

Learning through practice: Goals, concepts and contributions



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Case

Proposes that experiences in practice settings (i.e. healthcare workplaces) can make particular and salient contributions to three key goals for medical educational the:

- i) selection of occupation (e.g. specialisms),
- ii) generation of occupational capacities and
- iii) ongoing development across professional life.

That is, assisting the formation of professional identity, and initial and further development of professional competence.



Progression

Premises for progressing

Goals for medical education :

- i) identifying a specialism;
- ii) developing capacities to practice effectively and
- iii) sustaining medical competence

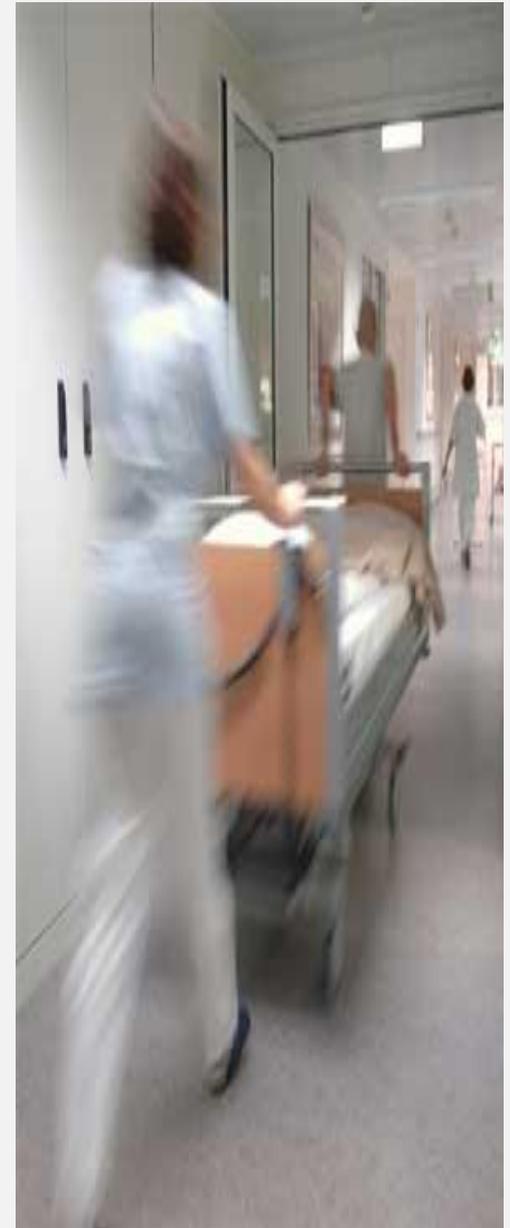
Contributions and limitations of learning through practice

Practice curriculum, pedagogies and epistemologies

How the three goals are addressed through practice-based experiences and their integration

Integration of practice experiences in medical education

So what?



Premises

No separation between participating in practice and learning

..... Also, remaking of cultural practice (e.g. medical practice)

Occupational (e.g. medical) knowledge is a product of history, culture and situation (e.g. locale)

– it needs to be accessed and engaged with (i.e. inter-psychologically)

Rich learning of this knowledge likely dependent upon the:

- i) kinds of activities and interactions available to students, and
- ii) quality of students' engagement with them.

Experiences provided in educational institutions and practice settings are nothing more or less than invitations to change

Ultimately, the take up of invitations by students is most salient.

Learning through practice: historical perspective

The most common and sustained mode of learning occupations across human history

Central to humanity and human progress

Similar processes for learning occurred in Europe, Asia and, likely, elsewhere -

Local workplaces common sites for that learning in Europe, India (Menon & Varma 2010), Japan (Singleton 1989) and China (Ebrey 1996)

Yet, little evidence of direct teaching

Vast majority of this learning appears based on mimesis: observation and imitation, then practice

That is - a learning process - not premised on being taught



Goals for medical education



Dewey (1917) two goals for vocational education:

- i) Identifying an occupation/vocation (i.e. coming to identify with medical work or a specialism within it)
- ii) Developing occupational capacities (i.e. canonical knowledge of medicine and situated requirements for performance) – the competence required to practice.

In contemporary times, he would have added

- iii) Sustaining occupational competence – learning across professional life

Let us consider the centrality of those goals to medical education

1. Identifying and selecting an occupation/specialism

A vocation means nothing but such direction in life activities as render them perceptibly significant to a person, because of the consequences they accomplish, and are also useful to his [sic] associates. (Dewey 1916:307)

“... being a teacher, a minister, a doctor, or a parent would *not* be vocational if the individual kept the practice at arm’s length, divorced from his or her sense of identity, treating it in effect as one among many indistinguishable occupations. ...

This is not to say the person would conceive the activity as meaningless. He or she might regard it as strictly a job, as a necessity one has to accept, perhaps in order to secure the time or resources to do something else”. (Hansen 1994: 263-64)

Has to be assented to(a personal fact)

So, securing individuals’ vocations and coming to practice them is quite central to personal and societal purposes.

Participation in practice can assist identify whether individuals are suited to medicine and to which specialism

When we are a student we don't have such a responsibility as a working adult. What we were focussing is just exams, get it passed, make sure you got knowledge. And the knowledge that is enough to survive as junior doctors and so on. You think you have big dreams –“I want to be like surgeons, I want to be this and that”- but once you start working with the working hours, with the working environment, the stress level you start realising that it's not that easy and I've realised that working in this field, as with medicine, it requires a lot of commitment to keep you going. (SLC #1)

Since I was student I had always been thinking of becoming general surgeon. But once I start working in general surgery things changed. My interest in the surgical topics, the surgical skills is still very strong. But looking at the working environment, the working physical demands, mental strain, it's really tough. Cos they have their protocol, their timing. And the way they work, their attitude you will see the difference between medicine and surgery. I would prefer like a more peaceful, more harmonious working environment. ... So I don't feel like I would like to work in that way for 30 years so I start changing my mind. I still have strong interest like in anatomy and understand how it works and how it change. So I start thinking about radiology. So radiology is my current first choice. (SLC#1)

you always knew that there was a reason why you got into it (medicine) in the first place. And when you start work that's when you realise that you've made the right decision, or at least I did, or I felt that way. (JB#1)

I'll apply for Acute Care ... hopefully apply to dual medical and anaesthetics. I'd quite like to do ITU. That was my last job and I loved it so I quite fancy, like, doing something in that area. (JB#1)

you can see ... the actions that you make, you can see the effect so I quite like the acute aspect of it. And the patients are quite sick and I think it's quite interesting whenever they're really sick- you can treat them, rather than, you know, watching and waiting for, like, a slow chronic treatment. I find that probably a bit less exciting. (JB#1)

2. Developing occupational capacities

Canonical knowledge of medicine and specialism, and also situated requirements for practice

Three dimensions of medical knowledge

Domain-specific conceptual knowledge – ‘knowing that’ (Ryle 1939) (i.e. concepts, facts, propositions – surface to deep) (e.g. Glaser 1989)

Domain-specific procedural knowledge – ‘knowing how’ (Ryle 1939) (i.e. specific - strategic procedures) (e.g. Anderson 1993, Sun et al 2001)

Dispositional knowledge - ‘knowing for’ (i.e. values, attitudes) related to canonical and instances of practice (e.g. Perkins et al 1993), includes criticality

Conceptual knowledge



...when I first started, ...the simplest job became the toughest job for me. So if I manage to get some bloods off from patient I'll be very happy then (laughs). But I feel like I'm enjoying it because I'm learning again. I like to learn as in when I learnt I see the patient, I practice it and I understand it and I know in the future if come across this case I have better knowledge, more confident in managing the patient or dealing with it, compared with like one year ago which I have no confidence. But now I feel like everyday I'm learning and seeing patients and new cases and I feel excited. (SLC#1) – *specific procedures – new patient group for junior doctor - children*

I learnt most after a year of working ... in the ward. Let's say after the ward round patient who needs to go home, they need medication to be prepared by a certain time. So things you have to consider not only yourself, you also have to consider about like pharmacies, what time they come and check the medication or how much time they need to prepare the medication. And if there is any patient coming in that didn't need the bed and then someone needs to clean the room so I have to judge the time. And also imaging scans, if in the ward if there are any sick patients that have to take priority first so if they need imaging scan do it right then. And then do they need any urgent bloods or do you need to communicate with anyone? Get the information first. Yeah, or any family members that would like to get an update from you. So I just look at it, any sick patient, I have to deal with sick patient first. And if I'm going to spend a lot of time with just one particular patient and I will still have a lot of jobs to be done I have to inform my senior colleague and ask for help from my other colleagues to make sure things are still progressing while I'm occupied with this patient. So I have to make it a balance between the two. Or plan ahead... things that I can do beforehand then I try to do it like the day before or two days ahead. (SLC#1) – *strategic procedures*

3. Sustaining occupational competence

Learning and work co-occur – on going learning and development arising through everyday work activity

Can be shaped by particular experiences – also training programs assisting secure knowledge that not otherwise be learnt

Agentic learners – preparing students to be active and intentional learners both for their study but across their working life

So, each of these three goals is important to medical education

Let's consider the learning potential of these kinds of experiences



Learning through everyday practice

Contributions to learning through everyday occupational practice include:

i) engagement in work tasks (“just doing it”) – legacies of goal-directed activities (cognitive & socio-cultural constructivist accounts);

ii) indirect guidance provided by the setting (“just being there”) – observation and imitation (cognitive & neuro-science accounts);

iii) practice within that setting – practise, rehearse, refine and associate (cognitive accounts of procedural & conceptual development); and

iv) close guidance (proximal) by other practitioners and experts – assisting develop knowledge that cannot be learnt through discovery (Billett 2001).

Notes:

1. locus for these contributions is individuals’ intentionality, agency, energy and interdependent processes – mimetic processes
2. contributions are made interdependently (i.e. not just self-direction)
3. particular kinds of utility and impacts at points in learners’ trajectories

Limitations of learning through everyday practice

- learning that is inappropriate (i.e. bad, unhelpful, wrong)
- lack of access to activities and guidance
- not understanding the goals for workplace performance
- reluctance of experts to provide guidance
- absence of expert guidance
- limits in developing understanding in the workplace
- reluctance of workers to participate (Billett 2001)

Need to find ways of drawing on the contributions and minimising or ameliorating these limitations



In all, learning arises through everyday activities or workplace interventions is a process comprising a duality of:

affordances of workplaces - (i.e. invitational qualities, can be positive or negative) and

engagement - how individuals elect to engage with what is afforded them (i.e. their intentionality, interest etc).

Comprises a duality that is relational



So, how should we take forward these conceptions in informing an account learning through practice that can inform medical education?

Practice curriculum, pedagogies and epistemologies

A literature review (Billett 2011) identified three dimensions of a practice-based approach to learning:

Practice curriculum – organisation of learning experiences (i.e. the course to follow)

Practice pedagogies – means of augmenting experiences provided through the practice curriculum

Personal epistemologies – means by which individuals could to engage



Practice curriculum – sequencing of experiences

A way of life as an apprenticeship - Lived experiences within a community (Jordan, 1989, Rogoff 1990, Bunn, 1999) – e.g. experiences on wards/other practice settings/accommodation

Deliberate structuring of learning experiences (Bunn, 1999) – e.g. in-service education sessions, particular intentional experiences

Sequencing of activities - from those of low error risk to those where consequences of errors are greater (Lave 1990)

Tailors – hairdressers – production workers – room attendants -- doctors (Sinclair 1999) – admissions, diagnoses,

Refers to the ‘learning curriculum’ (Billett 2006, Lave 1990) – the sequencing of workplace experiences for achieving medical education outcomes

2. Practice pedagogics: the augmentation of those experiences

Story telling (Jordan, 1989)

Verbalisation (Gowlland, 2010)

Pedagogically rich activities (Billett 2010)

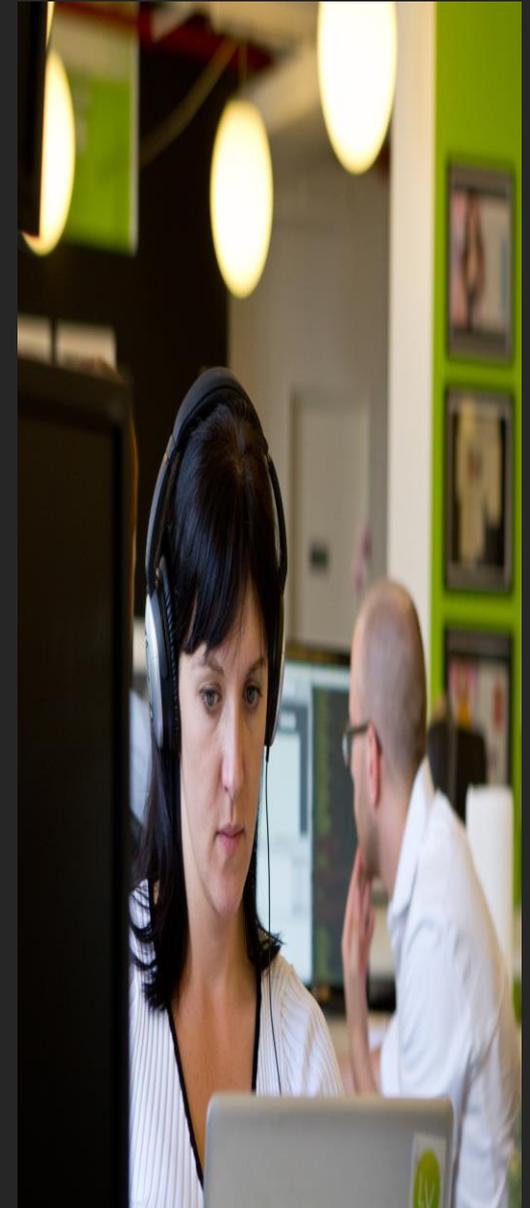
Proximal guidance (Rogoff 1995 Billett 2001,

Direct instruction/‘hands on’ (Makovicky, 2010)

Indirect/distal guidance (Gowlland, 2011)

Heuristics (Billett, 1997) and mnemonics (Rice 2008, Sinclair 1997)

Partially worked example (Makovicky, 2010)



Pedagogies for practice

Procedural development

Modelling

Coaching

Scaffolding



Conceptual development

Questioning

Diagrams

Explanations



Also

Group discussion

Extending knowledge through
questioning

Billett 2001

Personal epistemological practices

Imitation (*mimesis*) (Jordan 1989, Tomasello 2004, Gardner 2004, Marchand, 2008)

Ontogenetic ritualisation (Tomasello 2004)

Active engagement with and construction knowledge:

- apprehending -to seize (Webb 1999),
- to steal, (Marchand 2008),
- Japanese word for apprentice is *minarai*: one who learns by observation;
- unobtrusive process of observation: *minarai kyooiku* (Singleton 1989)

Importance of learner readiness (Bunn 1999, Singleton 1989) and assent (Mishler 2004)

Deliberate practice (Ericsson, 2006, Gardner 2004, Sinclair, 1997)

Goal#1 - Identifying an occupation/vocation

Practice Curriculum - Experience in clinical settings shapes choice of specialism, assists students and graduates identify their preferred specialism

- Provision of experiences to expose students/FYIs to diverse practices (i.e. learning curriculum)

Pedagogic Practices - Close guidance can introduce, guide and familiarise novices in ways that might otherwise be too difficult

Personal Epistemologies - Critical engagement, identifying what interests and for what reasons, and then working to achieve the preferred outcomes



Goal#2 - Developing occupational capacities

Practice Curriculum - Everyday working and learning during clinical – development of conceptual, procedural and dispositional capacities

- Accessing goal states (required performance)
- Developing dispositional qualities
- Establishing causal links and association - essential quality of expert performance
- Enriching representations of knowledge (simulations, episodic)

Pedagogic Practices - Developing procedural capacities, guidance,

- Access heuristic capacities, and strategies for working and learning

Personal Epistemologies - Actively engaging in activities, from which learning arises – degree of press, intentions, effort and focus all essential for rich learning to arise.

Goal#3 - Sustaining occupational competence

Practice Curriculum - Ongoing legacy – refining honing, facing new tasks, engaging with other and more experienced clinicians

Pedagogic Practices - Access to experts, work situations in which the knowledge is verbalised or otherwise made accessible

Personal Epistemologies - Ongoing development across working life through everyday work or organised PD activities largely shaped by individuals' personal epistemologies



Promoting, aligning and integrating practice-based experiences with intentional education experiences

Considerations of how these experiences can be:

- i) made more effective for medical students
- ii) aligned with the intended outcomes of medical education
- iii) integrated with other elements of the medical education experience

Some lessons might be drawn from a recent study

Australian Learning and Teaching Council Fellowship on utilising integration practice-based experiences. Comprised 20 projects a range of disciplines, each addressing specific issues

A consideration of: -

Curriculum practices

Pedagogic practices



Integration of experiences

Integration of practice experiences

Curriculum:

intended,
enacted and
experienced

Pedagogic practices:

before,
during and
after practice-based experiences



In sum,

Practice experiences go beyond just exercising, practicing and 'contextualising' what is learnt in educational programs.

Make particular contributions and have specific qualities

Address three key educational goals of i) identifying preferred specialisms and suitedness to medicine; ii) developing medical capacities and iii) ongoing development for future

Need to understand how to optimise experiences in clinical settings to generate the knowledge required for medicine

Likely requires conceptions of practice curriculum and pedagogies and emphasise personal epistemologies

Also, considerations for integration of experiences