

Readiness and learning in healthcare education

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This Toolbox article outlines the concept of learner readiness as it applies to healthcare education, including its clinical aspects. It proposes that there are three broad dimensions of readiness associated with the knowledge required for practicing healthcare professions: i) conceptual, ii) procedural and iii) dispositional dimensions of knowledge. Commencing by discussing the concept of 'readiness' and its implications for individuals' learning and development, this article elaborates the characteristics of these three interdependent dimensions of occupational readiness. Finally, some considerations for organizing and enacting clinical practice are outlined.

Readiness and learning and development

Readiness comprises what individuals' know, can do and value. It is this readiness that shapes their ability to engage productively in activities and interactions, such as at work and university, and learn from those experiences. Hence, students and healthcare workers' existing kinds and levels of knowledge define what they can learn from what they experience in clinical or educational settings. For instance, without the appropriate readiness, what might be intended as an explanation to assist understanding can lead to misunderstandings and/or confusion. It follows that learners' readiness is important for engagement in and learning through intentional educational experiences as well as through everyday clinical experiences.

The concept of readiness is long-standing within accounts of human learning and development. It is used in Piagetian theories of child development(1). There, it is proposed that children's cognitive abilities are premised upon readiness associated with their progress through developmental stages founded on and constrained by their biological maturity. These stages commence from where thinking and acting rely upon sensory input alone, through to an ability to utilise and manipulate what individuals are experiencing, and then engaging with and cleverly manipulating abstract concepts independent of having access to concrete instances. In this account of readiness, cognitive abilities are predicated on children's stage of biological development, which determines what they experience and what they can do with those experiences (e.g. learn from them). Hence, presenting a child with a problem or have expectations of them performing a task beyond their stage of cognitive development (i.e. readiness) will be unhelpful for their learning and unrealistic for task completion.

This account of readiness leads to questions about whether, and in what ways, the scope of individuals' learning and development is constrained by biological factors, such as maturation, or whether engagements in social interactions and socially-derived activities can promote learning and development. For instance, socio-cultural constructivist accounts propose that the kinds of activities and interactions individuals' engage in are the bases of their learning and development, not biological maturation. So, rather than being premised on individuals' capacities alone, their learning is mediated by the kinds of activities in which they engage as afforded by the social world. Hence, their readiness is premised on the learning they have derived from earlier or premeditate experiences(2).

Adopting this emphasis, and of greater pertinence for adults, readiness, therefore, refers to individuals' abilities to engage with and learn effectively from what they experience, as proposed in Box 1. So, rather than being premised on maturation, what adults know, can do and value shapes the scope of their learning potential(2). The scope or zone of adults' potential development is an important concept for understanding the processes of learning within clinical education to consider how best students learning can occur, as noted in Box 2, based on their existing knowledge. Also, whereas Piaget emphasised cognitive development, here conceptual, procedural and dispositional readiness are all addressed, including how individuals elect to engage with what they experience.

Conceptual, procedural and dispositional dimensions of readiness

The kinds of knowledge individuals require to perform healthcare tasks can be seen in terms of what they know (i.e. conceptual: factual, propositional) (3), can do (i.e. procedural: capacities to achieve goals) (4) and value (i.e. dispositions: values, interests)(5) associated with a specific occupational domain. These three domain-specific forms of knowledge and their hierarchies are elaborated in Box 3. This categorisation of knowledge supersedes earlier accounts and, most notably, those derived from Bloom's taxonomy of cognitive, psycho-motor and affective, often proposed as categories of knowledge, skills and attitudes. Each of these elements are categorised as forms of knowledge. Findings about how human perform goal-directed activities, such as work, led to the category of procedural capacities (i.e. how goals are achieved) to comprise cognitive processes such as planning, selecting and monitoring of acts(6), as well as physical actions (i.e. psycho-motor). Moreover, just as it was important to acknowledge the non-observable aspects of procedural capacities (7), the elaboration of attitudes to include values, interest and beliefs that motivates and guide those actions as dispositions (5), also marks the departure from Blooms taxonomy.

An important reason for having clear categories of knowledge, and their particular forms, is that specific kinds of experiences may be required for them to be learnt. For instance, procedural development arises from engaging in serial episodes of practice, through which these specific procedures are exercised, monitored, refined and honed, and strategic procedures develop. Similarly, diverse episodes of practice, can assist learners build causal links and associations amongst concepts, such as is required in clinical reasoning(3). Dispositions are likely shaped by individuals' prior experiences and how these are reconcilable with what they experience(8).

However, although these three forms of knowledge are characterised and defined separately in Box 3. When individuals engage in work activities they are deployed interdependently. How healthcare workers value or view (i.e. dispositions) particular ideas or practices (i.e. conceptual knowledge) shape how they respond to those particular tasks (i.e. procedural approach), as indicated in Figure 1. Whether frequent hand-washing is seen by individuals as either an essential element of good healthcare practice, or a workplace compliance requirement, will likely shape the frequency and thoroughness of that washing. So, these three kinds of domain specific knowledge (i.e. related to the occupation) and the readiness they provide can be considered separately but enacted interdependently. Hence, the importance of engaging in authentic activities that engage and require the deployment of these three forms of knowledge interdependently is important.

FIGURE 1 IN HERE

Yet, beyond canonical requirements of the occupation per se, readiness is also needed to confront the particular variations of occupations as practised in particular situations. As elaborated in Box 4, beyond the knowledge required to practice an occupation (e.g. canonical knowledge of doctoring, nursing etc) are variations in performance required in particular situated practice(9), such

as how medicine and nursing are practised in metropolitan, regional and remote health care settings. The point is that expert performance and, therefore, readiness to engage, perform and learn is based on situational factors, not just the possession of occupational specific knowledge.

Readiness for learning at and through work

Readiness associated with learning at and through work is premised on individuals' prior learning experiences. These experiences can be those that have arisen through activities and interactions in educational, workplace and other kinds of settings. These are referred to as pre-mEDIATE experiences (2) that shape how a person makes sense of and responds to what they subsequently experience. If a nurse or doctor does not know how to perform particular procedures, then they are not ready to adapt them to other circumstances or be confident about engaging with different kinds of patients. For instance, when individuals are learning specific procedures (e.g. taking blood), although aware of the overall task requirements (e.g. talking to and reassuring patients), they may be unable to perform that task whilst also learning to take samples. When focusing on taking blood, their conscious thinking and acting is directed towards that activity, and they may not be able to talk with patients. So, if they are still engaged in the process of proceduralisation (i.e. developing the capacities to perform tasks requiring conscious attention)(10), individuals may not be able to engage simultaneously in other actions. However, through practice, they can come to perform taking blood without requiring high levels of conscious thought, and can simultaneously talk to and reassure patients. Taking this example further, a complex task such as taking blood from patients with dementia or very young children may require healthcare workers to focus most attention on the patient (i.e. monitoring, reassuring, holding them steady etc). Here, readiness is likely derived from having had sufficient experience in taking blood samples to perform that procedure without recourse to conscious engagement in that task. Instead, they are able to monitor patients' responses and adapt their procedures accordingly.

The same goes for conceptual readiness. That is, novice healthcare workers or students may know a range of concepts (e.g. particular kinds and classes of diseases, etc). Yet, they may not understand links and associations amongst them, for instance physiological considerations and characteristics of disease. Hence, expectations about them being able to make these links and associations without having had the repertoire of experiences to form purposeful associations and linkages are probably unrealistic. Instead, these students are probably ready to have the kinds of experiences from which such conceptual associations might arise. Indeed, that might be a reasonable focus for the next phase of their occupational development. So, what has been proposed above is that individuals' readiness to engage in particular kinds of activities is shaped by the extent and kinds of conceptual and procedural knowledge required in a particular healthcare setting.

Then there is also dispositional readiness. That is the level of occupationally-related dispositions required to draw upon and utilise their knowledge effectively when, for instance, interacting with patients. These dispositions are central to how individuals elect to engage in these activities, and they also mediate the kind of effort that individuals exercise in their thinking and acting, and therefore, their learning(11). So, they direct the focus, intensity and direction of individuals' intentional thinking and acting as depicted in Figure 1. Without an appropriate level of dispositional readiness, it would be inappropriate for students or junior staff to engage in clinical activities. That readiness is premised on personally-founded factors, including how interested individuals are in engaging in particular activities and interactions. This engagement extends to how they direct their consciousness efforts and energies in that engagement. Rich learning (i.e. deep

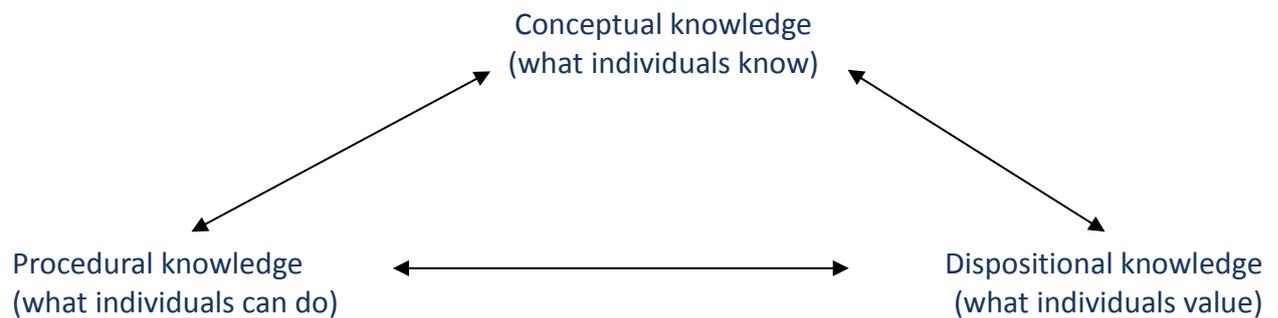
understanding, strategic procedures) arises through effortful and conscious engagement that is unlikely if learners are uninterested, or opposed to such engagement. For instance, if they do not value working in inter-professional teams, they are unlikely to exercise the effort required for such interactions and learning from them to be effective. This kind of readiness, in many ways, underpins all of the above. How, for what reasons, and by what degree individuals elect to engage in goal-direct activities is central to what they do and learn. No amount of external force, pressure, monitoring and surveillance will be sufficient to overcome a lack of human interest in engaging in anything other than superficial and enforced ways. Indeed, Wertsch(12) makes distinctions between mastery (i.e. superficial engagement to meet compliance requirements) and appropriation (i.e. effortful engagement to learn and become committed to what is experienced). Hence, dispositional readiness is central to the quality of engagement in and learning through clinical practice to secure the appropriation of healthcare knowledge.

In summary, understanding about conceptual, procedural and dispositional readiness is helpful for organising educationally-appropriate and well-aligned experiences that are conducive with learners' readiness and purposive for developing further these capacities as indicated in Box 5. All of this is shaped by their level of interest and focus of their engagement in healthcare tasks and their learning. It also emphasises that a principal consideration for educational provisions and their enactment is being aware of and responsive to learners' or students' readiness.

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Figure 1 – Interdependence amongst conceptual, procedural and dispositional knowledge



Box 1 text

Readiness refers to individuals' abilities to learn from what they know, can do and value (i.e. their conceptual, procedural and dispositional capacities).

Box 2 text

The zone of potential development(13) is the scope of individuals' learning that can arise based on their readiness and efforts alone. Beyond this zone, they likely require assistance, guidance or input from others - their Zone of Proximal Development(14) to extend the scope of their learning that they could not achieve independently. To be effective, others' assistance (e.g. teaching) should to be aligned with learner readiness.

Box 3 text

Conceptual knowledge includes facts, concepts and propositions, which are the kinds of knowledge individuals can state: they are declarative(15).

That knowledge:

- has hierarchies with factual knowledge at the lowest level and associations amongst concepts (e.g. the complex of factors determining individuals' health) the highest or what is described as depth of knowledge;
- can be spoken or written down (i.e. declared); and
- is often the kind most focussed upon and assessed in educational programmes.

So, whereas factual knowledge is knowing the names of parts of human anatomy, or health conditions, deep conceptual knowledge comprises understanding the causal links and associations required to comprehend and explain particular health-related conditions, and then elect appropriate treatments. Hence, deep conceptual knowledge is required for effective clinical reasoning(3).

Procedural knowledge is what we use to achieve goals through thinking and acting.

That knowledge:

- has hierarchies from specific procedures, for enacting single tasks (e.g. undoing a bandage), through to strategic procedures used to realise and manage more demanding goals (e.g. evaluating the kinds of bandages required, frequency they need to be changed etc, for instance); and
- can only implied, it cannot be stated

Specific procedures are learnt and honed, usually by developing sub-procedural elements which become combined and through rehearsal can be performed without requiring conscious thought.

Higher order procedures assist task completion by monitoring and evaluating the use and outcomes of specific procedures, providing strategic procedures that are developed over time through engagement in different kinds and variations of goal-directed activities(16).

These procedural capacities are learnt by working with patients of different ages, fitness, health levels etc, and are likely premised on foundations of honed specific procedures.

Dispositional knowledge comprises attitudes, values, interests and intentionalities that direct and guide individuals' conscious thinking and acting, and, therefore, learning.

Dispositions associated with work have three dimensions:

- i) social - accepted patterns and norms associated with human interactions;
- ii) occupational specific - the values, norms and practices expected of those practising particular occupations (e.g. patient care, being sensitive to their needs confidentiality, caution, double-checking); and
- iii) personal - what actions and conceptions individuals' preferences and how they direct their efforts in utilising and further developing that knowledge.

Socially-derived dispositions often arise through observation, and personal dispositions arise through across life as individuals mediate and reconcile what they experience.

Box 4 text

Canonical occupational knowledge – the concepts, procedures and dispositions required to practice a particular occupation (i.e. doctor, nurse, physiotherapist). Essentially, they comprise what those practising the occupation are expected to know, can do and value.

This complex of knowledge is that captured in occupational standards and national curriculum documents and used in educational programs and in assessment for licensing, etc.

Situated domains of practice – are the conceptual, procedural and dispositional requirements of a particular circumstances where the occupation is practised (e.g. hospital, medical centre, surgery, rural, regional, metropolitan setting).

These domains ultimately constitute being effective in occupational performance as those requirements differ across work settings.

Hence, occupational competence and expertise are manifested in circumstances of actual circumstances where the occupation is practiced.

Box 5 Text

Practical points for clinical teachers

Assessing students or junior clinicians' readiness (i.e. what they know, can do and value) can assist in selecting appropriate learning experiences for them.

Appraising their zone of potential development can inform what tasks and learning they can accomplish on their own and for which they will probably require support and guidance.

Providing opportunities for repeated practice to develop specific procedures and progressive engagement in diverse experiences can build procedural, conceptual and dispositional capacities at both the canonical and situated level of performance.