Longitudinal integrated rural placements: a social learning systems perspective

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Background: There is currently little theoretically informed exploration of how non-traditional clinical placement programs that are longitudinal, immersive, based on community-engaged education principles and located in rural and remote settings, may contribute to medical student learning.

Aim: To theoretically illustrate the pedagogical and socio-cultural underpinnings of student learning within a longitudinal integrated community-engaged rural placement.

Methods: Data collected using semi-structured interviews with medical students, their supervisors, and other health clinicians participating in a longitudinal rural placement program were analysed using Framework Analysis. Data interpretation was informed by the theoretical lens of social learning systems.

Results: In a longitudinal rural clinical placement students participate in a social learning system with distinct yet interrelated learning spaces which contain embedded communities of practice. These spaces are characterised by varying degrees of formality, membership and interactions, different learning opportunities and experiences. They are situated within and shaped by a unique geography of place comprising the physical and social features of the placement setting. Within these learning spaces, students acquire clinical knowledge, skills and competencies, professional attitudes, behaviours and professional values. The process of connectivity helps explain how students access and cross the boundaries between these learning spaces and develop a more complex sense of professional identity.

Conclusions: Longitudinal integrated clinical placement models can be understood as social learning systems comprising synergistic and complementary learning spaces, in which students engage and participate in multiple communities of practice. This occurs in a context shaped by unique influences of the geography of place. This engagement provides for a

range of student learning experiences, which contribute to clinical learning and the development of a more sophisticated professional identity. A range of pedagogical and practical strategies can be embedded within this social learning system to enhance student learning.

Introduction

There is increasing international interest in understanding how longitudinal integrated clinical placements contribute to student learning.[1] With more medical students completing training programs[2] there has been increased competition in hospitals for valuable clinical training time. This has highlighted the need to explore alternative models of clinical training which can provide students with opportunities to acquire the knowledge, skills, and professional behaviours required for practice as a newly graduated doctor.[3] Longitudinal placements immerse students in environments where learning and service provision are integrated[4] and are designed to provide 'continuity for medical students with regard to setting, supervisors, and patients'.[5](p699) In moving away from a traditional hospital departmental model, they reflect a change in the way in which contemporary clinical training is structured and delivered. Such placements are typically situated within primary and community care settings including in rural and remote locations, and vary in duration and structure.[1, 6] Their wide acceptance has challenged the urban tertiary hospital as the dominant and preferred site for undergraduate clinical education.[7]

Research has shown that longitudinal integrated placements result in comparable academic outcomes,[7] facilitate the acquisition of knowledge, skills, and professional behaviours required for students' future practice as a doctor,[5] and promote rural career intention.[8-9] Despite the abundance of empirical literature describing the outcomes associated with longitudinal integrated placements, not much of this research has been theoretically informed. For example, although socio-cultural theories such as situated learning[10] and community of practice[11] have been applied to the study of learning in clinical environments[12-13], there has been little theoretical exploration of how learning occurs within placement models which are much more integrated, connected and immersive compared to traditional clinical placements. Accordingly, it is difficult for medical educators to understand which aspects of the longitudinal placement have most influence on student learning, and how the various learning situations and processes that make up such placements could be best conceptualized and further developed.

Theoretical Framework

Our previous work[9] showed that within a longitudinal integrated clinical placement, it was the informal curriculum[14], with multiple encounters between students, patients and their families, clinical teachers and other health staff, which played an important role in supporting and extending student learning.[9] In particular we reported that learning in a longitudinal placement and the development of professional identity as a rural medical practitioner took place through a process of socialisation[9] alluding to the socially constructed and situated nature of learning. Learning can be conceptualised as a social phenomenon which as Wenger puts it, reflects "our own deeply social nature as human beings capable of knowing".[11](p3) Lave and Wenger proposed a social learning system (SLS)[10, 15] as a way of framing learning as a social process underpinned by a dynamic interplay between 'social competence and personal experience'.[15](p227) It involves communities of practice, boundary processes and identity formation.[15] A community of practice[11] is the basic unit of analysis within a social learning system, and is defined as a 'group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly'.[16] Communities of practice (CoP) can be understood as the 'containers' (p229), or learning spaces, in which competence is developed within a social learning system.[15] Individual learners participate in multiple CoPs, negotiate the boundaries between them in different ways, and so develop their personal and social identity.[17] This raises the question of whether SLS can be usefully applied to understand the elements and processes impacting on learning within an longitudinal integrated placement program.

Context of the Longitudinal Placement in this study.

The specific longitudinal placement studied was the Broken Hill Extended Clinical Placement Program (BHECPP). It is hosted by a University Department of Rural Health (UDRH). Its structure has previously been reported in detail.[9] Key program features, such as the location, academic partnership arrangements, instructional methods and learning context are

summarised in Box 1. Initially, in developing the program, it was conceived of as replicating

the community engaged learning models of Worley et al,[4, 7] not as a social learning system.

Box 1.

In this study we drew on the theoretical lens of social learning systems (Wenger 2000,

Blackmore 2010) to explore the pedagogical and socio-cultural underpinnings of student

learning within a longitudinal, integrated, community-based rural placement. Our research

question is 'what are the factors impacting student learning within a longitudinal integrated

community-based rural placement program in the context of social learning systems?'

Method

Data collection

Data reported in this study was collected as part of a larger study exploring medical student

experiences within the BHECPP. The purposive sampling of participants and the details of

the data collection process and method are described elsewhere[9] and are summarised in

Table 1.

Table 1.

Data Analysis

Framework Analysis was utilised in the data interpretation process. Use of this method by

the authors has been reported previously, as well as their involvement with medical

education and familiarity with qualitative research.[9] In the current paper, the initial analysis

was inductive, grounded in the data and conducted by all authors. The aim of this phase of

the analysis was to identify recurrent themes and subthemes (codes) in the dataset, and

develop a shared coding framework.[18] In conducting this primary inductive analysis and

developing a coding framework we identified <mark>themes that resonated</mark> with key constructs within SLS. We thus applied social learning system theory as a conceptual lens in the secondary analysis of data and we returned to the data to code for the elements, processes and interactions within the placement environment that influenced student learning. This involved an iterative process of moving between the raw data, <mark>summary themes</mark>, and the theoretical literature, in order to clarify and negotiate understandings among the authors and to compare, contrast, and <mark>map relevant themes</mark> to SLS constructs. NVivo 9 (QSR International, Doncaster, VIC, Australia) was used as the qualitative data analysis software.

Results

Our analysis found three main themes impacting on student learning in the context of the BHECPP. These themes were: geography of place; learning spaces, and connectivity. Illustrative quotes are identified by: student (S) further differentiated by entry (En) or exit (Ext) interview; general practitioner (GP); and health clinician (HC).

Geography of place

Geography of place has been defined as the notion of 'the location, locale and sense of belonging to any meaningful place'[19] and refers to the physical and social geographical characteristics of the setting for the longitudinal placements. Within the unique context of the geography of place of Broken Hill, a range of elements influenced the processes of student learning, and the achievement of learning outcomes including; socioeconomic attributes, workforce constraints (leading to differing levels of responsibility and participation), and a sense of kinship and belonging by the students to the community.

Broken Hill is located in a rural and remote desert scrub setting in Far West New South Wales. The metaphor *'back of beyond' [GP 03]* used by one GP supervisor conveyed the remoteness of the region. The geography of place of Broken Hill is typical of many rural and

remote communities in Australia, characterised by limited employment options, lower socio-economic status, higher mortality rates, lower educational outcomes, geographical and social isolation. These issues are amplified for Aboriginal communities in outlying towns.[20] Students reported that exposure to these issues and challenges over the duration of their placement helped them to gain insight into and awareness of the public and population health issues, socio-economic and cultural determinants of health, as well as the impact of illness from the perspective of family and carers.

> *'You get a much better sense of the circumstances in which the people are living, whereas in [metro hospital setting] you certainly don't go into people's homes and you certainly don't spend a lot of time with relatives' [S12 Ext]*

As is commonly the case in rural settings, workforce constraints were an important element impacting on student learning.[21] The transient 'fly-in fly-out' component of the medical workforce in Broken Hill, meant that at times there was variable and incomplete membership of clinical teams and groups, compared with urban settings. This meant that students were required or had the opportunity to take on a greater level of responsibility and more complex roles in some clinical situations.

> *So if you take O&G for instance there's myself and another medical student and the consultant so when something goes wrong instead of it being the registrar or the RMO heading up first it's often me [S09 Ext]*

Situations like this enabled students to 'act up' [22] into roles that would traditionally be assumed by interns or resident medical officers in urban settings with less workforce limitations. Thus the confined geography of place and associated workforce limitations functioned to create an environment in which students had a clear and legitimate role[10] in patient care activities.

The workforce constraints in Broken Hill compared to urban hospital settings also meant that students had increased exposure to and participation in a diverse range of clinical learning opportunities and experiences. These provided students with unanticipated but much valued opportunities to acquire knowledge and hands-on experiential skills[23] in areas such as emergency medicine, chronic disease management, Aboriginal health and aged care.

> *I had to go out with an ambulance crew to a very remote location where a car had rolled over and the driver was trapped inside, there was no doctors, there were a couple of nurses and that was a learning experience, but it was also a lifesaving experience for that driver, and I had to crawl inside the wreckage and give him morphine [S12 Ext]*

Finally, the experience of being immersed for 6 to 12 months in a small tight-knit community facilitated enhanced feelings of kinship and belonging. Students described that *"frequently seeing the same people makes you feel like you belong there" [S15 Ext]* indicating that the frequency and continuity of exposure to the community had a formative impact.[24] Supervisors echoed this sentiment and also added that such repeat interactions and exposure actually contributed to the development of confidence and skills.

> *They [students] get the feeling they belong a little bit more... that builds their confidence and I think they find they can relate much more to people after being in a rural area [GP07]*

These examples illustrate the rich and varied interactions with the community, which helped students gain and demonstrate confidence and acquire skills in areas such as establishing rapport and developing professional relationships with patients.

Learning spaces

The learning system was made up of a number of learning spaces containing embedded communities of practice and networks resonating with Lave and Wengers' notion of multiple communities of practice.[10] Each learning space was distinguished by different degrees of formality. The formal structured spaces were characterized by differing levels of student participation and engagement, achieving learning outcomes defined in the formal learning program, for example clinical and procedural skills. The informal spaces were characterized by extended clinical skills developed through experiential learning,[25] service–learning opportunities in the broader community,[26] and opportunities for additional learning through negotiation, an important aspect of social learning.[15]

Formal Learning Spaces

There were three distinct learning spaces within the structured part of the placement program which were considered as formal learning spaces: the general practice; hospital; and remote care communities (see Box 1). For example, the General Practice parallel consulting sessions provided a structured, formal and supportive environment within which students could take on additional responsibilities and advanced roles, demonstrate autonomy, and engage in teamwork and collaboration. Within these formal learning spaces and associated embedded communities (the doctor, the practice team, the patients, for example), students had a clear, legitimate and active role.

> *it's your responsibility and your job to get that patient either home or into hospital and do everything that needs to be done, the entire clerking, initiating management [S03 Ext]*

The progression of the 'student as apprentice' towards independence can be understood as an ongoing process from observation to action, characterised by progression from peripheral participation/observation to deeper more active participation.[10, 27]

The pressure of sometimes having *'...to figure it out [themselves]' [S07 Ext]* engendered by the limited supervisory capacity within some learning spaces within this placement, although challenging, appeared to support the development of personal and professional confidence, and self-efficacy, necessary for transitioning to future practice.[28]

> *the remoteness meant that there....was a little bit more independence, which actually helped me become more confident and trust in my own judgement [S15 Ext]*

Despite the largely positive learning experiences and opportunities that students encountered within these multiple learning spaces, it was clear that in some instances the variability in supervision and support provided to students impeded their progress to a deeper level of participation in a particular learning space.

> *the value of the placement is very dependent on how enthusiastic your tutors are and your teachers and your supervisors... some do it better than others, some don't have the time and some probably don't give a crap [S04 Ent]*

Development of the formal aspect of the placement program requires that clinical teachers and supervisors are provided with appropriate orientation to the placement program, professional development, and ongoing support.[29]

It was evident that students achieved different types of learning outcomes within these formal learning spaces and communities. For example, a simulated crash scenario, run jointly between the University Department of Rural Health and the Royal Flying Doctor

Service, was identified by students as being particularly useful in helping them gain a better understanding of the interdependent and collaborative nature of rural and remote health practice and the roles and competencies of other health care professionals.

> *it was great to see how all the different emergency services worked together...it gave us an insight into what they do and what their field of expertise is or how they managed this scenario as opposed to how we would manage it from a medical perspective [S16 Ext]*

Informal Learning Spaces

Informal and opportunistic learning experiences provided students with a means of consolidating and extending their learning, gaining additional knowledge and hands-on training, and also developing a broader sense of their value and extent of contribution to the clinical team. Access to these spaces was usually negotiated directly by the student.

> *today the residents were asking us to come and help them, and you really are a valued member of the team, and on surgery they'll ask you to be there because they need you, so you very much feel like you're part of the team [SO8 Ext]*

Other students discussed that informally they had developed an enhanced sense of awareness and appreciation of how the health system functioned and how various parts of the system interacted with each other in contrast with their learning experiences in urban tertiary hospital settings.

> *it's almost like you've got a little microcosm of a bigger picture of a hospital, so you can work out how the different things, in terms of admin and how things come together, a lot easier[S11 Ext]*

These opportunistic experiences also involved participating in the broader community and contributed to the service-learning aspect of the placement.[26] Extra-curricular activities such as participating in health career promotion at local schools and Health Academies[30] helped the students make more meaningful connections with children and young people while providing important community service. Students also reported that as a result of these experiences they achieved unanticipated learning outcomes such as critical teaching skills, developing insight into their own procedural skills, enhanced communication and reflection skills.

> *we told them about our own personal backgrounds, spoke about our pathway into medicine and then ran little tutoring classes or classes on how to take blood pressure... giving us an opportunity to teach skills through the kids, I think, also reinforces those skills in yourself when you have to explain it to somebody else [S14 Ext]*

The experience of being immersed for up to twelve months in these learning spaces, where learning and service delivery occurred concurrently, appeared to contribute to the development of professional identity,[31] sense of identification with the medical profession,[32] and a sense of being "rural".[9]

> *'...more used to being, I don't know, being in medicine and being a medical student, and being a doctor' [S16 Ext]*

Warhurst has described these "experiences of learning as a process of identity transformation",[33](p111) a development of a sense of professional self, which is broadly aligned with the expectations and requirements of independent clinical practice. This developing sense of professional identity helped them become aware of how they could contribute to the workplace, the profession, and the broader community.

In breaking out of the perceived confines of the structured program, some students also negotiated additional learning experiences e.g. participation in ambulance retrievals, resuscitations or negotiating with clinicians to sit in on non-core specialist clinics.

> *I don't even count anymore how many resuscitations and codes I've gone to as part of a medical team, and those additional experiences have all come about, just because of, partly, asking for things [SO9 Ext]*

This achievement of core clinical skills and an extended sense of professionalism was linked to students' own motivation and self-directed role in seeking learning opportunities and experience.[34]

Connectivity

Our final theme, connectivity, was a key underpinning process describing how the boundaries between the learning spaces, with their embedded communities of practice, were identified, negotiated and crossed.[15] We broadly consider this connectivity in terms of the formal and informal learning spaces.

This process of making connections to enable learning was a strong theme and it was evident that students learned how to negotiate the complex intersections and boundaries between the different learning spaces and embedded communities. This was described as

> *working with them and trying not to get in their way or interfere in a disruptive way, I don't know, just being there and trying to integrate ourselves into the team [S16 Ext]*

The ability of students to make connections and create learning opportunities varied according to the student's skills, personal aspirations and stage in the placement. The

experience of students crossing boundaries surrounding the formal learning spaces, and their associated communities of practice, was reported consistently, for example following patients from the hospital to the general practice. Some students saw additional opportunities and took them, such as identifying the presence of a visiting specialist, making contact (negotiating access) and crossing boundaries (attending/ observing their clinics).

> *I was getting kind of bored and so I started sitting in with the anaesthetists and they were like "yeah, sure, come on, come on, do you want to come in tomorrow, that's sweet"[S04Ent]*

Others were less proactive and restricted themselves to the main elements of the formal placement curriculum such as the GP placement, the hospital component and the remote placement. UDRH staff, through their close knowledge of student progress would try and facilitate access to some of these learning spaces that seemed beyond the purview of the particular student.

Students also crossed status boundaries when they were crossing temporarily from their student role to an 'acting up' doctor role.[22]

> *today for instance there's no surgical registrar so I had no choice but to assist the surgeon, so they have to use their medical students, 'cause that's all they've got' [SO2 Ext]*

However there was some evidence of tension when boundary negotiations were not successful.

> *if I turned up to watch that sort of thing [patient arrest] I would be very rudely told that I wasn't welcome and asked to leave [S15Ext]*

At such times staff felt students exceeded their scope of practice and higher level negotiations with program management and senior clinicians were needed to resolve issues. In a stressful work situation the students sometimes perceived this feedback as very negative however such experiences helped students learn how to manage future boundary crossings.

Students often described how they had identified with various communities of practice, by stepping out of the typical network of clinic or bedside based doctor-patient relationships, and had seen their patients in different contexts both professional and social. This resonates with Wenger's perception of network and community as two interrelated processes in a social learning system.[35] Network emphasises connection between people, whilst community emphasises a sense of identity with those connections. Although students participated in social and professional networks developing and maintaining multiple connections; they strongly identified with and were committed to the health and well-being of the community and this sense of identification and commitment are features of communities of practice not necessarily present in a network. The nascent community of practice around the student body facilitated individual student access to a broader range of informal learning opportunities. This commitment by the community to a learning partnership with students was noted by their supervisors.

> *the patients love the time that the students spend with them and they also tend to love the thoroughness as often students are very, very, very thorough and ask questions that we wouldn't ask [GP01]*

Connectivity also involved students accessing and developing relationships across the multiple community of practice members in the various clinical settings, whether centred on the general practice, the community services or the hospital.

these amazing people that you've got really ready access to, as opposed to those

distant figures in a [metropolitan placement]...I think being able to get very hands on

and to talk, have those relationships with the clinicians and the surgeons, you can

then say to them "so what's it like, what's your job like and what are you doing", get a

feel for that, so it's, yeah I think it helped me to have a better idea of what it's like to

be a doctor [S08Ext]

This access gave students opportunities to understand better the values and professionalism of senior clinicians, which they reported to be more difficult in metropolitan placements with less permeable boundaries. Meaningful interactions and engagement with role models who were genuinely interested in them and their learning, appeared to strengthen their motivation to learn.[36]

Discussion

By using the framework of a social learning system[15], we have identified three factors impacting student learning within a longitudinal, integrated, community-engaged, rural placement. First, the physical and social geography of the placement location in Broken Hill shaped the scope and nature of student learning and socialisation experiences both professionally and socially.[9] We have conceptualised the geography of place as a double-edged sword, which functioned to socially isolate students from their pre-existing support networks, yet at the same time helped them to develop a sense of attachment and belonging through immersion in a relatively close-knit rural community.[9] The remote setting also provided opportunities to understand the social determinants of health and to act up into more advanced patient care roles and assume added responsibilities.[22] These experiences supported the development of students' confidence and notions of self-efficacy.[34] The opportunity to act up has been identified as underpinning preparation for practice.[22] Thus

geography of place[19] and the social and physical context of the placement mediated student

learning experiences.

Second, the placement comprised a series of interconnected learning spaces containing

embedded communities of practice, with which students identified. These were synergistic

and complementary, and contributed to student learning in differing ways. Much of the

clinically related learning outcomes occurred in both formal and informal learning spaces.

Clinical procedural knowledge and skills were gained in structured settings, often supervised

by locums, but also through informal hands-on experiential learning.[23] There was evidence

of the achievement of non-clinical learning outcomes such as the acquisition of teaching

skills and reflective skills within the context of learning activities promoted by the UDRH,

designed to promote health literacy and increase the educational aspirations of local

schoolchildren.[30] Active engagement, participation and socialisation within the various

learning spaces enabled students to increase their sense of professional identity.[31] They

demonstrated progression, from being a theoretical learner to a clinical learner and to a co-

worker, as they acquired legitimacy within a community of practice (Lave 1991). However, in

some instances, the variability in supervision[37] was shown to limit student learning and

active participation

Third, connectivity was a key process by which the boundaries between these learning

spaces were identified, negotiated and crossed.[17] Our findings indicate that the boundaries

between these learning spaces were permeable and in flux. Crossing boundaries was an

enriching learning experience, but also challenged students to shape their participation as

required within different settings and communities. Crossing the boundaries was often

dependent on student skills and aspirations, but could be facilitated informally by role models

and skilled social facilitators within the UDRH. As a result of being immersed in these

various learning spaces for an extended period of time, students developed an awareness of

the realities of rural and remote clinical practice, and a complex sense of identity[31]

commensurate with the medical profession. Students crossed the boundaries of the learning spaces and embedded communities, motivated by their desire to learn, the willingness of the healthcare staff to teach, supervise, and provide access to rewarding learning experiences, as well as the local community's receptivity to their presence. The overarching community of Broken Hill thus functioned "as a living curriculum for the apprentice"[16] with the shared objective for students, the teachers and administrators of the BHECPP program, and the community, being the health and well being of the local people.

Social learning system theory[10, 15] has provided a way of understanding learning in a longitudinal clinical placement as a social process. We have described how this may influence student learning, the nature of interaction between multiple learning spaces and their embedded communities of practice. Further we have shown how the boundaries among these learning spaces are negotiated and traversed, and how this impacts on student learning and on their growing sense of professional identity.

From this perspective, learning can be understood as occurring through engagement and participation in multiple learning spaces, with the boundaries between them being negotiated in different ways, and resonating with Wenger's notion of personal and social conceptions of identity.[35]

These different learning spaces were shaped by a unique social and physical geography of place. Students were able to achieve a number of intended and unplanned learning outcomes. Clinical diversity, experiential hands-on learning in the clinical workplace alongside authentic engagement with supervisors and clinicians, facilitated learning and supported students as they moved from the periphery to a more legitimate central position within the multiple communities within which they participated.[10, 15]

Implications

Conceptualizing a longitudinal clinical placement program as a social learning system[15] around a rural community is a valuable way of promoting student learning. Medical educators can encourage active student engagement and participation in the various learning spaces that make up a particular geography of place. Students can be coached to recognise the embedded communities of practice and social networks within the various spaces and then take advantage of the learning opportunities they bring. Students require additional guidance to identify, negotiate and cross the boundaries between these learning spaces. Medical educators need to work at developing reciprocal relationships with the multiple communities of practice and social networks within the particular geography of place. It remains important to enhance "what" students learn and better integrate the formal learning program. However, we suggest that innovation will come by investing more time in facilitating access to social networks and communities of practice, outside of the formal clinical teaching program; supporting supervisors and role models to provide learning opportunities; and investing in partnership with the important stakeholders in the community, who have an interest in health and well-being. This ongoing networking and developing of liaisons within the community will extend the communities capacity to provide access to rewarding learning and socialisation opportunities and rich student experiences.

It is also important to ensure that students receive practical guidance so as to get the most out of their learning within a social learning system. For example, at orientation, they should be taught context-specific learning strategies to use within the various learning spaces they engage in, and to recognise, negotiate and cross boundaries. They also need to be taught how to manage the tensions associated with traversing the boundaries of multiple learning spaces and the different embedded communities of practice. Transitions across learning spaces sometimes created difficulties for students in negotiating multiple, and at times, competing expectations and demands. This can lead to adverse learning experiences, which could also be better managed by improving student and staff orientation to the underpinning philosophy and activities of the placement program and providing ongoing professional development for supervisory staff.

Strengths and limitations

This is the first time that the pedagogical and socio-cultural underpinnings of student learning within the context of a longitudinal, integrated, community-engaged rural placement model has been theoretically articulated. Study limitations include the small sample size which is reflective of the small numbers of students that are typically accommodated within such placement programs, and sampling within one geographical region and community. This paper does not examine the experience that student peers might have in other clinical settings but a comparative study looking at metro and regional settings is planned to further explore this aspect.

Conclusion

Longitudinal integrated clinical placement models can be understood as social learning systems comprising synergistic and complementary learning spaces, in which students engage and participate in multiple communities of practice. This occurs in a context shaped by unique influences of the geography of place. This engagement provides for a range of student learning experiences, which contribute to clinical learning and the development of a more sophisticated professional identity. A range of pedagogical and practical strategies can be embedded within this social learning system to enhance student learning.

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