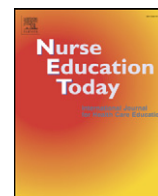


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Nurse Education Today

journal homepage: www.elsevier.com/nedt

Shaping the research experiences of graduate students using action research

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ARTICLE INFO

Article history:

Accepted 10 January 2013

Available online xxxxx

Keywords:

Graduate students

Nursing

Action research

Research methods

Jamaica

SUMMARY

Background: Nursing research capacity is often not optimal in developing countries. Capacity building at the graduate nurse level presents an opportunity for improved research output. Students pursuing a research methods course at a nursing school in Jamaica expressed fear and anxiety towards the course. Action research was used to address this fear and improve learning outcomes.

Objective: To determine attitudes towards research and to improve the experience of graduate students pursuing a research methods course at a nursing school in Jamaica.

Methods: Students ($n = 44$) registered in the Research Methods course of the MScN at a nursing school in Kingston, Jamaica for the academic year 2010/2011, were invited to participate. Each student was assigned a main supervisor and an alternate supervisor and all had equal access to the course leader and content. On completion of the course three focus group discussions of 10–14 students per group were conducted to determine how students felt about the course experience and their attitude towards the course.

Results: Thirty-seven students (mean age of 41.4 ± 1.5 years; 94% female) participated in the exploratory course evaluation exercise. The participants reported that they entered research methods with feelings of apprehension and anxiety. However, these fears were allayed by a combination of factors including interest in students' welfare, affirmation of students, respect for and understanding of students' needs and resourcefulness, and the use of a panel of experts. Barriers included faculty's unrealistic expectations of students' research competencies and the limited time in which to learn and apply concepts. While students thought the course as challenging they felt more confident that they could be successful on completion of the course.

Conclusion: Significant improvement in attitudes to research was realized among graduate nursing students using action research at an urban school of nursing in Jamaica.

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Introduction

The challenges associated with the strengthening of nursing research capacity have been recognised in several settings (Green et al., 2006). In the Caribbean nurses face several challenges in conducting research, including limited bibliographic support, lack of adequate expertise in research methodology, insufficient opportunities for graduate training, lack of research mentorship and absence of a strong culture of research (Drope et al., 2007; Edwards et al., 2009; Green et al., 2006). Additionally, perceptions of hierarchical positioning within healthcare professions, whereby physicians are typically considered “head” of the health team, have resulted in the designation of nurses as assistants or data collectors instead of leaders in clinical studies (Edwards et al., 2009; Jamerson et al., 2011). Further, nurses often have heavy clinical workloads which may be in direct conflict with the time required to conduct research (Atkinson et al., 2008).

A limited number of Caribbean nurses have benefited from training opportunities and international fellowships to strengthen research capacity in developing countries (Edwards et al., 2009). However, nurses in many developing countries lack the capacity to produce original high quality research. This is due, in part, to the perception among nurses that research is difficult; the lack of absorptive capacity for nurses to have dedicated research careers and scarcity of funds to conduct nurse-led research (Drope et al., 2007; Edwards et al., 2009; Green et al., 2006). Many graduate nursing students express fear in research due to hearsay regarding the complexity of the theoretical bases, long periods out of the academic environment and competing activities (Radke and Rideout, 2000). In the absence of adequate mentors and role models, graduates will be unprepared to initiate competitive research (Minnick et al., 2010).

Major limitations to the development of nursing research capacity in the Caribbean include financial constraints and the “changing roles and expectations of nurse educators” (Edwards et al., 2009; Segrott et al., 2006). Capacity building strategies which have been identified include; “the creation of infrastructures, fostering of research cultures and environments and the facilitation of training and collaboration” (Segrott et al., 2006, p. 637). In many developing countries these

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may not be present because of competing social and economic demands (Edwards et al., 2009; Grigg and Saxena, 2004). However, the creation of research cultures and environments may be achievable with less expensive interventions such as those directed at attitudinal change among graduate students (Hicks, 1996).

In Jamaica nursing research faces several challenges as evidenced by the low per capita output of peer reviewed articles. This is due in part to the negative attitude which graduate nursing students bring to the subject of research which is perceived as difficult and often esoteric. Nurse educators must dispel existing myths about research among graduate nursing students and optimize their capacity to lead independent studies upon graduation in keeping with the health agenda of the Caribbean. One important step is the creation of positive learning environments as students who have positive experiences in their first exposure to research are more likely to participate in future research activities (Knowles et al., 2011). Furthermore, students' expectations of success in future research are based on their perceived capacity relative to the perceived complexity and effort needed to complete the task (Weiner, 1979). The experience individuals have in a given activity or course is likely to affect the way they behaviourally respond on future occasions as explained in the Attribution Theory (Weiner, 1972, 1985; Martin and Dowson, 2009).

Background

Over the last decade nursing education in Jamaica has seen significant evolution with the transition of nursing schools from hospital based programmes to university settings. As discussed by Green et al. (2006), many of the nursing faculty in the new school did not have university level qualifications. In the study conducted in the UK, educators were given the opportunity to participate in research capacity building by attending in-house postgraduate courses; particularly those which strengthened research methodology and nursing science (Green et al., 2006). Furthermore, research capacity was further supported by conference leave and in house seminars and workshops which allowed staff to share research ideas and projects and problems (Green et al., 2006).

In 1999 a school of nursing was established as part of a major university in Jamaica. At the time of the study the school had 30 faculty members of which only three had a PhD or other terminal degrees. Further, the school had a single Senior Lecturer, a position which is based heavily on research output.

The school offers the Master of Science degree in Nursing (MScN) a part of which is a compulsory research methods course (Research Methods 1; RM1). This three credit course was designed to enhance critical thinking and analytical skills in the delivery of evidence-based nursing care; introducing students to a broad range of research methodologies. It enabled them to use the research process to answer questions which were crucial to practice. Students were required to present their literature review as coursework assignment (worth 40% of the final grade) and a research proposal (worth 60% of the course grade) at the end of the semester which fulfilled the course examination requirements. Generally, proposals for pilot studies and single case studies were submitted for ethical approval by the end of Semester 1. Successful students progressed to a second research methods course (Research Methods 2; RM2) where they submitted completed research projects for course grade. Failure to achieve a passing grade for the coursework assignment required students to withdraw from the programme for one year.

Ontologic and Epistemologic Presumptions

Exit interviews and staff/student liaison meetings revealed high levels of anxiety among graduate students regarding RM1 and reportedly there was a perception among the students that the course had a high degree of difficulty; they also had a negative attitude towards

nursing research, perceiving it as an area to be avoided if possible. Furthermore, in the previous year's offering of the courses there was a high rate of attrition due to relatively high failure rate (33%) for RM1 and a slow turnaround time on some research projects at the end of RM2. Hicks (1996) described the relationship between attitude towards research and research activity showing that nurses with negative attitudes were far less likely to conduct research than their counterparts.

Problem Statement

Given the wider context of the difficulties facing nursing research in developing countries and the strategic goal of improved research output at the university; nursing research projects were changed from pilot and case studies to projects which would result in at least one peer reviewed publication. This raised the level of anxiety among faculty as they anticipated increased challenges in Masters students progressing in the course. Furthermore, high levels of anxiety, negative attitudes towards research and high failure rates were associated with the delivery of two nursing research methods courses among MScN students at an urban nursing school in Jamaica. This study assumed that nurses were more likely to be successful in research and evidence-based practice if they have positive experiences in postgraduate research training (Weiner, 1972, 1985; Hicks, 1996; Martin and Dowson, 2009).

Faculty members sought to determine students' attitudes towards research and to improve the experience of graduate students pursuing a research methods course at a nursing school in Jamaica. Using action research, the specific objectives were to:

1. Plan and implement teaching strategies to improve the learning experience of MScN students pursuing research methods courses at an urban school of nursing.
2. Describe the experiences of students in the research methods courses through the use of focus group discussions.
3. Determine changes in the attitude of students registered in the RM1 course following implementation of student learning-centred strategies.
4. Determine measurable outcomes indicative of improved students' competence including improved pass rates and presentation of abstracts at conferences.

Methods

Study Design

This qualitative study used action research to shape the experiences of the registrants of the two research methods courses. Action research is a systematic inquiry conducted by teacher researchers to gather information about the teaching/learning process (Mill and Ogilvie, 2003). It involves deliberate actions to improve a specific aspect of teaching practice and focuses on how teachers transform teaching to have a positive impact upon student learning (Ferrance, 2000). All students (44) registered in RM1; a 3-credit course delivered over a 12-week period formed the study population. Action research requires participation from both teacher and student. This partnership between researchers and study participants facilitates the characterization of the problem and possible solutions (Polit and Beck, 2010). Participatory action research methods facilitate dialogue which can build self-esteem and motivate students increasing the likelihood of their success (Polit and Beck, 2010).

Action Research Approach

Pre-step

Prior to the delivery of RM1, the course leader facilitated reflection by faculty members; students' feedback regarding previous offerings

of the course from interviews and staff/student liaison meetings were examined. Several strategies including team supervision, creating a supportive learning environment and workshops were agreed on. Additionally, consensus was arrived regarding learning goals and copies of the course outline, assignments and assessment criteria were provided for teachers and students. Students and supervisors (faculty) were provided with a timetable of topics to enable them to plan for supervision and completion of assessments and all were encouraged to submit abstracts from their projects for peer review and presentation at conferences.

Action Cycle

Teaching Strategies

Human Resources/Team Supervision. Students registered for the course had full access to the first examiner (course leader who organized and supervised the process) and the second examiner. Based on the limited number of experienced researchers, a team of a primary (nursing teacher with greater research experience) and a secondary supervisor (junior researchers) was assigned to students for two weeks of the semester. Each team had between two and four students and a teaching assistant was employed to assist students with data analysis. The course leader acted as a resource person for all stakeholders. Students were given access to the Statistical Package for the Social Sciences version 17® (SPSS v 17) for Windows®, internet access and the support of three campus libraries.

Training Workshops. In addition to lectures, the students were involved in several training workshops on library skills, scientific writing and statistical analysis. Panel discussions which involved specialists in medical ethics, research design and epidemiology, statistical analysis and qualitative research were held. The panels included nursing faculty and experts from other disciplines at the university.

The Learning Environment. A friendly learning environment was created using the principles of andragogy and the guidelines for professional practice designed by the [Education Queensland \(2005\)](#).

The students were encouraged to identify their learning needs and to develop strategies to address them. This process assisted them in monitoring and reviewing their progress in a trusting and supportive environment. They were also assisted in developing effective communication skills required for dissemination of research findings through scheduled oral presentations.

All nursing faculty were invited to attend the presentations of students' research project proposals for the purpose of feedback. In order to ensure a supportive and safe learning environment, both teachers and students were reminded of the importance of constructive criticism; therefore, assessment was free from threat. This was an attempt at creating an enabling atmosphere and reduce fear of failure; allowing students to test new behaviours such as oral presentations in relative safety ([Smith-Stoner and Molle, 2010](#)). The process was also intended to build relationships based on shared trust and respect and to provide social support for student achievements ([Vella, 2002](#)).

Evaluation

Process and summative evaluation was facilitated by a staff/student liaison meeting three weeks into the semester and monthly meetings thereafter with both students and faculty. At the end of the course all students were invited to participate in three focus group discussions to explore their attitude and experience in the course.

Review of Records

Projects submitted (RM2) were graded by the supervisors and second marked by the course leader. High and low graded scripts were remarked by the second examiner of the course. The number of projects completed and submitted by the required deadline and

the number and proportion of the abstracts accepted for conference presentation were used to assess the quality of the projects. Success was measured by students' ability to successfully complete the requirements of RM1 and RM2 and the successful submission of abstracts at a research conference.

Ethical Considerations

The study was approved by the UHWI/UWI/FMS Ethics Committee. This intervention was conducted with the permission and full support of the school and the focus group discussions were facilitated and analyzed by an external independent qualitative research consultant. To protect the identity of the students, faculty members received only the summary reports of focus group discussions which were provided by the consultant. In addition, informed consent was obtained from each student prior to participation in focus group discussions and audiotaping of discussions.

Data Collection

Conduct of Focus Group Discussions

Three focus group discussions of 10–12 students were conducted (two for new students and one for repeating students) to determine the effectiveness of the teaching strategies employed in RM1. The students were asked to complete a 5-item questionnaire which included questions on demography, knowledge of statistics, previous failure in the course and computer literacy. They were asked how they felt about research prior to RM1; about their experiences during the course and with research supervision. Perceptions of supervision, learning environment, workshops and course assignment and content were also examined. The students were asked to state what worked well, what could be improved and whether or not there had been any changes in their attitude towards research since the completion of RM1. The results of the focus group were then shared with the students for accuracy and their feedback was used to assist in the interpretation of the data; "minimizing the potential gap between the narrative told and the narrative reported" ([Heikkinen et al., 2007, p. 6](#)).

Course Modification

The results of the focus group discussions and consultation among faculty were used to refine the interventions. This was done to avoid repetition of any negative elements in RM2. Successful students from RM1 progressed to RM2 and benefited from course adjustments.

Analysis of Focus Group Discussion

Manual notes and audio recordings were used to develop scripts of each discussion session. These scripts were further referred to the group members to verify that what was captured represented the views they expressed and adjustments were made accordingly. Two analysts worked independently to read and re-read the scripts, identifying and mapping the emerging themes. Both analysts compared notes after completing the first script and agreed on what issues were evident.

Validity and Reliability

The challenge of remaining objective in action research is important; consequently, the quality criteria for action research were used to guide the narrative of this paper as described by [Heikkinen et al. \(2007\)](#). A written summary of the context and evolution of the process was included in the introduction of the paper. The first author of the paper also played the role of first examiner or course leader and this represented the first experience in leading the delivery of the course. Therefore, other authors/faculty were invited to comment on the objectiveness of aspects of the paper and consensus obtained

to ensure objectivity. In general a positive relationship was maintained among the faculty. Direct quotes that typified elements of themes identified were used in the presentation of the findings. In addition, the independent consultant who conducted the focus group discussion, presented findings to the students for confirmation of its content.

The evaluation methods employed in the study included both qualitative (focus group discussions and interviews) and quantitative measures such as the acceptance of abstracts from students' work for presentation at conferences after peer review.

Results

Focus Group Discussions

Profile of Participants

Thirty seven (83%) students participated in the focus group discussions. Most were female (95%) with a mean age of 41.4 ± 1.5 years and 37.8% had failed the course previously. There was variability in students' competencies in computer skills, the ability to search electronic databases and basic knowledge of statistics. Most of the participants had attended all or most of the research methods classes.

Experience and Attitudes towards Research Methods 1

Many participants entered the course with feelings of inadequacy and hopelessness. These students either resolved to work tirelessly to achieve a passing grade or were resigned to going through the motions with the hope of passing to complete the requirements of the programme. For repeating students, previous failure in this subject was their justification for fear and poor self-esteem. A common emotion among this group is exemplified by the following quote:

'I felt so helpless and nervous. It really was not a nice thing to be asked to withdraw from the course when I failed. I did not qualify to continue the research and knowing that I was about to go through a similar experience made me feel numb and terrified.'

For first time students, negative emotions were triggered from: (a) feedback from previous students who told them the course was difficult to pass, (b) the demands of the course and enormous amount of new content to be learnt mainly through self-directed learning, and (c) having had negative experiences in a previous research methods course. The participants used words such as 'fear', 'apprehension', 'hopelessness' and 'anxious' to explain how they felt starting the course. For example two persons said:

'I just had a mental block because I was told it was a very difficult subject and started seeing difficulty in everything that was presented to me.'

'I was apprehensive and could not get anything done.'

The few who started the course with an open mind all reported seeing it as daunting in the initial stages when they were challenged to balance their time and intellect to get an understanding of the course content.

'I did not hear anything good or bad about the course prior to starting it but three weeks into it and I felt it was something to get me mad [insane]. The time was short, there was a lot to read and understand to be able to apply it; it was just too much. But the supervisor helped to change that.'

The Student/Supervisor Synergy

Study participants found the team approach to research supervision more rewarding than the single supervisor approach. Those who were

satisfied attributed it to good student/supervisor synergy which often involved organized meetings between parties. The assignment of experienced researchers with good knowledge of research methodology and an interest in helping students was cited as key to capacity building. Timely initiation of the supervisor/student relationship was described as critical by the repeating students. "Supervisors should be assigned as early as possible so that they can guide you from the beginning". Such arrangements left no room for misunderstanding with what was required and this enhanced students' confidence. Discrepancies in advice between supervisors led to discouragement of the students. There were also supervisors who did not give timely feedback and students who refrained from following up on work submitted (Table 1).

Quality of Course Leadership

The participants described the course leader as a common overall supervisor who acted as a buffer against negative experiences. They thought the course leader's role in encouraging positive self-talk and self-esteem and affirming students was crucial to their success (Table 1). The course leader promoted confidence and self-esteem while giving hope and triggering resiliency. Some of this was achieved through securing professional help and resources from across the campus to address specific research issues for the class.

Students' Competence and Self-management Skills

The students thought that 12 weeks were inadequate for the large volume of content to be covered and felt overwhelmed with trying to learn and apply new concepts. They also identified undergraduate research courses as weak and inadequate preparation for RM1. However, the main issues were learning to banish fears which led to procrastination, reading and searching without clear direction and setting unrealistic goals. Some thoughts expressed were:

- "Having to do research on my own for the first time was frightening."
- "I am just doing enough to pass and I don't know if I will be able to do it after the course."
- "I had problems keeping up with the reading and doing the assignments but I had to learn quickly."

Perceptions about Effectiveness of Interventions

All the participants reported that the support received during the course delivery and workshops were timely and useful. One repeating student explained, 'When you enter the course they assume that you

Table 1
Examples of expression of leadership tactics that helped to build research capacity in students.

Sub-themes	Students' quotes
• Level of interest	<i>Some supervisors are really interested in students' welfare and even when you do not seek them out they find you to determine what you are doing.</i>
• Assumptions	<i>I have a good supervisor who makes me feel as if I have some sense. I had always loved research but after hearing from previous groups I developed negative feelings but the lecturer gave her all in helping us to understand the course material.</i>
• Knowledge and experience	<i>Sometimes supervisors expect us to know things that we don't really know. They assume that you learnt research in basic training or tell you to go and read up how to do some things but reading it and doing it are two different things. We need their input.</i>
• Promoting resiliency	<i>Some supervisors are not really knowledgeable about research and so they miss weaknesses in your work and this affects your grade. Deciding when to use qualitative or quantitative was my big problem. The approach of the lecturer and the methodology used has decreased my level of apprehension. Sometimes when you feel hopeless and down after bad experiences with a supervisor the lecturer builds you up and make you feel good about yourself and believe you can really do it. The lecturer made me think that she was a student once because of her attitude to me and making me feel worthwhile.</i>

learnt research in basic training and have some skills that you don't have.'

The participants were quick to add that fear was their biggest hindrance to success and that they would seek to avoid spreading such fears to other students.

Course Adjustments

Results of the focus group discussions were shared with faculty members, thereby raising the level of awareness regarding the importance of synergistic team supervision. The supervisors were encouraged to meet with the students as a group and to share comments on manuscripts in written format. Further, the students made several oral presentations of their work in a non-threatening environment. A workshop was designed to respond to the gaps in students' knowledge regarding critical review of the literature and scientific writing.

Records Review

All except one student obtained a passing grade in RM1 and progressed to RM2. Thirty-eight students (79.1%) successfully completed research projects in RM2 while six were granted extensions of one semester. Twenty four (63.2%) research projects had abstracts accepted for presentation at research conferences in 2011 after peer-review.

Lessons Learnt by Faculty

Feedback from faculty was mainly favourable with an acknowledgement of the need for further strengthening with regard to research skills. The management of the process of building research capacity remains challenging and appears to be essential if we are to be successful. Multifaceted interactions between teaching responsibilities, clinical supervision, personal goals as well as other activities in the school must be strategically managed and incorporated into research capacity building initiatives of the school with full stakeholder participation.

Discussion

Action research allowed teachers at a school of nursing in Jamaica to respond to the expressed needs of students in combating fear and apprehension associated with a research methods course based on empirical evidence. They created a supportive learning environment which resulted in a significant increase in the number of students who successfully completed the course and in major changes in their attitude (Seib et al., 2011). A positive attitude towards research is an effective incentive to engage in research activity (Hicks, 1996). Furthermore the process empowered faculty members and assisted with development of research capacity of all involved.

Students entered the course with feelings of inadequacy and hopelessness and used words such as "fear", "apprehension" and "anxious" to describe their attitude towards the research methods course. However, the creation of an enabling learning environment reduced fear associated with research while resulting in improved pass rates and output. Fear and intimidation were commonly reported among females in higher education settings and by students exposed to curricula with high content saturation (Forbes and Hickey, 2009; Merriam, 2001). Anxiety and self-confidence were shown to affect self-directed learning which is essential to the successful conduct of research (Mala-Maung et al., 2007; Oliveira and Simões, 2006). Fear forces learners to depend on their environment for support, but belief in their abilities can reduce the degree of fear experienced in learning contexts and consequently enhance attempts to direct their own learning (Caprara et al., 2008).

The early assignment of supervisors and their having an interest in helping students were cited as key to capacity building in research. While supervisors were assigned in previous deliveries of the course this was strengthened by creating the relationships very early in the

semester; thereby reducing the initial high levels of anxiety with which students entered the course. The team approach to supervision of students strengthened the research aptitude of both students and staff in this setting. This approach was described as essential to strengthening research capacity in low and middle income countries (Edwards et al., 2009). Students who expressed satisfaction with research supervision described good student/supervisor synergy and a supportive environment as crucial to their success. Similarly, Taiwanese doctoral nursing students were more successful in a research course following exposure to a supportive learning environment and high levels of participation among faculty members (Lou and Chen, 2008). In contrast, discrepancies between supervisors or difficult relationships were seen as barriers to success. Implementation of additional training of nursing faculty members in mentorship may be another strategy for enhancing this process (Edwards et al., 2009).

The supportive learning environment employed by the course leader and supported by faculty in settings where students presented their oral presentations was reported as successful by students. Positive perceptions of the teaching and learning environment directly influenced both academic achievement and qualitative learning outcomes among university students (Lizzio et al., 2002). Participants in an Australian vocational training programme reported that they "liked teachers to be friendly, treat them as adults and to show concern" (Choy and Delahaye, 2002, p. 6). In the current study the students suggested that lecturers promoted positive self image by encouraging positive self-talk and acknowledging their incremental successes. They suggested it was important that the supervisor demonstrated concern for their welfare by appearing interested in their progress. Supportive learning environments may also have positively influenced student's motivation and is an important part of creating a research culture and a research environment (Segrott et al., 2006; Schell, 2006).

Study participants exhibited a strong sense of determination and willingness to work hard and to make sacrifices in order to be successful as seen among South African postgraduate nursing students (Essa, 2011). Despite high levels of anxiety, fear and poor self-efficacy graduate students were aware that postgraduate studies involved hard work, dedication, good time management and high levels of motivation as supported by the Attribution Theory (Martin and Dowson, 2009). This presented a challenge to faculty who must endeavour to find the best fit for students; task should not appear overwhelming relative to students' competencies. In this study the quality of the learning process may have been affected by the reported variability in the students' competencies in computer skills and ability to search electronic databases. This was reported as limiting research capacity in developing countries (Grigg and Saxena, 2004). The workshops and expert panels addressed some of these gaps and appeared to have facilitated confidence building. However, strategies to better assess students' competencies may be needed before or at entry into the programme (Essa, 2011).

While this study addressed some aspects of research capacity building which were initiated at the level of the course leader further action is required by the leadership of the school in nurturing and supporting research (Segrott et al., 2006). This is particularly important in fostering a research culture and environment, facilitation of training and collaboration and creation of research infrastructure (Segrott et al., 2006). The training of research students who are now more likely to continue research after graduation will enhance these leadership efforts.

Conclusion

The study participants identified four clear enabling factors that reduced fears and improved attitude towards research, which includes the following: the quality of course leadership, faculty members' interest in students' welfare, the affirmation of students, the level of respect

for and understanding of students' needs and the direction of students to additional resources.

While the students appeared to have exhibited strong determination to do well they were hampered by high levels of anxiety, fear and poor self-efficacy. The participants acknowledged that fear was the biggest hindrance to success in the programme and they planned to avoid spreading such fears to other students. Strengthening of the research component during undergraduate training to enable better outputs at the graduate level was suggested by the study participants. Significant improvement in the attitudes of graduate nursing students to research was realized through provision of expert guidance and the facilitation and creation of a supportive learning environment.

The faculty thanks all the participants in the action research process which allowed both students and faculty to reflect on issues affecting the learning process with the goal of improving the learning process. Despite efforts employed to address possible bias we note that truth in interpretation of narrative data requires continuous dialogue (Heikkinen et al., 2007). More research is needed to determine the effectiveness of specific teaching strategies.

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