



## A Multi-Dimensional Theoretical Framework to Support the Learning Needs of Medical Specialists

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### Abstract

*The Royal Australasian College of Physicians (RACP) is the professional medical College of over 17,000 physicians and 8,000 trainee physicians (medical specialists), in Australia and New Zealand. Due to the complex and applied nature of the medical profession, continuous learning is an absolute priority which involves specific challenges, such as the constantly evolving state of knowledge and the extensive diversity of the scope of practice of different specialties. The College operates in a fast-paced environment, characterised by profound change, driven by rapid advances in medical knowledge, shifts in patterns of disease, new technologies, and changing regulatory frameworks. Medical specialists mainly learn on the job in teaching hospital settings. This learning practice is situated in a specific context (hospital hierarchy, high level of responsibility while still in training, long working hours, etc.) that affects learning processes. To provide effective learning opportunities in such a complex environment, the College has developed a research-based conceptual multi-dimensional framework comprising four components: social learning, learning by doing, experiential learning and reflective practice. The framework has been applied to the design and development of the online learning resources the College produces every year. Its effectiveness is being regularly evaluated using pre and post course evaluation that indicates excellent level of users' satisfaction.*

**Keywords:** *Medical education, social learning, learning by doing, experiential learning, reflective practice.*

I acknowledge the contribution of Sarah Champion, Senior Executive Officer, The Royal Australasian of Physicians, in providing data and figure shown in this paper.

### 1. Introduction

The Royal Australasian College of Physicians (RACP) is the professional medical College of over 17,000 physicians and 8,000 trainee physicians (medical specialists), in Australia and New Zealand, representing 33 medical specialties. The College provides accredited specialist training to trainee doctors who have completed their medical degree and wish to further specialise as physicians and continuing professional development for specialists who have completed their physician training. Medical specialists mainly learn on the job in teaching hospital settings, a learning practice which is characterised by specific dynamics and contextual elements (hospital hierarchy, high level of responsibility while still in training, long working hours, etc.). To provide effective learning opportunities in such a complex environment, the College has invested resources to identify a suitable theoretical framework that could ensure expected learning outcomes. Due to the applied nature of the medical profession and the constantly evolving state of knowledge in the medical field, the need for a multi-faceted framework that could fit the extensive diversity within the scopes of practice of different specialties has become a priority.

### 2. Literature review

Medical education is based on the apprenticeship model, where trainee doctors learn by observing senior doctors and by reproducing same procedures. Central to this learning process is learning by doing, through a form of apprenticeship training “based on beliefs that important learning is rooted in repeated practice of skills in different situations, using actual tools [...] in real contexts, while coping with the social and political dynamics important to any working community” [1 p6]. Medical education must also take into account rapid advances in medical knowledge, shifts in patterns of disease, new technologies, and changing regulatory frameworks. This constantly evolving context requires an educational model that can progressively build layers of subsequent knowledge, ensuring continuity between pre-existing knowledge and newly acquired knowledge. *Experiential learning* [2,3,4,5] can offer such a framework.



The notion of experiential learning was originally introduced by John Dewey [6], who argues that learning processes build new knowledge through adapting and applying previous experience. His scholarly work has shaped the way we understand the relationship between experience and learning. Dewey points out that “What [one] has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow” [6 p44]. This describes the principle that Dewey called *continuity*, in which past and present experiences of learning are connected. Existing knowledge constitutes the basis for acquiring new knowledge, as learners can connect aspects of the new experience to what they already know through modalities that alter the knowledge.

The contemporary understanding of the relationship between experience and learning has been particularly shaped by Kolb [2]. He describes learning as a process through which knowledge is created through the transformation of past and present experience in relation to a context, tapping into the concept of continuity described above. The process involves four basic stages: concrete learning, reflective observation, abstract conceptualisation and active experimentation. Building on this situated learning process approach, Tennant and Pogson [7] developed a model that underscores the role of practical experience, an aspect that is particularly relevant for an apprenticeship-based practice as medicine. The model identifies four levels through which experience creates learning opportunities, and subsequently knowledge, by incorporating prior experience, current experience and new experience into a ‘learning-from-experience framework’. This model is mostly suitable for medical education as physicians learn by following a sequence of stages, which allows students and residents to participate “in activities designed to help them develop a corpus of knowledge, skills, and experience of potential use to them in their medical practices” [8 p1013]. As a consequence, experiential learning frameworks can be particularly suitable to deliver medical education, as they are rooted into work-based learning processes “located in everyday workplace tasks and interactions [...] and other important sites of non-formal and sometimes unacknowledged education” [1 p1].

The connection between adult learning and experience brings about the notion of *reflective practice*, a concept introduced by Schön [9,10]. Reflective practice is “learning that is acquired through reflection on or in practice (experience)” [11 p115] and is based on two core principles, reflection-on-action and reflection-in-action [11]. The former is described as the process through which learners consciously reflect on an experience they have had after the experience has occurred. The latter relates to the reflection that happens while the experience is in progress, thus it occurs concurrently with the practice. Schon points out that reflection-in-action “reshapes what we are doing while we are doing it” [10 p26]. Reflective practice and experiential learning are robustly connected to work-based learning, and therefore with medical education which, as noted above, is rooted in the learning-by-doing model. In medical education the purpose of reflective practice is for doctors to articulate and formalise ideas and insights about their professional development through the process of reflection. Reflective practice is designed to stimulate critical thinking and reflection on learning experiences and to provide a structure to reflect on a series of events that have had an impact on medical practice. This process allows to identify the link between everyday experiences and the domains of the medical practice and to consolidate good practices leading to improved performance [12]. However, its application to work-based learning environments needs to be problematised and contextualised to understand how the learning processes occur in work environments, so that “the work-based environment can be formalised as an authentic learning environment and thus accepted as comparable but nevertheless different from the traditional on-campus one” [13 p319].

### 3. Empirical research in the RACP context

To corroborate with empirical evidence this conceptual framework, a preliminary ethnographic study was conducted by the College across Australia and New Zealand with the objective of identifying the educational model that best aligns with the way physicians learn. This project (denominated *eLearning Futures*) commenced in September 2013 and focused on reviewing best practice in medical education, researching the learning context through site visits (observations), consultations (focus groups) and interviews, to observe trainees and physicians learning in their workplace.

The field work included site visits to five hospitals in metropolitan and rural areas, three focus groups with 42 trainee physicians and physicians to map the findings from each session against the findings from the site visits to determine similarities and difference. It also involved semi structured interviews with seven participants and four workshops to enable RACP stakeholders to engage with the research findings and contribute their perspectives to the results and recommendations.

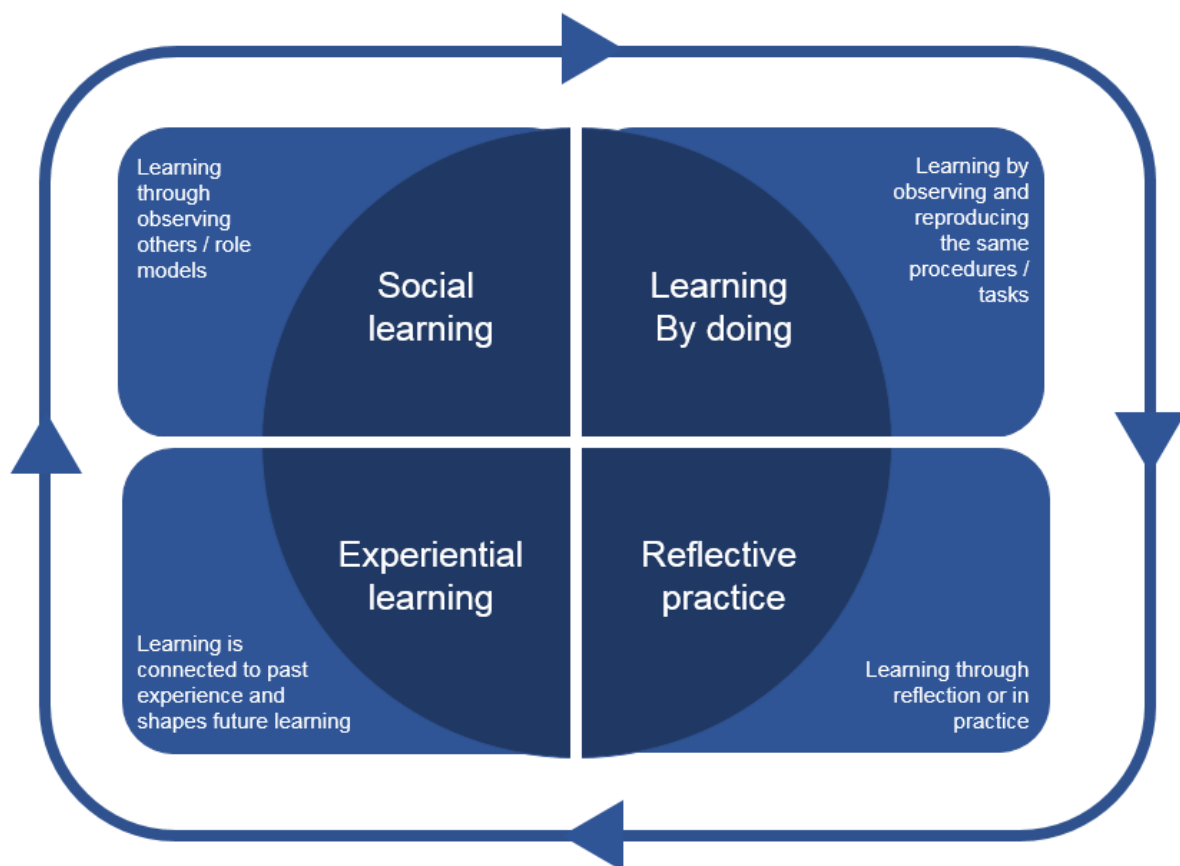
The findings of the study revealed that trainees and physicians learn socially, on a number of levels, from interaction with peers, with and from their peers, with and from their supervisors, and from



observing colleagues in the wider workplace. The next step was to introduce social learning principles into the design of the educational resources developed by the College. As the findings of the ethnographic study indicated, the way trainees and physicians learn is aligned with Bandura's conceptualization of social learning: "Most human behaviour is learned observationally through modelling: from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action" [14 p22].

Based on these findings, the College has subsequently identified a multi-dimensional framework that could assist in designing and developing educational resources to support the learning needs of medical specialists:

Figure 1: RACP Multi-dimensional Learning Framework



#### 4. Application: The Supervisor Professional Development Program (SPDP)

Drawing upon the multi-dimensional learning framework presented above, the College has designed an online course to train supervisors. Supervisors play a pivotal role in specialist medical training. To access a training post in a teaching hospital, trainee physicians need to secure a supervisor to oversee their training path. Supervisors support trainees by assisting them to plan learning opportunities and providing feedback on their progress. The Supervisor Professional Development Program (SPDP) consists of three online courses, each held over a five-week period. The online social learning nature of this program provides many opportunities for participants to interact, share ideas, experiences, questions and comments. The courses do not form a traditional eLearning environment in which participants interact with a computer by responding to questions on screen and clicking through linear content. They have been designed as a community of peers, sharing experiences and knowledge while considering the core components of learning at work [15]. In 2018, the College ran five SPDP courses, training 494 supervisors. The post-participation evaluation included a specific question on the social component of their learning trajectory: "the opportunity to have discussions online with other supervisors was useful for my learning". Of the 494 participants, 263 answered this question and the results are shown in the table below:



Table 1: Responses to the question “the opportunity to have discussions online with other supervisors was useful for my learning”

| Rating                   | Raw | %     |
|--------------------------|-----|-------|
| Strongly agree           | 55  | 20.91 |
| Agree                    | 176 | 66.92 |
| Neutral / does not apply | 27  | 10.27 |
| Disagree                 | 1   | 0.38  |
| Strongly disagree        | 3   | 1.14  |

The results shown in Table 1 demonstrate that participants significantly valued the online discussion with their peers. The success of the program has been also demonstrated by the answers provided to the question: “what did you find valuable about the resource?”, which was also included in the post-participation evaluation. An overwhelming majority of responses was related to the social learning nature of the program and to the opportunity to reflect on medical practice, as participants’ statements below show:

- “Reading the experience of other supervisors and their ideas/thoughts on each topic”
- “The ideas from other participants”
- “Really valuable discussions on the forum”
- “Ability to learn from all participants”
- “The online forums were very helpful”
- “Opportunity to reflect and reinforce information learnt as well as practice”
- “It made me reflect on my practice”
- “Gaining insights from others’ experiences and reflections”
- “I enjoyed the forum discussions and allowed me to reflect more on my own behaviours as a supervisor”
- “The forums with other people’s views and posts”

These statements demonstrate how much participants valued the opportunity to learn from their peers and from their experience, through sharing ideas and reflections. Moreover, the possibility provided by the program to reflect on their own practice as supervisors was considered of great value.

An area of further research to support the College’s framework and its validity is a more advanced assessment of the learning outcomes and their impact on medical practice and patients’ outcomes.

### Conclusions

The College designs and develops all its educational resources for trainee physicians and physicians following the multi-dimensional framework presented in this paper. The multi-faceted nature of this framework allows to capture the complexity of the medical educational model into the design of the College’s educational resources. The design of the resources reflects how physicians learn throughout their professional life, from observing their peers and their behaviours, from their own experience and the experience of their peers, from their daily job, and from reflecting on their practice.

### References

- [1] Fenwick, T. “Learning through experience”, Malabar, Florida, Krieger, 2003
- [2] Kolb, D. A. “Experiential learning: Experience as the source of learning and development”, Englewood Cliffs, NJ, Prentice Hall, 1984
- [3] Jarvis, P. “Adult education in the social context”, London, Croom Helm, 1987
- [4] Green, G., & Ballard, G. H, “No substitute for experience: Transforming teacher preparation with experiential and adult learning practices”, SRATE Journal, 20(1), 2010-2011, 12–19
- [5] Kolb, D. A., & Yeganeh, B. “Deliberate experiential learning”, In K. Elsbach, C. D. Kayes, & A. Kayes (Eds.), “Contemporary Organizational Behavior in Action”, Upper Saddle River, NJ, Pearson Education, <http://learningfromexperience.com/research/>, 2012
- [6] Dewey, J. “Experience and education”, New York, Collier Books, 1963 (first published 1938)
- [7] Tennant, M., & Pogson, P. “Learning and change in the adult years”, San Francisco, Jossey-Bass, 1995
- [8] Slotnick, H. B. “How Doctors Learn: Education and Learning across the Medical-school-to-practice Trajectory”, Academic Medicine Issue: Volume 76(10), October 2001, 1013-1026



- [9] Schön, D. A., "The reflective practitioner: How professionals think in action", New York, Basic Books, 1983
- [10] Schön, D. A. "Educating the reflective practitioner", New York, Basic Books, 1987
- [11] Merriam, S. and Bierema, L. "Adult Learning. Linking Theory and Practice", Jossey-Bass, San Francisco, CA, 2013
- [12] The Royal Australasian College of Physicians", Professional Qualities Reflection", [https://www.racp.edu.au/docs/default-source/default-document-library/basic-training-reflection-information-sheet.pdf?sfvrsn=1e69371a\\_2](https://www.racp.edu.au/docs/default-source/default-document-library/basic-training-reflection-information-sheet.pdf?sfvrsn=1e69371a_2), RACP, Sydney, 2019
- [13] Chisholm, C. U., Harris, M.S.G., Northwood, D. O., & Johrendt, J. L. "The characterisation of work-based learning by consideration of the theories of experiential learning", European Journal of Education, 44(3), 2009, 319–337
- [14] Bandura, A. "Social Learning Theory", Oxford, England, Prentice-Hall, 1977, 22
- [15] The Royal Australasian College of Physicians, "SPDP Online Participation Guidelines", RACP, Sydney, 2019