Students’ perspectives of using the hub and spoke model to support and develop learning in practice


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Abstract
The hub and spoke model is one approach to nursing students’ practice learning, which involves a base practice placement (hub), from which the student’s learning is complemented by additional activities (spokes). This model has been integrated into Edinburgh Napier University’s undergraduate nursing programmes since 2011, and it is considered to enhance practice learning.

Aim To explore the characteristics of the hub and spoke model that support nursing students’ learning and enable them to improve their understanding of a person-centred approach to care.

Method The study involved nursing students from two fields of practice – child health and mental health. A mixed methods approach was used, using a questionnaire and three focus groups.

Findings A total of 24 students completed the questionnaire, while 27 students participated in the focus groups. The questionnaire results indicated that participants were able to undertake spoke activities in their practice, which enabled them to understand communities’ issues and to better understand their learning competencies. Three themes emerged from the focus groups that encapsulated participants’ experience of hub and spoke learning in practice: value for learning, making connections, and organisations and systems.

Conclusion There were several positive effects on nursing students’ practice learning as a result of the hub and spoke model approach to practice learning. Students valued the option of undertaking a ‘different’ placement experience that offered them the opportunity to view connections to the wider patient healthcare journey and understand the influence of the community on patients’ health and well-being.

Keywords
hub and spoke model, nurse education, nursing students, practice learning, professional development, research, student experience, undergraduate nursing programmes

PROFESSIONAL REGULATIONS STIPULATE that 50% of undergraduate nursing programmes must be dedicated to learning in practice environments (Nursing and Midwifery Council (NMC) 2010), which can significantly enhance student learning and professional development. Learning in practice can be organised in a variety of ways. Campbell (2008) reviewed practice learning models used in health and social care professions, identifying several core approaches to organising practice learning. They identified that the most typical model used is the rotational model of practice learning, which involves students undertaking a series of placements that have no connection to each other. Campbell (2008) found that while this model provides a range of experience for nursing students, it also tends to erode their confidence, since frequent and repeated new starts in unfamiliar
The majority of students’ practice placement experiences continue to be in secondary and/or acute care settings (Shelton and Harrison 2011), despite changes in healthcare provision that emphasise community care. For example, 87% of people spent their final six months of life in their homes or in a community setting rather than a hospital setting in 2016/17 (Information Services Division 2017).

For the purpose of this article, a hub is the base practice placement, from which a student’s learning is complemented by spoke activities. Examples of spoke activities could include following a patient to the operating theatre from a surgical ward and remaining with them during their postoperative recovery, or working with a nurse specialist to visit such patients before they are admitted to hospital. These spoke activities can range in length from a few hours to two or three days, depending on how this learning can be applied to the patient’s healthcare journey and the student’s learning. There is no requirement for the student to be allocated a mentor during spoke activities, because they are relatively short in length and do not require student assessment. However, spoke activities may be supervised by a registered healthcare professional, who can give feedback to the student’s hub mentor.

Levett-Jones (2005) explored the idea that self-directed learning for students was valuable, but only when students and teachers were adequately prepared. This suggests that the involvement of both academic and clinical staff in practice could enhance the hub and spoke model by considering available spoke learning experiences and providing guidance for students.

One concern that has been raised is that the majority of students’ practice placement experiences continue to be in secondary and/or acute care settings (Shelton and Harrison 2011), despite changes in healthcare provision that emphasise community care. For example, 87% of people spent their final six months of life in their homes or in a community setting rather than a hospital setting in 2016/17 (Information Services Division 2017), and a total of 59,780 older people received home care in Scotland in 2016 (The Scottish Government 2016). Furthermore, government policy is increasingly driving forward the integration of health and social care services, and education providers must provide flexibility in practice learning to support this change (NMC 2010, Department of Health (DH) 2013, Public Bodies (Joint Working) (Scotland) Act 2014).

This move towards providing care in the patient’s home, or a home-like setting such as a care home, has encouraged nursing curriculum developers to explore other settings for practice learning. These changes to nursing curriculums may also enable students to focus on the whole person as an individual and not only as a patient in an acute hospital setting.

The acquisition of competence in learning is dependent on several variables. In particular, it is necessary for students to feel a sense of security in the placement area to fully develop the skills required to meet their competencies as nursing students (Levett-Jones and Lathlean 2008). Roxburgh et al (2012) demonstrated that organising a hub and spoke model of practice learning can improve students’ understanding and support growth in confidence. This is in contrast to the rotational model of practice learning, since the hub and spoke model reduces the number of movements between disconnected placements by ensuring allocations ‘fit together’, either by patient group, geographical location, or the modules in their undergraduate nursing programme. Using this approach enables students to see the logical movement and patients’ healthcare journeys between placement areas, and provides flexibility in achieving practice learning objectives.

Early findings suggest that, in general, nursing students exhibit increased understanding when the hub and spoke model is incorporated into their practice learning (Roxburgh et al 2012). Overall, the hub and spoke model of practice learning has become generally accepted in nurse education as a ‘value-added’ model to learning, since it provides the opportunity for improved student learning.
experiences that can also enhance a person-centred approach to care.

Background
There are various forms of the hub and spoke model that can be used; however, the quality of these various forms of the model may become diluted as a result of organisational and capacity issues of universities and placement providers. In addition, restrictions of placement areas, regulatory requirements and curriculum demands can result in a significantly reduced version of the hub and spoke model being implemented. If this occurs, practice learning experiences might become short, disjointed and disconnected, and prioritise the administrative and curriculum demands of the programme over the effectiveness of student learning. Thus, the hub and spoke model requires further exploration to identify the core characteristics of the model that best enhance, support and develop student learning in practice, ensuring only effective variations of the model are used.

Hub and spoke models of practice learning have been used in Edinburgh Napier University’s undergraduate nursing programmes since 2011. In this university, hub placements are always predetermined by the university, while spoke activities can be pre-determined by the university or negotiated on an individual basis between the hub mentor and the student. If they are negotiated on an individual basis, this involves the hub mentor liaising with the spoke supervisor to ensure the student’s selected spoke activity is congruent with the module learning objectives. To further support this, the university provides guidance on the appropriateness of the spoke activity for students and mentors.

The level of student learning in the hub and spoke model depends on their degree of connection with three areas: the community; the patient journey of health and ill health; and the student journey of learning (Roxburgh et al 2012). Thus, mentors, students and the university should all aim to accentuate these areas with any variation of the hub and spoke model used.

In Edinburgh Napier University, a field approach is taken to practice learning, in which each field of nursing uses additional spoke activities to enhance the individual learning of a student. This field approach is usually ad hoc and arrangements are made in accordance with student requirements. Each of the fields of nursing – adult, learning disability, mental health and child health – have developed placement experiences in slightly different ways to reflect the requirements of their patient population, with a range of distillations of hub and spoke models of practice learning used.

The first step of this research was to establish examples of effective practice and gain an understanding of how these affect students’ experience of practice learning, via an initial scoping exercise with the programme leads. Each programme lead articulated the nature and use of practice learning in their field of nursing, and how this was used to address students’ learning competencies.

The researchers identified that child health and mental health nursing fields have been proactive in exploring alternative and atypical practice learning experiences for nursing students. The child health programme had validated placements in the third sector (such as voluntary organisations), local authority nursery settings, and child and family centres, while the mental health programme reconfigured the organisation of practice learning to emphasise geographical and person-centred connections. In addition, the organisation of the potential spoke activities varies between the two programmes. The child health programme has a well-established set of potential spoke activities that are organised for students, whereas the mental health programme places increased emphasis on students identifying relevant spoke activities themselves, in accordance with their individual learning requirements. These differences may be summarised as a ‘formal’ and ‘informal’ approach to spoke activities.

This research aimed to continue the work of Roxburgh et al (2012) on evaluating hub and spoke models of practice learning; however, rather than
focusing on the benefits of the model itself, it sought to explore the characteristics of the hub and spoke model that support nursing students’ learning and enable them to improve their understanding of a person-centred approach to care (McCormack and McCance 2010). This means examining the characteristics of the hub and spoke model that may affect nursing students’:

» Ability to engage with the whole person rather than viewing the individual as a patient only.
» Connection with the person’s family and their wider community.
» Security in their learning process.

Aim
To explore the characteristics of the hub and spoke model that support nursing students’ learning and enable them to improve their understanding of a person-centred approach to care.

Method
This was a small-scale exploratory study with a mixed methods design. Quantitative and qualitative approaches were used to provide detailed information about students’ experiences of hub and spoke learning, and to enable findings to be generalised to the specific population of undergraduate nursing students. A phenomenological approach was used to improve understanding of the experiences of hub and spoke learning undertaken by child health or mental health nursing students (McConnell-Henry et al 2009) at Edinburgh Napier University. This type of approach involves seeking the real-life experiences of individuals, in this case nursing students, and interpreting their thoughts and feelings (Parahoo 2014). The questionnaire was designed by combining two established methods for assessing qualitative experiences of individual and organisational caregiving: the Belongingness Scale–Clinical Placement Experience (Levett-Jones and Lathlean 2008) and the Senses Framework (Nolan et al 2006). These methods were selected because they explore organisational or individual attributes that, if present, result in person-centred care being enhanced. The Belongingness Scale–Clinical Placement Experience (Levett-Jones and Lathlean 2008) was selected because it focuses entirely on students’ experience of practice learning, whereas the Senses Framework (Nolan et al 2006) focuses on organisational and environmental elements that foster relationship-based care. By combining the two tools, the researchers were able to extract data that reflected the lived experience of nursing students who had undertaken spoke activities.

There were 16 questionnaire statements in total and the response options for each questionnaire statement were ‘never true’, ‘rarely true’, ‘sometimes true’, ‘often true’ and ‘always true’. The researchers examined the questionnaire statements and linked these to themes of practice learning experiences of the nursing students who had undertaken hub and spoke learning. Box 1 shows some sample statements from the questionnaire and their related themes.

The type of qualitative sampling used should be appropriate to the methodology (Holloway and Wheeler 2010). Purposive sampling was selected for this study since nursing students had undertaken hub and spoke learning and could express their thoughts and feelings about their experiences. An adequate sample size was reached when similar themes began to emerge within the focus group setting, which provided enough data for the researchers to analyse (Hunt and Lathlean 2015).

BOX 1. Sample statements from the questionnaire and their related themes

» I was able to undertake spoke experiences (learning)
» I felt like I fitted in with others in the team (security)
» I involved informal carers and family (person-centred)
» Spoke learning enabled me to better understand communities’ issues (community connectedness)
» I knew of people’s stories beyond their health experiences (client journey)
» I was able to pursue learning that I was particularly curious about (student-centred)
» I was better able to meet my learning competencies as a result of my spoke experiences (learning)
The students were approached to participate in the study when they were in university, to minimise disruption to their practice learning experiences. Since the study had a specific timeline to adhere to, the researchers approached nursing student cohorts from child health and mental health fields of practice who had undertaken hub and spoke placement experiences within the past academic year in their undergraduate nursing programme. A total of four cohorts were chosen: three from the field of child health and one from the field of mental health. Although two of the researchers were known to the students, they reduced the potential for bias by interviewing students from different fields of practice.

**Data collection and analysis**

Data were collected through the use of focus groups and a questionnaire. Individual cohorts of child health and mental health nursing students were approached to participate in the study, with a total of 24 students completing the questionnaire and 27 students volunteering to participate in the focus groups.

There were three focus groups in total: two child health focus groups ($n=9$ and $n=10$) and one mental health focus group ($n=8$). These groups were recruited from the year cohorts of child health ($n=68$ per year) and mental health ($n=70$ per year) nursing. The focus groups were of one-hour duration and were formulated around eight stem statements that aimed to instigate discussion about two specific areas: practice learning in general, and the specific experiences of hub and spoke learning undertaken by the students.

The focus groups enabled students to respond to thoughts about effects of the hub and spoke experiences on their learning, with discussions being allowed to emerge freely in relation to the stem statements. Audio recordings were used alongside field notes to capture the discussions. Group comments were recorded instead of identifying individual participants.

The questionnaire used in the study was a modified combination of the Belongingness Scale–Clinical Placement Experience (Levett-Jones and Lathlean 2008) and the Senses Framework (Nolan et al 2006), using closed questions to enable the researchers to code each question and produce specific data for analysis. To test validity and reliability, a pilot test of the questionnaire was conducted with five other students from the field of mental health nursing before it was used in this study.

Data collection took place over a six-month period between November 2013 and May 2014. The first phase involved undertaking the focus groups while the students were in university, to minimise disruption to student learning. Data were transcribed by one researcher for each focus group and analysed by a different researcher to reduce bias. The second phase involved sending the questionnaire to the cohorts of students by email, as well as via the university’s electronic learning platform, which is a system that students access online to support their learning.

**Ethical issues**

The standardised ethical framework of gaining approval, providing information, gaining informed consent, and maintaining confidentiality during all aspects of data collection, analysis and findings, was applied in this study. Ethical approval was sought and gained from the Research and Ethical Approval Committee of the university, thus fulfilling the guidance criteria for undergraduate research activity involving nursing students. All students were presented with detailed information to enable them to make informed decisions about their participation in the study, and they were provided with written and verbal assurances regarding confidentiality and anonymity.

**Findings**

**Questionnaire**

A total of 24 respondents completed the questionnaire, with 19 child health and five mental health nursing students. The researchers conducted the questionnaire analysis by examining the 24 completed questionnaires and categorising the students’ answers as ‘never or rarely true’,
‘sometimes true’ or ‘often or always true’. All of the 24 respondents indicated they were able to undertake spoke activities in their practice placements, with 92% \((n=22)\) stating this was often or always true and 8% \((n=2)\) stating this was sometimes true. All of the 24 respondents answered that they often or always felt part of the team while undertaking these experiences, and felt supported by their mentors and other members of the team to undertake spoke activities. Although the questionnaire results showed that all of the respondents had an opportunity to take part in spoke learning, 13% \((n=3)\) of respondents reported that spoke activities were sometimes limited. This was supported by findings from the focus groups, in which some participants reported that they sometimes had to ‘fight’ for opportunities in some spoke areas, particularly if these areas already supported other students.

A total of 92% \((n=22)\) of the respondents stated that ‘often or always’ spoke activities enabled them to understand communities’ issues. This could provide evidence that spoke activities support nursing students to begin to understand patients beyond an episode of acute illness, and are able to engage with them outside of the acute hospital setting. The focus groups indicated there was an appreciation and understanding of the role of the family and how this effects health, especially by child health students.

In response to the statements that mentors and clinical team members were supportive in their pursuit of spoke activities, 92% \((n=22)\) of respondents indicated that this was often or always true. This would support the notion that clinical staff value these extended experiences for students in their practice areas. In addition, the students in the focus groups provided examples of how mentors supported this learning and were often important in the success of these experiences, because of their knowledge about spoke experiences and the personal contacts they had to arrange them.

A total of 8% \((n=2)\) of respondents stated that they rarely or never felt they could better understand their learning competencies as a result of undertaking spoke activities, which suggests that nursing students are able to link theory to practice by participating in hub and spoke learning.

**Focus groups**

Using an inductive approach to data analysis for the focus groups, three themes were identified that encapsulated the students’ experiences of the hub and spoke model, including:

- Value for learning.
- Making connections.
- Organisations and systems.

These themes will be explored further in the discussion section of this article. Table 1 shows how the primary themes derived from the focus groups were further examined using the two qualitative evaluation tools used in the questionnaire and how these were broken down into sub-themes. Each questionnaire statement had an identified sub-theme and these themes were grouped together following data analysis of the focus groups. In this way, the focus group themes provided evidence to support the questionnaire findings.

**Discussion**

All 24 of the respondents to the questionnaire who participated in spoke activities stated that it enabled them to improve their understanding of issues relating to the patient’s wider community, a theme which also emerged during the focus groups. In addition, all of the participants reported that the spoke learning complemented the
knowledge they gained in university, and that they discovered new information while undertaking spoke activities that had a positive effect on their learning. In contrast to the rotational model of practice learning, connecting the hub placements to the spoke activities meant that movements between placement areas were reduced and were driven by student learning objectives, rather than by regulations or limitations in mentor capacity. Participants reported they had an enhanced sense of control over their learning experiences, which directly influenced their confidence and competence. Development of these attributes is considered essential by the NMC (2010).

One issue raised by Levett-Jones and Lathlean (2008) was that nursing students often do not feel part of the clinical team while on placements, which hinders their learning. The use of mentors as facilitators of hub and spoke experiences may provide a solution to this issue. The focus groups indicated that it was necessary for students to feel secure to experience optimum learning. The process of moving between different placement areas can make students feel unsettled, thereby compromising their learning. Using mentors to coordinate the additional spoke experiences could allay student anxieties and encourage them to elicit the best from their experience.

Although all of the participants confirmed that spoke activities were available to them, there were differences in their experiences of the hub and spoke model between the two participating fields of nursing. Many of the child health students reported a sense of ease about identifying learning experiences that satisfied their curiosity as well as their required learning competencies. In comparison, many of the mental health students found this more challenging, perhaps considering the patient’s mental health condition first, rather than the whole person and how they are connected to their community. This may be accounted for, in part, by the varying approaches used in the different fields of nursing in developing potential spoke activities, with the child health programme using pre-determined spoke activities, while the mental health programme placed increased emphasis on the student selecting these activities. However, this may also be related to the characteristics of each of the fields of practice. For example, ‘the family’ is more accessible and visible in child health nursing, whereas in mental health nursing, ‘the family’ may appear to have a more remote and diffuse presence.

**Value for learning**

The theme of ‘value for learning’ conceptualises the students’ perceptions of benefits in terms of expanding knowledge and generating understanding. Students responded best to spoke activities if these benefits were clear and explicit. Comments such as ‘I didn’t know such places existed!’ reveal the previous narrowness of the students’ practice learning experiences, thus affecting their perceptions of the various settings that a patient may experience during their healthcare journey.

The theme of value for learning also relates to students feeling better informed about their potential future role as a nurse, since many discussed the way in which spoke activities supported them to filter their favoured clinical areas from those they favoured less. The spoke activities enabled the students to match their personality and areas of interest with what was available, thus students clearly perceived value for learning as a result of being able to control their spoke learning. One student reported that this control led to ‘greater confidence because of spoke learning’.

**Making connections**

The theme of ‘making connections’ relates to the capacity of spoke learning to widen nursing students’ perceptions of the patient as an individual, the community they are operating in, and the healthcare system. Child health students, in particular, discussed the way in which spoke learning enabled them to ‘see how it all comes together’ and ‘gave a feel of the community’. However, students felt it was important that spoke activities were
The theme of ‘organisations and systems’ revealed that students’ learning can be hindered if administrative processes are not clear or well-understood, or if the clinical managers, mentors, students or academic staff are not aware of the educational approach that underpins hub and spoke learning. The theme of ‘organisations and systems’ revealed that students’ learning can be hindered if administrative processes are not clear or well-understood, or if the clinical managers, mentors, students or academic staff are not aware of the educational approach that underpins hub and spoke learning. Some students in the focus groups reported feeling unclear about their role in organising spoke activities. They considered the purpose of spoke learning to be vague and, for some, an unnecessary distraction from their hub placement area, for example that ‘spokes reduce the amount of time in the acute hospital’ and ‘not all of the mentors understood why I was looking for spokes’. There was a sense that the way the university organised and supported students to identify a spoke activity area lacked consistency, and that ‘some spoke areas were in high demand’, resulting in either spoke areas becoming resistant to taking nursing students or spoke learning becoming diluted to simply ‘a visit with a talk from someone’.

Limitations
The researchers accessed nursing students that were in university at the time the study was undertaken, therefore limiting the sample size and the type of participants in terms of their field of nursing. Although the questionnaire was available to the wider population of child health and mental health nursing students via the university’s electronic learning platform, it was accepted that those nursing students who were in practice settings would not access this platform regularly because they would be focusing on practice-related activities. There was a significantly larger number of child health respondents (n=19) than mental health respondents (n=5) to the questionnaire. This was because of varying programme theory and practice activity, since child health students were in university and mental health students were in the practice setting at the time the research was undertaken. However, the researchers felt that the data captured was valuable and provided evidence of the characteristics of hub and spoke learning as a result of the mixed methods approach of the study.

Further research
Since this was an exploratory study, there are several areas that require further development, such as the university’s role in organising spoke activities. Participants indicated there was significant work to be undertaken in relation to the administrative aspects of introducing the hub and spoke model to students, informing mentors and updating members of teaching teams about the nature of the model and how it applies to practice. In addition, there appears to be a need to embed the hub and spoke model of practice learning in nursing curriculums. These initial findings provide evidence of the value of experiences of hub and spoke learning for nursing students’ learning, which could be used as a basis to positively enhance student learning across all fields of nursing practice.

Conclusion
The focus of this research was to identify the core characteristics of the hub and spoke model that best enhance, support and develop student learning in practice. It demonstrated that students valued the option of undertaking a different placement experience that offered them the opportunity to view connections to the wider patient healthcare journey and understand the influence of the community on patients’ health and well-being.
Students reported that they discovered new information while undertaking spoke activities that had a positive effect on their learning, which demonstrates the importance of ensuring undergraduate nursing programmes offer practice learning environments that accurately reflect the patient’s healthcare journey.

As the provision of health and social care moves towards an integrated service approach (DH 2013, Public Bodies (Joint Working) (Scotland) Act 2014), it is important for students to understand the ‘bigger picture’ and the importance of communicating with a range of practitioners and services. Experiences of hub and spoke learning can positively contribute to the development of students’ confidence and competence, both of which are essential in nursing practice.

**IMPLICATIONS FOR PRACTICE**

» The findings indicate that the most important aspects of the hub and spoke model of practice learning are: how the model is configured in undergraduate nursing programmes; the degree to which the model enables a student-centred approach to practice learning; and the opportunities the model provides to widen students’ learning.

» Examining the characteristics of the hub and spoke model could enable nursing curriculum developers to ask challenging questions, such as ‘Are our aims simply to enhance placement capacity or do we want to provide added value to the student learning experience?'

» For the nursing profession to ensure its place in the context of increasing health and social integration, nurse educators should enable students to consider patients’ experiences beyond their illness and the hospital setting.

» Nursing students should be involved in person-centred care for patients early on in their professional development, ensuring an enhanced understanding of the patient as an individual, and how their connection with the person’s family and wider community contributes to society. This would shift the expectation that most care occurs in an acute hospital setting and effectively prepare nursing students for their future career in healthcare.

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