



# The use of near peer teachers in the radiography program at Monash University

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## ABSTRACT

**Introduction:** This research investigated the perceptions of fourth year students as near peer (NP) teachers, and second year NP learners during a pathology unit in the Bachelor of Medical Imaging and Radiation Sciences at Monash University.

**Methods:** A systematic review of literature was undertaken to inform the research design. Semi-structure pre- and post-teaching interviews were conducted with four NP teachers. An online survey was conducted with 50 second year NP learners. Quantitative data was analysed using Microsoft Excel. Interview data and 64 free text comments in the online survey were analysed using NVivo.

**Results:** NP students felt there were significant benefits being involved in the NP program, including an explanation of concepts and complementary teaching to lecturers. Three of the free text comments outlined a negative perception, although in each case the comment related to the student's individual learning style rather than being negative against the program.

**Conclusion:** The benefits to learners in a pathology course was consistent to those identified within the literature. Students perceived benefits in terms of content delivery, interaction and communication. Recommendations were made about the organisation and design for future cohorts.

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## Introduction and background

Near peer (NP) teaching involves students teaching other students who are two to five years less advanced in their academic program.<sup>2,10,11</sup> This style of teaching improves academic performance of both the teacher and the junior student. Additional benefits include increased confidence and reduced anxiety for the learner as a result of increased academic and emotional support. The concept has been accepted practice for 30 years although there is limited research on the perception of benefits by students involved.

Peer teaching is an integral part of learning and has been identified as a key teaching methodology used in primary and secondary school education since the 1960s.<sup>1,2</sup> The use of peer teaching has been found to be advantageous for both students and teachers.<sup>1,3–5</sup> Peer teaching is used extensively in healthcare educational programs including nursing, paramedic, radiography, bioscience and medicine.<sup>5,9,10,14,15,18,21</sup>

Peer teaching is the practice of students assisting other students in learning material with the goal of increasing understanding, knowledge and skills.<sup>6,7</sup> Peer teaching can be subdivided into various structures and formats that include group peer teaching, tutor–student interaction and problem-based learning.<sup>3,8,9</sup> Peer teaching incorporates a number of educational constructs with various names including peer-assisted learning (PAL), peer tutoring, peer mentoring, team based learning and reciprocal peer teaching.<sup>1–3</sup> The more common term PAL, involves students of similar age and knowledge level, working together in a small group to explore challenging concepts or course material.<sup>3</sup> In contrast to PAL, NP teaching involves advanced students teaching less advanced students within the same or similar educational programs.<sup>2,10,11</sup> For example, NP teaching is final year medical students teaching first year medical students.<sup>2,5</sup> NP teachers are usually two to five years more advanced in their academic program than NP learners.<sup>1,4,12</sup>

NP teaching has been found to improve academic performance which is reflected in student grades.<sup>3,5,6,13,14</sup> It has been suggested that this is because NP teachers are able to understand and meet the learning needs of NP learners, due to their own recent learning experiences with similar content.<sup>6,12,15</sup> It has also been found that

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NP teachers are able to act as a filter to mediate the copious amounts of material presented in textbooks or by senior academics with a more complex and advanced knowledge base and research interest.<sup>7,9,16</sup> There is a consistent theme throughout the literature that NP teachers convey the main concepts of the material<sup>3,4,6</sup> facilitating a better grasp of new content covered in lectures. This ultimately leads to a more complete understanding of the subject resulting in improved examination scores.<sup>1,5,17</sup>

In addition to the improved academic achievement, NP learners also gain general survival skills and self-confidence through the emotional and motivational support and reassurance provided by NP teachers.<sup>3–6,9,18–20</sup> A reduction in anxiety and an increase in support and friendship networks has been found with NP learners.<sup>5,9,18,21,22</sup>

In health care, the ability to apply didactic learning in the clinical setting through the demonstration of ever more complex clinical practice skills is key to success. Schiff and colleagues (2014) found that NP learners improved their clinical practice skills and achieved competence with greater ease.<sup>9,21</sup> In a study by Best and colleagues, involving 130 paramedic students and 13 NP teachers, case-based simulation and role-playing helped the learners to develop enhanced patient assessment, communication and technical skills to enable them to manage emergency situations or trauma incidents.<sup>21</sup>

Although peer teaching has been around for at least 50 years, and NP teaching has been identified in the literature as a teaching methodology for almost 30 years, there is little research on the perception of the perceived benefits of NP teaching with both NP teachers and learners. Most studies have focused on quantitative data such as improved grades. Furthermore, a search of the academic literature has resulted in no studies conducted specifically on radiography students.

## Aim

The project investigated the perceptions of both NP teachers and NP learners enrolled in a radiation biology subject in the Bachelor of Medical Imaging and Radiation Science at Monash University. Specifically, the project considered NP teacher role satisfaction and perception of their NP teaching ability and preparation. The study also considered NP learners perceptions of their grasp of the learning material, comfort and engagement level with this methodology and whether they as students taught by this method would volunteer to be NP teachers in the future.

## NP teaching at Monash University

In semester one, 2015, four fourth-year students volunteered to be NP teachers for Radiologic Biology 3, a second year, first semester subject that included seven two-hour tutorials. The tutorials, facilitated by the NP teachers, utilised an applied learning approach that was structured around case studies relating to the lecture material. There were two tutorials each week with 37 students enrolled in each. The four NP teachers worked in pairs to support each other in preparing and teaching the material to the NP learners. The aim of pairing the NP teachers was to reduce the burden and to provide peer support. The NP teachers were encouraged to maximise their individual teaching strengths either through facilitating small groups, working one-to-one with learners or providing instruction and direction for the larger tutorial class. This structure also allowed for maximum interaction between NP teachers and learners.

Within the tutorial, NP learners were assigned to subgroups that led the discussion of the weekly case studies available through the online learning system. To assist the NP teachers a weekly guide

was developed that included anticipated student questions and suggested responses.

NP learners were provided with unit content including journal articles and were expected to come to class having read the unit materials for that week. Learners were advised prior to the start of term that they would be participating in this pilot project. Learners had the opportunity to withdraw from the pilot if they wished. There were 74 learners enrolled in the unit and 73 successfully completed the unit.

## Methods

This study adopted a mixed methods approach. Ethics approval to conduct this research was provided by Monash University Human Research Ethics Committee. Data was gathered in three ways: a literature review, interviews and via a questionnaire. The first method was a thorough review of the literature. This review was undertaken to inform the research project and the design of the survey tool and interview questions.

The second method was interviews of NP teachers. Semi-structured pre- and post-teaching interviews were conducted with the four fourth-year volunteer NP teachers. Pre-teaching questions were open-ended and related to previous teaching experience, motivation for becoming a NP teacher, and expectations including any identified concerns about the activity. These questions were based on themes identified in the literature review about emotional support and confidence in teaching. Post-teaching questions focussed on the outcome of the experience. These questions included a reflection on the pre-teaching responses, as well as questions about the experience of being a NP teacher and whether students would recommend NP teaching to other fourth year students in the future. The interviews were conducted by an independent person from within the University, experienced in conducting interviews. The interviews were face-to-face and took between ten and 15 min each. Responses were digitally-recorded and transcribed. Themes were interpreted using NVivo Version 11 (QSR International, Burlington, MA). Themes emerged from an analysis of interview responses, which were coded into nodes based on key words including: teaching experience, emotional impact, and personal learning.

The third research method was a non-identifiable online survey using Qualtrics (Qualtrics, Provo, UT) for NP learners. Qualtrics is a subscription software company that allows for the construction of online surveys and collection of statistical data. Fifty second-year learners completed the online survey at the completion of the NP teaching activities. There were 11 statements to which NP learners indicated their agreement using a five-point Likert-type scale from strongly agree to strongly disagree. A “don't know or not applicable” response was also provided. The statements were developed based on the general themes identified in the literature review. The survey was piloted with academics from the research team, and some ambiguous words were modified to make the statements clear. Statements related to learning experience, emotional support, and interaction with NP teachers. The statements were written in neutral terms to avoid value-laden statements. Learners also had the opportunity to provide a free text comment if they wished. Quantitative data from the survey were analysed using Microsoft Excel. Sixty-one free text entries were included in the survey responses. These comments were analysed thematically using the NVivo software.

## Results

The initial interview of the fourth year NP teachers asked about their prior knowledge of NP teaching. All four NP teachers had a good understanding of what was expected and recalled being taught in this way earlier in their programme. With respect to

previous teaching experience, only one NP teacher had taught before and this was with young children learning Tai Kwan Do. With regard to their reasons for volunteering, all four mentioned their own positive experience with NP learning when they were second year students and three thought it would help with their own revision and would reinforce their knowledge. Two NP teachers felt nervous about teaching the second-year students. Two NP teachers thought it would be a rewarding experience.

In the NP post-teaching interview the NP teachers all found it to be a positive experience: “enjoyed the experience” “There was nothing I didn’t like-enjoyed working with students”, “really good experience”. Three of the NP teachers also felt they developed a good rapport with the students in that they “related to the students” “became friends – say hi if see students on campus” and that they “could give them advice about their future work experience”. The NP teachers also saw benefits in their own learning and found that the NP teaching helped them to “consolidate personal learning”, was a “good revision”, and that the “the process helped with own knowledge”. All of the fourth year NP teachers would recommend this activity for future fourth year students in the radiography program.

Of the 74 second-year radiography NP learners in the Bachelor of Radiography and Medical Imaging program at Monash University, 50 completed the online survey (a 67.5% response rate). Overall, students perceived the NP learning experience in a positive way. Forty-three (86%) NP learners found that the NP teachers explained the concepts and theory in ways that helped them to understand the material; 23 (46%) NP learners were more comfortable asking questions and seeking explanations from a peer student teacher than from the lecturer; 30 (60%) NP learners felt that the NP teachers complemented the lecturer’s teaching; 31 (62%) NP learners indicated that having NP teachers allowed for more interaction in the lab; 42 (84%) NP learners found the NP teachers were knowledgeable about the subject area and were well prepared for the labs; 45 (90%) NP learners found the NP teachers interacted with the students in the labs; 30 NP learners (60%) would recommend this type of NP teaching for other study units and felt that it could be used for other aspects of their study. Responses from 32 (64%) NP learners indicated that they would volunteer to be an NP teacher in the future if there was an opportunity and 28 (56%) learners thought that being involved in the NP teaching program was exactly what they expected.

Sixty-four free text entries were made. Of these 64 entries, 21 NP learners indicated that they found the NP learning to be a valuable experience with four providing positive feedback on the teaching ability of the NP teachers. A further four NP learners indicated that additional NP teaching sessions should be incorporated into the unit. One NP learner commented that it was a “Good and valuable experience that should be continued”. Another NP learner indicated that the “peer student teachers were easy to talk to and knowledgeable” and that the NP teachers “facilitated my learning”.

With regard to less positive comments, three of the 64 entries suggested that NP was a negative learning experience. In each case, the negative comment related to the NP learner’s individual learning style rather than a negative comment about the program. Of these three comments, one NP learner indicated that they didn’t feel that they learned as much as when they were with the senior lecturer, another thought it was an ineffective teaching method and the third indicated that they preferred to learn with peers at their own year level rather than being taught by the more advanced students in the program.

With regard to the structure, organisation, preparation and space utilised for these sessions there were quite a few suggestions for improvement. Five NP learners found the space used to be overcrowded, while four NP learners felt there should be better

organisation and provision of instructions. With regard to the structure of the sessions, there were 18 comments. The NP learners were expected to read journal articles in advance of the NP teaching sessions. The free text comments revealed that majority of NP learners did not read the articles in advance, requiring them to take up time in the NP sessions to do so. This may relate to the comment regarding the need for better instructions on the pre-reading requirements or alternatively be reflective of a general lack of preparation and pre-reading by NP learners in the program.

## Discussion

Although this study is limited in size and scope, three themes emerged in relation to implementation of NP teaching for radiography students: learning experience; emotional support; and interaction between NP teachers and NP learners. These themes are consistent with existing research in the use of NP teaching in the healthcare industry.<sup>6,23–25</sup> Both NP learners and NP teachers acknowledged that this method of teaching provided an engaging and collaborative way to learn. Previous research has shown that NP teaching provides a more comfortable learning environment and helps students to feel less anxious.<sup>23,24</sup> When learners are anxious and uncomfortable, it is difficult for them to focus and engage. Our study found that the NP learners considered the NP teachers easy to talk to and approachable, more so than the traditional lecturers. NP learners overwhelmingly agreed that they were comfortable asking questions and seeking explanations from the NP teachers. Further, the emotional support provided by the NP teacher was an added bonus, a by-product of shared experience rather than an overt attempt for NP teachers to act in a dedicated supportive role. The support emerged naturally as a result of the interaction between teacher and learner and was a point of difference to the usual teacher/learner relationship. The literature suggests that close social congruence found in the near-peer teachers and learner relationship results in a better appreciation and understanding of the demands placed on the student in a program. This social congruence allows NP teachers to provide feedback and advice to the NP learners based on their own recent and similar experiences.<sup>25</sup> In our study the NP teachers found that they were able to develop a rapport with the NP learners and that they could give the NP learners advice about both their program and future career.

It is important to note that the NP teachers that participated in this study were selected based on both their academic and interpersonal skills. The literature suggests that rigorous selection criteria is needed in NP programs to ensure that the NP teachers have sound theoretical knowledge of the subject matter.<sup>4,10,13</sup> Recognising that NP teachers usually have little or no formal teacher training, it has been suggested that it is important to provide oversight and guidance. Teacher training programs can help to compensate for this deficit.<sup>23</sup> Although this study did not provide such training for the NP teachers, they were nevertheless considered to be well-prepared and able to explain concepts in a way that elicited understanding with the NP learners.

Our study found that NP teachers also benefitted from the experience in that they were able to consolidate and refresh their own knowledge while they prepared for their NP teaching sessions. This is consistent with the other studies that have found that NP teachers gain a deeper understanding of the material they teach and that they are able to consolidate their knowledge through the NP preparation and teaching process.<sup>25–27</sup>

Challenges to the success of NP teaching identified in the literature include a lesser knowledge base and level of expertise of NP teachers when comparing them to senior faculty and teaching staff.<sup>28</sup> The literature also suggests that a lack of teaching experience with NP teachers can impact the success of NP teaching

programs.<sup>23</sup> These challenges were not evident in our study but that may be because NP teaching sessions were used to compliment the senior lecturer's teaching and adequate preparation for the NP teaching sessions was carried out. Any future expansion of NP teaching in the Monash Radiography Programme should take this factor into consideration.

A further limitation of this research is that no quantitative data was gathered regarding academic improvement with this cohort. Ideally, future research should include crossover cohort studies and longitudinal research to fully explore the tangible benefits of NP teaching programs on student success. This would justify broader implementation of NP teaching in other radiography educational programs.

The Radiography Program at Monash is relatively small and close-knit. Some of the disadvantages identified with NP teaching in the literature, such as a lack of respect for peers, did not emerge with our study. In larger health science programs, where students may not be entering the same discipline or where they perceive themselves to be in competition with one other, this aspect may be more evident. With our study the main disadvantage identified with the NP teaching sessions related to students' preferred learning style, and this disadvantage was found to be a very minor impact for the cohort.

## Conclusion

Overall, the integration of NP teaching clearly benefited the second-year radiography students. However, it was also apparent that consideration of the structure, design and preparation of the teaching sessions was required. The learners identified consistent points to what exists in current literature for similar professions, including the ability to relate to the near-peer teachers, better engagement with the learning material and comfort with this type of learning environment. Although the sample size was small, this study indicates that with improvements in design and organisation of the NP teaching sessions, NP teaching can be beneficial in the delivery of radiography programs.

## Conflict of interest statement

None.

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