nursing practice (Okaya, 1995) and is defined as the use of words and behaviors to construct, send and interpret messages (Schuster, 2000). It is necessary for nurses to be effective communicators so that they can deliver safe and appropriate nursing care (Ito and Lambert, 2002). The AACN has formulated six standards for establishing and sustaining healthy work environments that communication skill is one of them and express that nurses must be as proficient in communication skills as they are in clinical skills (Urden et al., 2009). Effective communication is essential prerequisites for high-quality clinical care in hospital settings, and the importance of effective patient–professional communication in this context is widely acknowledged (Wilkinson, 1991a,b). Good communication between the hospitalist and the patient and family is essential to prevent lawsuits. Poor communication can lead to angry feelings, omission or distortion of important information, and subsequent injury to the patient (Zouzis and Chiag, 2007). Poor communication and unhelpful attitudes from health professionals, particularly at the time of diagnosis, can have a lasting and deleterious effect on patients (Barraclough, 2000). Any nurse who wishes to be an effective caregiver must first learn to communicate. Good communication skills enable nurses to get to know their patient and, ultimately, to diagnose and to meet their need for nursing care. Many experienced nurses identify the quality of their interpersonal relationships as the single most significant element in determining their helper effectiveness (Taylor et al., 2008).

Nursing students should be able to communicate with accuracy, clarity and efficiency with patients and their families (including spoken and non-verbal communication, such as interpretation of facial expressions, affect and body language). To elicit and record information about health history, current health state and responses to treatment from patients or family members and to convey information to clients and others as necessary to teach, direct and counsel the nursing student must recognize, know, and practice proper communication techniques.
Many creative strategies have been developed in recent years to promote active learning, some of which encourage students to work collaboratively with peers. Cooperative learning is one of the learning methods that have social benefits as well as academic. Cooperative learning groups set the stage for students to learn social skills. Leadership, decision-making, trust-building, and communication are different skills that are developed in cooperative learning (Andrew, 1994). Cooperative learning is defined as a division for labor undertaken to solve a problem. For any given task, students divided up the work, then come together to present findings. Each student makes an individual contribution (Johnson, 1992). Cooperative learning most often involves small groups of students who contribute to each other’s learning. Student interactions lead to opportunities for improving communication skills, and more importantly, to collective problem-solving (Earl, 2009). The objectives of cooperative learning are generally recognized as the improvement of interpersonal skills, content knowledge, and higher-level thinking ability (Smith and Spindle, 2007). Through interaction students learn to interrogate issues, share ideas, clarify differences, and construct new understandings (Gillies and Boyle, 2010). Panitz (1999) defined cooperative learning as “an instructional strategy that employs a variety of motivational techniques to make instruction more relevant and students more responsible.” To be cooperative, a group must have clear positive interdependence, members must promote each other’s learning and success face to face, hold each other personally and individually accountable to do his or her fair share of the work, use appropriately the interpersonal and small-group skills needed for cooperative efforts to be successful, and process as a group how to appropriately the interpersonal and small-group skills needed for cooperative efforts to be successful, and process as a group how effectively members are working together. These five essential components must be present for small-group learning to be truly cooperative (Johnson, 1992). Small group learning offer many advantages. It allows learners to bring their own experience to the learning process and increase active learning. It encourages creativity, stimulates discussion, and has been shown to improve confidence and performance. In addition, small group encourage and assist students in developing such transferable skills as teamwork, communication, collaboration, and leadership (National Association of EMS Educators, 2005).

Continuity of group interaction is one of features of cooperative learning. Members have regular group meeting to deal with the assignment and, in turn, a social network develops (Johnson, 1992). Cooperative learning in college classes has its roots in the theories of social interdependence, cognitive development and behavioral learning (Andrew, 1994).

Some research demonstrates that cooperative learning result in higher achievement, more positive relationships among students, and greater psychological adjustment than do competitive or individualistic experiences (Panitz, 1999). However, no empirical evidence exists to answer this question if entering the nursing students to cooperative learning in theory classes can affect their communicating skills with patients at clinical settings. This paper addresses this deficiency by comparing the effect of traditional learning and cooperative learning methods on nursing students’ communication skill with patients.

Methods

Design and sample

An experimental, observer-blinded, pretest-posttest design was chosen for this study. This study was conducted during the spring and summer of 2009. The sample population for this study consisted of nursing students in semester 2 of their first year of training. All nursing students in their 2nd semester of program, studying in Arak University of Medical Sciences in Iran (n = 34) were selected, through census method.

A ‘census’ is the process of obtaining information about every member of a population. In contrast to sampling where information is only obtained from a subset of a population.

They were divided randomly into two groups, a control group (n = 18) who were taught their medical/surgical nursing course by traditional learning method and an experimental group (n = 16), who were taught the same material using cooperative learning method. The students in the each group after matching according to sex were selected using simple random sampling. For this purpose, each student in the population is assigned a number. A set of numbers is then randomly selected with units assigned those numbers being included in the sample.

The course content was identical for both sections, including the course syllabus, homework and exams: however, the traditional instruction group received primarily lecture-based classroom instruction, while experimental group participated in cooperative and active learning activities during class. Both groups had the same instructor.

Experimental groups were divided into four subgroups and students in this groups was taught based on explained guide plan in teaching books, the class was divided into cooperative learning groups of four students that remained together for the semester which helped to improve communication skills and strengthen positive interdependence among the group members.

Since heterogeneous groups promote student learning, students in the cooperative learning groups were heterogeneously arranged so no group was overly weighted with all academically strong or weak students and those with health care experience were evenly distributed. Instructor organized the four member groups so that students are mixed as heterogeneously as possible, first according to academic abilities, and then on the basis of gender. Groups included both males and females and students of different ability levels. As far as possible, different ethnic backgrounds and social classes represented as well.

On the first day of class, the students were given a pretest to assess their content knowledge thus far in the program. Based on individual scores for each content category and Grade Point Average last semester and the sex, the cooperative learning groups were devised. Also the first day of class was spent socializing the groups to develop communication and group social skills. Face-to-face promotive interaction was fostered by having the students sit facing each other so they could talk with one another and effectively work with each other’s resources. Students were frequently reminded to come prepared, having read the assignments for class.

The instructor for the active instruction methods group incorporated a variety of active and cooperative teaching methods into class sessions. These activities included Socratic questioning, paired discussion of homework assignments, paired pop quizzes, small group discussion of case scenarios, paired concept-map generation exercises, student identification of examples for concepts being discussed, and think-pair-share exercises. It’s try to involve all the students in the discussion.

For each cooperative learning group, a student who demonstrated superior knowledge of that specific content category was placed in the group as a leader. The duties of each group member were to be decided democratically by the group. The instructor gave tremendous flexibility and freedom to each group. Each group would be responsible for presenting a 15 to 20-minute review of information from their particular content category to the class. Although most groups chose to use a traditional lecture supplemented with Power-Point presentations, the parameters of the presentations were to be developed by the individual groups. In addition to oral lecture, other suggestions for the presentations included small group discussion of case scenarios, concept-map presentation. Because of time constraints, the groups were encouraged to meet outside of assigned class periods to discuss the details of the presentations.

To reinforce individual accountability and also strengthen positive interdependence among the group members, each group was allowed...
to potentially earn a total of 20 cooperative learning points through unannounced quizzes. Throughout the semester the group members evaluated each other with a weekly evaluation tool. This was used as feedback for the students to see how well they were working together as a cooperative learning group. Case studies and concept-map presentations were used to disseminate the information related to the day’s topic and were designed by the instructor assigned to teach the class.

The instructor for the traditional instruction methods group used primarily lecture-based classroom instruction.

Students’ communication skills with patient were measured in control and experimental groups once before starting teaching and once again after ending teaching with prepared tools and the data compared in two groups. The observer blinded to which group was the experimental and which was control.

**Instrument**

Communication skills of students assessed using the nursing students’ communication with patients scale (Sabzevari et al., 2006). The content validity of the instrument was established by reference to the previous research literature and by seven faculty members of nursing.

This questionnaire contained 35-item assessing nursing students’ communication with patients in hospital with 5-point Likert-type scale (yes: desirable = 3, semi-desirable = 2, non-desirable = 1; No = 0; non relevant). This section consisted of four sub-scales of beginning of interview (9 items, range of scores: 0–27), interaction skills (13 items, range of scores: 0–39) and in problem follow up (9 items, range of scores: 0–27) and end of interview (4 items, range of scores: 0–12) (Table 1). The total range of questionnaire’s scores is between 0 and 105.

The reliability of the questionnaire was acceptable (Cronbach’s alpha 0.85) as well as the sub-scales. The sub-scale Cronbach’s alphas were 0.81 for beginning of interview sub-scale, 0.79 for interaction skills sub-scale, and 0.78 for in problem follow up sub-scale and, 0.88 for end of interview sub-scale.

For analysis, absolute change score was converted to percentage change score. Percentage change score is a standardized measure that is more easily interpreted, particularly when different outcome measures with different scales are in use. Standardized mean is mean divided by the number of items.

While interviewing with patients, each student was observed by a trainer, three times in different days in the ward, and the results were recorded. In order to enhance credibility of data, each student behavior on 3 different days were evaluated. So in all the students, communication skills in the first and last 3 days of the training in clinical settings were evaluated. The questionnaire's scores range was between 0 and 105.

Data were analyzed using SPSS at an alpha level of 0.05. Descriptive analysis of frequency, percentages, mean and standard deviation were used for demographic data. Before comparisons between group means, Kolmogorov–Smirnov Test was used to test whether or not these two samples may reasonably be assumed to come from the same distribution. Also, before comparisons within group means the Kolmogorov–Smirnov test is used to test whether or not the sample of data is consistent with a specified distribution function. The analyses assumed a Gaussian distribution, therefore, independent t-test was used to compare communication skills scores between two groups and the pair t-test was used to compare the difference between the pre and post test scores in each group.

**Ethical consideration**

This study was neither mandatory, nor disadvantageous in any way for the participants. Identities were kept strictly confidential and all questionnaires were anonymously analyzed. This study had been approved by ethics committee of Arak University of Medical Sciences in Iran.

**Results**

The mean age of the participants was 20.13 years (SD 3.2, range 19–22), 50.87% of the participants were female, 21.05% (n = 12) of the participants were male in both groups.

Absolute and percentage change scores at pre-test for the both groups are shown in Table 2. The standardized mean of communication skills score of before the education were 1.49 and 1.52 in control and experimental groups, respectively.

In order to find the possible significant differences between the experimental and the control groups on the pre-test, the scores of both groups were computed and the t-test revealed that there is no significant difference between the two groups in before the education scores (P > 0.05).

Absolute and percentage change scores at post-test for the both groups are shown in Table 3. The standardized mean of communication skills score after the education were 1.80 and 2.22 in control and experimental groups, respectively. In order to, to find the possible significant differences between the experimental and the control groups on the post test, the scores of both groups were computed and the t-test revealed significant differences between the groups (P < 0.05).

In addition, independent sample t test was used to compare the standardized mean of sub-scales scores between two groups to see if there were statically significant differences between the sub-scales scores of two groups on the post test. The results showed that no significant difference between the two groups in the sub-scales scores of beginning of interview and end of interview (P > 0.05), but did show a significant difference between the two groups in the interaction skills and problem follow up sub-scales scores (P < 0.05).

In order to test whether or not there were significant differences between the subjects’ scores on pre- and post-tests, the data for each group were separately analyzed by pair t test. In the traditional learning methods group (control group) there was no statistic significant difference (P > 0.05) in mean of sub-scales before and after intervention (Fig. 1) but, did show a significant difference in mean of sub-scales of the Interaction skills and problem follow up sub-scales scores before and after intervention in the experimental group (P < 0.05), (Fig. 2)

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Examples of the Items used in measurement tool.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beginning of interview</strong></td>
<td>Item 1: Greeted patient warmly</td>
</tr>
<tr>
<td>Item 4: Treated patient like he/she is on the same level</td>
<td></td>
</tr>
<tr>
<td><strong>Interaction skills</strong></td>
<td>Item 10: Made eye contact</td>
</tr>
<tr>
<td>Item 12: Listened carefully to patient</td>
<td></td>
</tr>
<tr>
<td>Item 13: Asked informal questions</td>
<td></td>
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<tr>
<td>Item 15: Showed interest in patients’ ideas about his health</td>
<td></td>
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<tr>
<td>Item 17: Discussed options with patient</td>
<td></td>
</tr>
<tr>
<td><strong>Problem follow up</strong></td>
<td>Item 19: Encouraged patient to ask questions</td>
</tr>
<tr>
<td>Item 20: Let patient talk without interruptions</td>
<td></td>
</tr>
<tr>
<td>Item 26: Understood patient main health concerns</td>
<td></td>
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<tr>
<td>Item 27: Gave patient as much information as he wanted</td>
<td></td>
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<tr>
<td>Item 29: Explained what patient need to know about their problems,</td>
<td></td>
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<tr>
<td>Item 30: Checked to be sure patient understand every thing</td>
<td></td>
</tr>
<tr>
<td>Item 33: Spent the right amount of time with the patient</td>
<td></td>
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</tbody>
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Cooperative teaching techniques in comparing with traditional
rative learning, peer learning and group learning. We found that
for this research study to encompass cooperative learning, collabo-
communication skill with patients at clinical settings.
theory classes had positive effects in promoting nursing students'
incorporated into the program curriculum so that students have
clinical practice. Thus, a component of communication skills should be
Students may have dif

Absolute and percentage change score of communication skill subscales after intervention in control and experimental groups.

<table>
<thead>
<tr>
<th>Method</th>
<th>Traditional learning</th>
<th>Cooperative learning</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>Absolute change score</td>
<td>Percentage change</td>
<td>Absolute change score</td>
</tr>
<tr>
<td>Beginning of interview</td>
<td>15.12</td>
<td>1.68</td>
</tr>
<tr>
<td>Interaction skills</td>
<td>22.88</td>
<td>1.76</td>
</tr>
<tr>
<td>Problem follow up</td>
<td>16.29</td>
<td>1.81</td>
</tr>
<tr>
<td>End of interview</td>
<td>3.36</td>
<td>0.84</td>
</tr>
<tr>
<td>Total</td>
<td>52.15</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Discussion

Communication with patients paves the way for the nurses to
know the patients needs. Nurses’ communication skills have been
criticized for many years, and nurses’ communication skills have long
been a source of concern (Macleod Clark, 1988; Wilkinson, 1991a,b;
Heaven and Maguire, 1996; Jarrett and Payne, 2000; Navabi and Asri,
2003; Sabzevari et al., 2006).

Various surveys have been conducted to evaluate nursing
students’ communication skills. Findings from these studies suggest
that communication skills of nursing students are weak. For example,
result of Navabi and Asri (2003) study in Iran showed that the
practical activities of nursing students in the communication with
patients were medium and weren’t in the reasonable and satisfactory
ranges. In another study for evaluating the nursing students’
communication skills in different wards of a hospital showed that the
students didn’t possess sufficient skill (Sabzevari et al., 2006).

Communication skills and socialization in medical groups, espe-
cially in nursing, are very important and valuable and researches in
this field can play important role in improving nursing care quality.
Nurse–patient interaction can have a major influence on the patient
care experience and should be vigilantly considered (Shattell, 2004).

Senior students perceived a high level of stress from taking care of
patients. To minimize stress from taking care of patients, good
communication and social skills are needed. Effective communication
skills can also increase students’ self confidence in caring for patients.
Students may have difficulty in communicating within different
health disciplines and with patients from all walks of life during
daily practice. Thus, a component of communication skills should be
incorporated into the program curriculum so that students have
learnt and practiced various communication skills before their clinical
practicum begins (Chan et al., 2009).

Our study showed that cooperative teaching techniques in the
theory classes had positive effects in promoting nursing students’
communication skill with patients at clinical settings.

“Cooperative learning” is the umbrella term that has been chosen
for this research study to encompass cooperative learning, collabo-
rative learning, peer learning and group learning. We found that
cooperative teaching techniques in comparing with traditional
learning method can result in increasing communication skills
especially in interactive skills and follow up the problems domains
among nursing students. It’s necessary to mention that our review of
literature showed that this topic still don’t evaluate in nursing
students. Of course, the social benefits that accrue to students from
cooperative learning experiences have been well documented (Jordan
and Le Metais, 1997; Kamps et al., 1994). Rao et al. (2002) reported
that cooperative teaching improved interpersonal and group skills,
teamwork, communication skills and conflict management. Also,
Chinn et al. (2000) and Gillies and Ashman (2000) believe that in
cooperative learning complex cognitive communication between
students was promoting and was boosting the quality of peer
interactions and performance.

Cooperative learning is the instructional use of small groups so
that students work together to maximize their own and each other’s
learning. Interactions are crucial to the learning that occurs in groups
(Bennett and Dunne, 1991). It has been argued that cooperative
learning experiences are crucial to preventing and alleviating many of
the social problems related to children, adolescents, and young adults
(Johnson et al., 2000).

Mercer (1996), in a review of the literature on small group
collaboration, noted that a key factor that seemed important for the
success of this type of learning was the requirement that learners
communicate and collaborate to solve a problem rather than just
being allowed to do so. In effect, the task is established so the learners
have to interact to solve it. Furthermore, he noted that, if learners are
helped and encouraged to discuss ideas, they are more likely to be
active in the construction of knowledge as they learn different
functions for language in thinking and reasoning that are not likely to
arise in teacher-led discussions. In essence, there is strong support for
establishing groups so members understand that they are to
contribute to resolving the task and they are taught specific
interpersonal and small group skills to facilitate interaction among
members.

One of the essential elements of cooperative learning is the
development of social skills. Students work with classmates who
have different learning skills, cultural background, attitudes, and
personalities. Heterogeneous groups promote student learning. These
differences force them to deal with conflicts and interact with others.

<table>
<thead>
<tr>
<th>Method</th>
<th>Traditional learning</th>
<th>Cooperative learning</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
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</tr>
<tr>
<td>Absolute change score</td>
<td>Percentage change</td>
<td>Absolute change score</td>
</tr>
<tr>
<td>Beginning of interview</td>
<td>17.01</td>
<td>1.89</td>
</tr>
<tr>
<td>Interaction skills</td>
<td>24.18</td>
<td>1.86</td>
</tr>
<tr>
<td>Problem follow up</td>
<td>16.65</td>
<td>1.85</td>
</tr>
<tr>
<td>End of interview</td>
<td>4.04</td>
<td>1.01</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>1.80</td>
</tr>
</tbody>
</table>

* Significant.

Social interaction improves communication skills that become a necessity to functioning in society (Andrew, 1994).

Cooperative learning is a method to teach the critical thinking skills necessary for the transfer and use of classroom-acquired knowledge in the clinical settings (Hoke, 2005).

In our study cleared that cooperative learning results in significant improve in interactive skills and follow up the problems. This improvement in the skills can related with this topic that in this method learners acquired interactive skills and exchange of views with others through cooperating with others. So this method results in improving self-confidence, reducing shyness in learners especially in freshmen or lower educational grade. The ability to listen skillfully, and to communicate clearly, is the foundation for the nurse–patient relationship that these skill were promote in cooperative learning. Some aspects such as actively listening, paying attention, regarding with others’ right, regarding with manner of conversation, being silent if necessary, problem solving and staying on task, body language, gestures, facial expressions, eye contact, negotiate, and be kind to each other which also become a part of the communicating process that in this method will reinforce (Andrew, 1994; Panitz, 1999; Rao et al., 2002).

Cooperative learning develops self esteem of the students. Also, in small groups students can discuss content, share ideas, and solve problems (Cottell and Millis, 1992). Generally, these skills may help nursing students (especially senior nursing students) to build stronger communication with patients. In fact, training students in those social skills that facilitate group communication is accepted as a basic tenet of cooperative learning (Johnson and Johnson, 2003; Slavin, 1996). Gillies and Ashman (1997, 2000) demonstrated that when teachers do successfully stimulate high quality helping behavior, students’ communicative skills and performance are boosted.

When students work cooperatively together, they show increased participation in group discussions, demonstrate a more sophisticated level of discourse, engage in fewer interruptions when others speak, and provide more intellectually valuable contributions (Gillies and Boyle, 2010).

Students need communication with others in order to externalize their own ideas, to elaborate the presented information, to get feedback, to identify their own knowledge gaps as well as their misconceptions (Resnick et al., 1991), and, of course, in order to experience relatedness (Deci and Ryan, 2000).

However, it should be noted that any instructional method a teacher uses has advantages, disadvantages, and requires some preliminary preparation. One of the disadvantages of the cooperative learning method is that some students for example, shy students don’t work well this way. They should be to get involved with help from the rest of the group. However, shy students may feel more at ease in sharing thoughts and ideas in small groups than they would with a whole class. They can blossom when assigned to the right kind of group (Amini and marashi, 2009).

As a whole, considering total characteristics of cooperative learning, we can say that students in cooperative learning have more opportunity for acquiring communication skills to deal with problems and difficulties and for acquiring communicating skills. But in traditional learning classes, students mostly are silent and inactive and just are listener to lecturing of their professor. In other words, whenever students in cooperative learning have to pay attention to received other member ideas, in the other hands, they are responsible for offering logical and rational responses to accept or reject the ideas, and both of them are requiring observe especial framework for essential and logical communicating among all members.

Nurse educators must continually improve their teaching skills through innovation. Nurse educators need to shift the paradigm toward a more learner-centered environment. Again, cooperative learning could help educators move away from competitive or individualistic teaching methods and assessment. The author hopes this research study will help nursing science educators introduce this paradigm into the nursing curriculum.

Conclusion

This study provides evidence that cooperative learning is an effective method for improved and increased communication skills of nursing students especially in interactive skills and follow up the problems sub-scale; thereby it is recommended to increase nursing students’ participation in argument by applying active teaching methods which can provide the opportunity for increased communication skills.

Limitations

Some limitations in this study include: a small sample size and the method of sample selection. The size of the sample limited statistical power. Also, because a convenience sample was used for this study, generalizations are limited outside of the target program and should be approached with caution. A larger sample size, with perhaps a
longer duration, could allow more general conclusions about the benefits of cooperative learning projects in nursing education. However this is a pilot study, the results provide direction to continuing nursing education program planners regarding appropriate content and methodology for programs.

References

Bennett, N., Dunne, E., 1991. The nature and quality of talk in co-operative classroom groups. Learning and Instruction 1, 103–118.
Navabi, N., Assi, M., 2003. Practice rate of nursing students about communication with patients. Journal of Babol University of Medical Sciences 5(2) 48–51
Slavin, R., 1996. Research on cooperative learning and achievement: what we know, what we need to know. Contemporary Educational Psychology 21, 43–69.