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Learning and Maintaining Professional Expertise Within a Multi-Professional Critical Care Team

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Key Theoretical Approaches in this Chapter: Hean's Analysis of Learning Theories Relevant to Inter-Professional Learning Allied to Engeström's Activity Theory

This project concerns the learning that takes place during the day-to-day practice of a multi-professional clinical team within a Paediatric Intensive Care Unit (PICU). Because the learning that takes place is complex and varied, it is necessary to identify and take into account the relevant and applicable theories of learning as a framework for the critical analysis of the accounts of the team's learning experiences. This encompassing view is the foundation of the project. Some researchers have focused on particular professions, while others concentrate on a particular theory of learning. I have used theories and my experience to identify a set of theories that relate to the ways in which clinicians may learn in critical care environment settings such as this. Engeström uses Activity Theory as a way of taking into

account the multiplicity of personnel and learning activities and enables a framework of learning theories to be built.

Key texts

Engeström, Y. (2010) Expansive learning at work: toward an activity theoretical reconceptualisation. *Journal of Education and Work*, 14 (1), 133–156.

Hean, S., Craddock, D. and O'Halloran, C. (2009) Learning theories and inter-professional education: a user's guide. *Learning in Health and Social Care*, 8 (4), 250–262.

Introduction to the Research Project

The research considered in this chapter is a case study which, by using an eclectic combination of survey and semi-structured interviews, focuses on how clinicians in a critical care environment gain and maintain professional expertise as part of their everyday practice, and thus outside of formal education. Its utility will be to use the perspective of clinicians to determine the processes of such learning, its value to the participants, and to the underlying structures and people who support it. It is important to point out that this study is a work in progress; nevertheless, the role of literature can inform and enhance all stages of the research process, and the following account will identify how I have used theory to identify and frame my epistemological approach to the research design.

I have long been interested in the learning which takes place in clinical practice – from the start of my nurse training back in 1975, to the roles I have had within clinical education, and finally to my move to a lecturing post within a postgraduate clinical education programme. This experience has given me opportunities to reflect further and investigate more deeply the theoretical underpinnings, practical applications and experiences of learning within the clinical workplace; to consider the influence it has had on my philosophy of learning; and to clarify the personal context relevant to this research study.

There are two key aspects that define this study. The first is not only to take account of the perspectives of all professions within a clinical team, but also the specific clinical setting, including the clinical challenges encountered when working and learning together in a PICU. The second is to evaluate critically the ways in which learning takes place in this setting, and identify theories that underpin this. Other studies have focused on specific professions, or a particular learning theory in their approach, such as Eraut (2000, 2004); Lave and Wenger (1991); Cope, Cuthbertson and Stoddart (2000); Collins, Brown and Holum (1991). These studies, which relate theory to practice, have been highly relevant and provided an invaluable background, but a particular challenge for me has been to find a way of bringing together these influences in an ordered manner. For this I have used the work of Engeström (2010) and his application of Activity Theory, and the research undertaken by Hean, Craddock and O'Halloran (2009) investigating inter-professional learning, and I expand upon these later.

The participating clinical staff are nurses, doctors, physiotherapists and pharmacists, who work with and alongside their colleagues as part of their everyday work routine, each making their unique contribution to effective patient care. Some will have a wealth of experience on which to draw, others will be at an early stage in their career. Some may be undertaking formal programmes of learning, but for the majority of their colleagues self-directed, life-long learning is the order of the day. This research, as mentioned earlier, focuses on their experience of the learning that takes place as part of their everyday clinical practice.

The concept of continuing lifelong learning is encouraged and expected by the Department of Health (2001), and individuals are required to demonstrate how they have maintained their professional knowledge. Indeed such is the rate of change in practice that clinicians cannot afford to assume they know all they need to know at *any* stage of their career. Thus the research topic has relevance at all levels, from the individual to the wider organization, professional and political.

Applicable to all professionals, the novice to expert trajectory is identified by Dreyfus and Dreyfus (1986) as a learning journey, but how is this expertise developed and maintained, given all the potential changes that can impact on care delivery? What drives individual learning? What are the valuable learning experiences as identified by these clinicians? Since such professionals spend a large part of their career outside of *formal* education,

I am keen to understand their experiences of the processes underpinning their *non-formal* learning.

The clinical learning environment is a rich one – no patient or situation is entirely identical, and knowledge, therapies and interventions continue to develop. The importance of the clinical setting as a learning environment is acknowledged by Cope, Cuthbertson and Stoddart (2000), for example, who investigated the learning that occurs when undergraduate nurses undertake practice placements, while the work of Eraut (2004) has focused on gaining professional expertise in early career experiences. Both have focused on nurses as a discrete group, whereas I am including all members of the multi-professional clinical team.

The clinicians in my study rarely work in isolation. Teamwork is identified as increasingly important to patient outcomes, the reduction of critical incidents and improved patient safety (Hamman, 2004; Musson and Helmreich, 2004). Teamwork is of particular importance in this critical care setting, as members of the team work closely together, with professional boundaries becoming increasingly blurred. So I feel it is important to recognize that this working environment also gives opportunities for learning alongside each other, and from each other.

There is a plethora of knowledge, skills and behaviours required in order to become a professional. As part of the planning stages of this research study I investigated the varied forms of knowledge that clinicians would need in order to undertake their professional roles. My justification for this is that the different types of knowledge can be gained in different ways, and may be explained by any number of theories of learning. In the complexity of reality, this isn't easy, as forms of knowledge can overlap, and be used in varying degrees and combinations. There is a need to consider and understand this acquisition of knowledge and skills, and also behaviour modifications, in the light of appropriate learning theories. The potential relevance of learning theories to learning opportunities, has aided the investigation design into discovering how this manifests itself in the working lives of individual practitioners.

Theories Explained and their Use Justified in the Context of this Research Project

If, as I have argued earlier, the learning undertaken by clinicians in practice can take many forms, and is affected by the working environment and clinical activity, then I need a way of including and framing this activity

such that others can follow my rationale, which is of particular importance in a (qualitative) case study. This has led me to the work of Engeström (2010) and Activity Theory, as a way of achieving this aim.

There is an additional challenge in that having identified a number of key learning theories I felt they would also benefit from a framework, showing their inter-relationships. In the account of Hean, Craddock and O'Halloran (2009), who identified theories underpinning inter-professional learning, I found that my adaptation of their framework has also enabled me to clarify and organize my thoughts, and signpost this for readers. The relevance of these theories and frameworks will become apparent as I expand on the detail of the activity and learning that takes place within a clinical environment.

Clinicians of all levels, from novice to expert, will come to the workplace setting with at least some background knowledge of fact, and varying levels of experience. If they have been introduced to the concept of the role of reflection in learning, and how it can be used to build or construct their experiences into a cogent whole (or have taken up this intuitively), then they will use this experience to develop professional expertise (experiential learning theory: Kolb and Fry, 1975).

The influence of their colleagues can guide and support this learning implicitly, just by working together. However, if colleagues have a designated facilitator role, or it is one that they assume, then this support may be more explicit (social constructivism: Vygotsky, 1978; cognitive apprenticeship: Collins, Brown and Holum, 1991). The very nature of the clinical environment in the critical care setting, where practitioners work closely among and alongside each other, lends itself to the observation and scrutiny of each others' practice in a way in which other professionals (e.g., school teachers) may not experience as a matter of routine. This gives rise to the importance of situated learning in this setting (Lave and Wenger, 1991), and the opportunities to learn from such exposure.

The work undertaken by Engeström (2010) considers that change, development and thus learning can take place in the midst of complex activities and inter-relationships. I have used his Activity Theory to take into account the interconnectivity of:

- The rules and norms of the workplace (*working practices of the PICU*)
- The subjects (*individual clinicians*)
- The community (*the professional groups*)
- The division of labour (*multi-professional working practices*)

- The tools (*knowledge construction theories*)
- The object (*workplace learning*)
- The outcome (*knowledge construction*). (Engeström, 2010 – my emphasis)

Although at first glance this theory can seem complex, it is this very complexity that typifies clinical workplace learning in general and in the critical care setting in particular. I have looked for ways of both unpicking and drawing together these effects and explain my approach in the following section.

The Application of Theory to the Research

The clinical setting that forms the focus of my research is one where I spent over 25 years in practice as a nurse, undertaking a number of roles from staff nurse to senior sister, and latterly as a clinical educator. This experience, alongside my move to lecturing on a clinical education programme, has conferred a wealth of understanding of how clinicians work and learn together in practice, but can also run the risk of evaluating my own perspective as the norm. This calls for a reflexive approach to help guard against such assumptions. Brookfield (1995) has written of the need to be a critically reflective teacher, and identifies four lenses of enquiry (autobiographical, students' eyes, colleagues' experiences, theoretical literature) through which insights may be gained. This forms the foundation of my own evaluation of what is relevant to the investigation of learning in clinical practice. Since I am undertaking a case study, such transparency is crucial – thus my lenses of enquiry include:

- a critical analysis of my own experience;
- the experiences of other interested and informed clinicians; and
- a review of the theoretical perspectives propounded in the wider literature. (Adapted from Brookfield, 1995)

Reflecting on my own experiences, I can attest to the importance of learning as part of everyday practice. I have found it difficult, for example, to understand such concepts as the physiology of oxygen transport without a combination of studying a written text or listening to a formal lecture, having discussions with colleagues to verify my understanding, and linking this
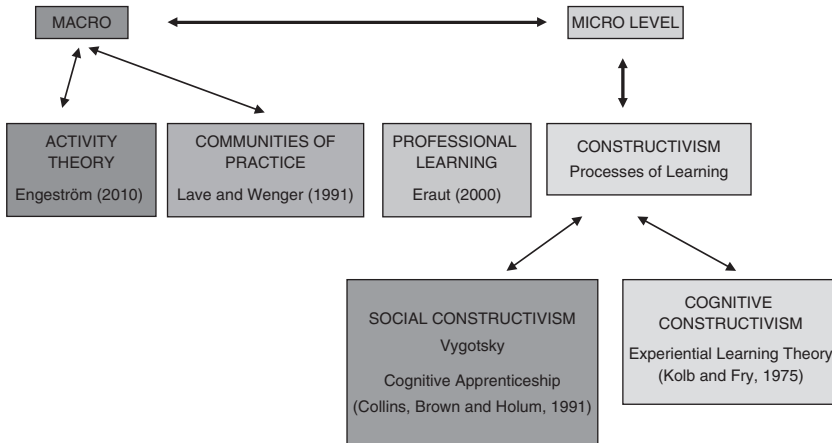
Figure 1.1 Figurative representation of theories and theorists relevant to my research. *Source*: Hean, S., Craddock, D. and O'Halloran, C. (2009) Learning theories and interprofessional education: a user's guide. Learning in Health and Social Care, 8 (4), 250–262.

to the observation and assessment of the impact of clinical interventions on individual children under our care. Teaching others further deepens my own understanding. Yet I have also worked alongside others who have valued learning in different ways – with a preference for less or more formal study, for example. These variations merely demonstrate that there is no universal mode of learning.

Moving on to the theoretical perspectives mentioned before, I show in Figure 1.1 how I have adapted the framework of Hean, Craddock and O'Halloran (2009) who identified learning theories relevant to inter-professional education and explained the evolution and inter-relationships between these theories in a way that I have found helpful. I have adapted a diagram they used (see Figure 1.1) in order to depict the relationships between the theories I have identified and justified as being central to my study.

The micro to macro continuum shows how learning can occur at the individual (micro) or societal (macro) level. Constructivist theories can take account of both of these forms. For the individual, constructivism theories explain how meaning and learning occurs within and in response to direct experience, that is, not divorced from practice. An early proponent of this is Kolb and Fry (1975).

Kolb's model is cyclical in nature and relates to the individual – whereby learning is best conceived as a process rather than merely an outcome.

This is significant for clinicians when considering the learning of excellence and expertise – at what point does one become an expert? Is it a finite journey, or one of continuing refinement? The importance of experience in the learning process is not to dismiss behavioural or cognitive processes, but to add to them. Put simply, we take part in an experience, observe and reflect upon it, think about and develop new concepts and connections, then move on to test these out in new situations. Knowledge is not a commodity 'out there' but within the person.

However, learning does not always take place in isolation. Vygotsky, a Russian psychologist who died in 1934, wrote among other things, of the ways in which children learn (Vygotsky, 1978), and further developed this work to explain aspects of adult learning as a communal activity. One of his contributions to theory was describing the 'Zone of Proximal Development' (ZPD). He considered that there was a gap between what a child can achieve alone, and that which can be gained from the support of an adult – the ZPD. He acknowledged the part that scaffolding (support) and fading (gradual withdrawal) provided by others can play in the learning process.

This is also relevant in the ways that adults learn, and relevant to the support given by more experienced staff to juniors, by understanding their 'comfort zone' and encouraging them to gain independence. From my own experiences, there have been times when I have encouraged a more junior staff member to move on from their comfort zone by asking them to imagine their 'worst case' scenario. I would then ask them what they would do, and who they would (and could) call on to assist them. This would usually enable them to see they had the skills and knowledge to take on the challenge, or more rarely, identify required learning. In either case, this is a valuable learning experience that needs capturing in my study.

Moving along the continuum, the inter-activity present in social constructivist theory broadens individual constructivist learning by, for example, including different views and concepts and different approaches to problem solving. An example of this form of learning would be that taking place during a multi-professional discussion. Members of the different clinical professions come together to analyse and evaluate the care and management of critically ill children: a rich learning environment giving opportunities to deepen understanding of individual cases and situations. The learning that takes place in this way is more of a communal activity, although further individual reflection may also occur.

Also part of the constructivist continuum is that of Cognitive Apprenticeship as outlined by Collins, Brown and Holum (1991). They

describe the traditional apprenticeship in four phases. Initially, skills are modelled – by those more experienced and expert. However, there is a degree of 'watching each other' at work, novices and experts alike. Apprentices are then supported in their work by the 'scaffolding' role of others (with reference to the work of Vygotsky), whereby the inexperienced may be given easier tasks to undertake, or the simpler parts of a more complex procedure. This then leads to a 'fading' phase, such that the support is gradually withdrawn, and the learner is able to do the task independently. Finally, 'coaching' is a concept that occurs at every stage of this process – a guiding and encouraging role, moving towards independent practice.

This progressive independence is aspired to by the different professions contributing to the management of care. As an example, newly qualified staff nurses undertake an orientation programme, working closely with a more experienced nurse and taking part in formal activities in order to gain and demonstrate the skills and knowledge required to undertake this role with more limited support – to appreciate their level of expertise, and be able to prioritize who they might need to call on and when, should the need arise. But I am keen to understand the extent to which this aim occurs in practice. Understanding and applying this theory to the research design, and data analysis will add to its richness, and give greater opportunities for others to assess its applicability to their own setting.

The social context is also important, since it gives continued access to expertise; people with all levels of expertise can continue to develop and learn from each other. Another important concept is that when observing each others' practice it may be apparent that there are often many ways of undertaking the same task or procedure (provided key principles are adhered to), and that also there is seldom an 'all-knowing' worker. Part of socializing into the clinical setting will be to discover who to go to for particular expertise, which is yet another example of where learning can take place, and who may support it.

A greater emphasis on *where* the learning takes place is part of the focus of Lave and Wenger's Situated Learning Theory (Lave and Wenger, 1991). They describe how, by way of 'Legitimate Peripheral Participation' 'Communities of Practice' (COPs) are important in the development of situated learning. There is a potential for multiple COPs in critical care, due to the different professional groupings and roles staff undertake. Learning is situated in the professional's role as a member of a COP. This involves 'socializing' into the role of the clinician, wishing to become part of that particular community, therefore being an active participant. Community

members benefit from the input of the new practitioners, by way of the questions they ask and the previous experiences they bring to bear, and this is also found in clinical practice.

In Lave and Wenger's (1991) original research, the COPs investigated comprised of single professional groups or craftsmen. In later work by Wenger, McDermott and Snyder (2002), there is recognition of being members of different COPs. This is similar to individuals in my study, who belong to different professional groupings, but who are also members of the COP that is the multi-professional healthcare team. I am keen to see whether their experiences of learning in practice involve the wider COP as well as their own profession.

To expand on the work of Engeström (2010) alluded to earlier, he has undertaken research, in a Finnish hospital, which has its focus on change and developments (and ultimately learning) within complex environments. This is comparable to the environment in my study. His questions are similar to those of Eraut (2004):

- Who are the subjects of learning, how are they defined and located?
- Why do they learn, what makes them make the effort?
- What do they learn, what are the contents and outcomes of learning?
- How do they learn, what are the key actions or processes of learning? (Engeström, 2010)

For my research, the subjects and their location are the qualified members of the clinical multi-professional team, working together as the critical care team of a PICU. The design and use of data collection tools enables me to capture not only the impetus and motivation to learn, but also the ways in which they learn, and the content and application of such learning. By using this theory to frame my questions for the survey and semi-structured interviews, and referring to it during the coding and thematic analysis, there is alignment throughout all processes. I can increase the reliability and authenticity of my research such that the questions relating to why, what and how participants learn capture the experiences of the individuals concerned.

The Relevance and Effectiveness of Using Theory

Arnseth (2008) has critiqued both Activity Theory and situated learning theory. I think both are still viable ways of shedding light on and analysing learning in practice although I am more amenable to Activity Theory as

a way of accounting for interconnections related to learning in this arena. Arnseth (2008) concludes that Activity Theory gives external perspective and situated learning theory a more internal one: situated learning theory has a tendency to gloss over potential areas of conflict. This has implications for developments in practice – do the masters of such communities or experts always know best? Could there be the tendency to discourage less-experienced staff from developing new ways and ideas? The need to acknowledge and investigate the interactivity of learning, both vertical and horizontal, is important to the depth of my study.

Identifying relevant theories and how they interact and impact on everyday learning within critical care clinical settings gives structure to my study. Qualitative research in general and a case study method in particular depend on clarity of approach for their authenticity – a framework enables others to identify my thought processes and rationale.

At the start of my research journey, I knew that the focus would be on the learning that takes place as part of everyday practice within a PICU. I knew what I meant by this, but enabling others to follow my train of thought was not as straightforward. Also, the questions that critical friends asked were sometimes difficult to answer, as was committing my thoughts to paper. The use of theory to structure research design has been invaluable. During the planning stages I developed a mind map of all that impacted on working in clinical practice and its link to incidental/non-formal/everyday learning. Having worked in clinical practice for many years, and having an interest in supporting learning in the clinical setting, I felt I had identified and produced a comprehensive picture. That said, when I began to write, the analysis looked and read like a long list of unconnected learning theories – hardly groundbreaking.

Wider reading led me to the previously acknowledged paper by Hean, Craddock and O'Halloran (2009) that identified learning theories relevant to inter-professional learning. Whilst of interest per se, what really helped me was the way they depicted such theories as being developmentally related, and able to be considered as part of a macro–micro or societal–individual continuum. Thus I was able to adapt this to my own needs (as shown in Figure 1.1) in order to be able to indicate more clearly not only their relevance to my study, but position my rationale for the readers of my research.

Using theory has helped me to take a wider view during the planning phase of the research, and has helped order my thoughts and move from a long list of learning theories to a framework in which inter-connectivity is recognized and acknowledged. Moving forward, this framework will be

used during the data collection and analysis phases of my study. Participants will have the opportunity to identify and elaborate on their learning experiences in practice; such a framework will aid thematic analysis.

Summary Conclusions and Recommendations

The discovery of the appropriate theories

These key theories were identified as a result of my wider reading and literature review. I first considered learning theories already known to me and searched for papers that had undertaken research of a similar nature.

The ease or difficulties with understanding the theories

Discovery of the work of Engeström and Activity Theory was very much a 'light bulb' moment, as it resonated firmly with my philosophy that learning in a complex setting needs to take into account those personnel and activities which define its complexity. Prior to this, I considered and included other theories (such as the work of Collins, Brown and Holum, 1991) as they provided a fit with my philosophy and could explain aspects of learning undertaken in this setting. Others seemed helpful on the surface, but on close examination were misaligned. On reflection, this alignment has enabled me to deepen my understanding of learning in practice, and how it may be researched.

The difficulties of application to data and texts

Data collection and analysis are yet to be attempted, although I plan on using these identified theories to aid in the identification of themes. Potential difficulties could arise if participants' examples of non-formal learning in practice fall outside of these inter-connected theories. Given that research is a dynamic activity, then the work I have already undertaken in this area provides a sound base should adaptations or additional theories need to be included.

What the application of the theories revealed

Applying theory enabled the possibility of taking a wider view of learning in practice. It provided a way of linking and framing discrete learning theories to depict their relationships and inter-connectivity.

How the absence of these theories might have impaired understanding

Before the identification of a possible framework, I had found that my thoughts and subsequent writing lacked a definable structure. I was also finding it difficult to explain to others the focus of my study. The framework on which my identified learning theories hang has enabled me to signpost my intentions in a way that is easier for others to follow. It has also helped me to identify areas for future development, such as categorizing my literature review.

The limitations of the theories

Although one of my key aims in this study has been to acknowledge and make reference to the complexity of working and learning in a multi-professional clinical setting, this may leave my study open to the criticism of a lack of depth due to the number of relevant theories I have identified. From my literature review I have been unable to find a study that has attempted to use such an amalgam of theories that could be both a strength (originality) and a weakness.

Reflection and recommendations of the experience

Discussing my plans, and listening to those of others at various stages of their doctoral journey has been immensely helpful by way of understanding their designs and answering their questions. Undertaking the writing of this chapter has given me the opportunity to justify my epistemological stance to a wider audience. Questions regarding clarification have both served to deepen my understanding and expose gaps in knowledge or argument that needed attention.

Recommended further reading

Engeström, Miettinen and Punamäki (1999) and Engeström and Middleton (1998) both provide a wealth of diverse examples of how Activity Theory may be used in research.

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