

A snapshot of placement activities and learning outcomes assessed through logbook submission for clinical exercise physiology students

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Abstract

Introduction: Student professional placement is integral to authentic student learning. A common requirement of the professional placement experience is for students to log details of their day-to-day activities, including a description of the clients and the knowledge and skills applied. Unfortunately, there is a lack of research investigating the specific activities that students undertake during clinical exercise physiology placement and whether completing logbooks provides assurance that learning outcomes have been achieved.

Methods: The purpose of this research project was to capture the skills and experiences that students report (via logbooks) being exposed to during their clinical professional placement for clinical exercise physiology and to compare these to the intended learning outcomes.

Results: Students tended to undertake 1-hour client sessions with clients 60–69 years of age. Osteoarthritis, general pain, hypertension, type 2 diabetes mellitus, mood affective disorders and post-traumatic stress disorders were the most common conditions seen during placement. Student skills involved predominately resistance and cardio prescription and assessment.

Conclusions: The snapshot analysis of experiences logged by students, although time consuming, provided an evaluation of student learning during placement. Now, with online, real-time data collection available, this type of analysis will be efficient and will provide evidence for learning outcome curriculum improvements.

Keywords: learning; logbook; practicum; professional placement; student; work integrated learning.

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Introduction

The accredited exercise physiologist (AEP) is a relatively new professional in the allied health sector and has developed from the more general area of sport and exercise science and/or human movement. AEPs specialise in the delivery of exercise for the prevention and management of chronic disease and injuries (such as cardiovascular disease, diabetes, osteoporosis, mental health problems, cancer, arthritis, pulmonary disease and neuro-musculoskeletal injuries and conditions). AEPs can be registered with Medicare Australia, the Department of Veterans' Affairs and "WorkCover", and are recognised by private health insurers. They work in a variety of areas, such as private clinics, hospitals, occupational rehabilitation companies, employment agencies, gymnasiums, general practitioner super clinics and research institutes. Given the complexity and range of conditions that an AEP may have to engage with, an undergraduate 4-year degree or an 18-month master's degree (focused on knowledge, skills and professional placement) is typically required, with professional education programme accreditation administered by the National University Course Accreditation Program Council—a council of Exercise and Sport Science Australia (ESSA).

Currently, in the majority of either undergraduate or postgraduate tertiary sector allied health programmes (e.g., exercise physiology, physiotherapy, dietetics, nursing and psychology), students must undertake a period or periods of professional placement. This professional placement is usually a requirement of the relevant professional body (ESSA) or accreditation authorities appointed by national boards and the Australia Health Practitioner Regulation Agency (e.g., Australia Physiotherapy Association and Australian Health Practitioner Regulation Authority) that regulate university programmes and individual professional accreditation.

Student professional placement is regarded as essential for student learning, specifically to assist in the development of professional skills for entry into the allied health workforce (Billett, Sweet, & Glover, 2013). Placement generally aims to provide students with the opportunity to progressively increase their professional workplace responsibilities involving real clients, with scaffolded guidance/supervision by appropriately qualified and experienced allied health practitioners. Student professional placement enacts Kolb's experiential learning theory, whereby learning as a continual process is grounded in experience and involves observation, reflection, and creating and actively trialling new knowledge (Kolb, 1984). The intended outcome of professional placement is for students to obtain the level of confidence and competency expected of an entry-level allied health professional (Lekkas et al., 2007).

A common requirement of the student professional placement experience is for students to log details of their day-to-day activities, including a description of the clients and the knowledge and skills applied. These logbooks form the basis of a student placement portfolio, which is often standardised across the profession, e.g., the speech pathology COMPASS tool (McAllister, Lincoln, Ferguson, & McAllister, 2006). These placement portfolios have been shown to have a high face validity and to be an effective method of recording students' clinical education experiences (Roberts, Newble, & O'Rourke, 2002). Although some research has been undertaken

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to investigate the perceptions of students and their clinical supervisors on the strengths and weaknesses of portfolio learning (Buckley et al., 2009; Currens & Bithell, 2003; Ryan, 2011), there is unfortunately a general lack of research investigating whether the completion of the placement portfolios, particularly the logbooks, results in or merely coincides with (or perhaps doesn't even coincide with) the assurance that learning outcomes have been achieved.

Placement portfolios typically represent a collection of evidence that, when considered together, can be used to verify that learning has taken place (Buckley et al., 2009). However, what constitutes the necessary content of the portfolio is subject to variation. The level of information required as well as the intensity of assessment, the focus on feedback and reflection, and the amount of administrative detail can vary with each professional practicum placement location, student engagement (motivation and self-confidence) and university unit coordinator/s (Rees, 2005). The consistency of the placement portfolio information may also be impacted by the student's own interpretation when recording events. Misinterpretation and, therefore, accidental misrepresentation may result in a mismatch between intended and actual learning outcomes and, ultimately, may result in students being less prepared for the professional workforce than what their portfolio represents. The potential may, therefore, exist whereby even though students complete the professional placement hours required by the university and professional accreditation standards, they may be missing skills and experiences. These may remain undetected in the current portfolio completion and assessment process. This provokes a few questions: What are students currently listing as skills and experiences in these portfolios? Do these skills and experiences meet the university's unit learning outcomes? Do these skills, experiences and learning outcomes align with the Exercise and Sports Science Australia's (ESSA) university programme accreditation requirements? Additionally, in the clinical exercise physiology context, should placement portfolios be standardised with guides, objectives and competencies or continue to operate with emphasis on minimum duration of professional placement?

Addressing these questions may assist with the development of standardised assessment practices that align with the learning objectives for professional placement. Therefore, it was the purpose of this research project to capture the skills and experiences that students reported (via logbooks) being exposed to during their clinical professional placement in the specific area of clinical exercise physiology and to investigate how these skills and activities align with the university's intended learning outcomes and the professional bodies' accreditation requirements.

Methods

Student logbooks from James Cook University's 2013 professional placement cohort of the clinical exercise physiology programme (n = 12) were used for analysis. All protocols for data capture and analysis were conducted in accordance with the Declaration of Helsinki (no ethics required).

Each logbook was coded for specific details: session length (unspecified, 30 minutes, 1 hour, 1 hour & 30 minutes, etc.), type (unspecified, single or group), gender (unspecified,

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male, female, combination), age (age range unspecified, 0–9 years, 10–19 years, etc.), specific pathologies/conditions (musculoskeletal/neurological, cardiorespiratory/metabolic, and others, such as mental health and cancer) and skills/activities (specific exercise delivery/prescription [e.g. cardio, balance, gait retraining, resistance training etc.], initial assessment and general exercise perception) and finally ESSA professional placement categories (category A—face-to-face delivery of exercise science, category B—preparation for exercise delivery, observation and other clinical activities related to the scope of practice and category C—administration tasks). Data were entered and analysed using Microsoft Excel (Microsoft Office 2010, Microsoft, Washington, USA).

Additionally, hours of contact for particular types of interaction were extracted and recorded. It is a requirement of the professional body (ESSA) that students undertake a minimum of 500 hours of professional placement. This includes a minimum of 140 hours of experience with apparently healthy populations and a minimum of 360 hours of experience with clinical populations (this project analysed the clinical population hours only). ESSA requires that of the 360 hours of clinical placement, a minimum of 140 hours of musculoskeletal/neuromuscular/neurological professional placement and a minimum of 140 hours of cardiopulmonary/metabolic professional practicum placement must be undertaken. Any remaining hours may be completed as health-related activities (such as provision of exercise for pathologies related to cancers, mental health, or renal and/or other pathologies) or further exercise delivery for musculoskeletal/neuromuscular/neurological and cardiopulmonary/metabolic pathologies. Of the 360 hours, it is required that a minimum of 60% be for face-to-face delivery of exercise services (category A) and a maximum of 35% be for preparation for exercise services delivery, observation and other clinical activities related to the scope of practice. A maximum of 5% can be allocated for completion of administrative tasks. These requirements were also compared to the student professional placement logbook data.

Furthermore, the portfolios were reviewed to identify whether the institution's intended learning outcomes were met. For clinical exercise physiology units, these included:

1. Students will gain hands-on and observational experience in clinical exercise physiology at professional practices in the community, including assessment and monitoring, design of exercise prescription/intervention, communication and leadership and safety.
2. Students will put into practice professional obligations to clients and peers in a clinical setting, including abiding by codes of conduct; ethical responsibilities; mentoring; responsible reporting; legal implications of their actions; interpersonal relationships; client privacy, client consent and confidentiality; referral; self-management.
3. Students will have the ability to critically reflect on their experiences at clinical practicum sites.
4. Students will have the ability to evaluate their clinical practicum sites.

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Results

Session length, type of session, gender and age

During professional placement, students tended to spend a majority of their time in 1 hour client sessions (51.1%), with 30 minutes (14.6%) being the next most common session length logged. Less than 3% of sessions lasted either less than 25 minutes or longer than 120 minutes. Students recorded considerably more time spent in single sessions (65.9%) than group sessions (20.4%) during professional placement, with 13.7% unlabelled. Students predominately engaged in single sessions with male clients (40.8% compared to 26.7% female clients), with 16.2% being a combination and 16.2% unlabelled. The age range data demonstrated a skewed normal distribution, with the largest age group (24.9%) being 60 to 69 years of age. Students failed to record age details for some clients (i.e., N/A—21.6%) (Figure 1).

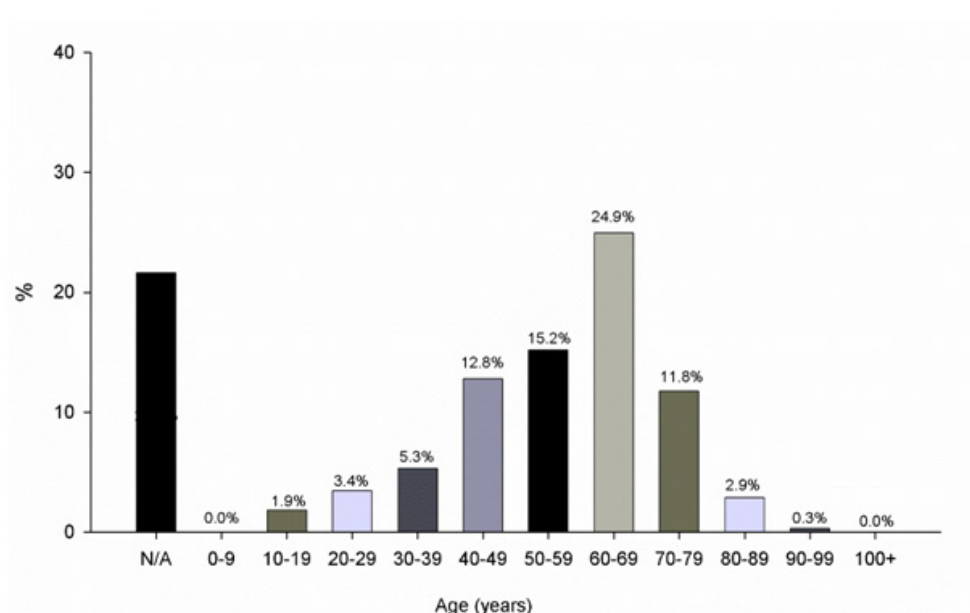


Figure 1. Age groups of clients logged by clinical exercise physiology students during professional clinical placement.

Conditions recorded

Musculoskeletal/neuromuscular/neurological (n = 8592)

Osteoarthritis (21.7%) and pain (15.8%) were the only two conditions logged over 10% during student professional placement. Other conditions such as cerebral palsy, rheumatoid arthritis and plantar fasciitis were logged with an incidence below 1%.

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Cardiopulmonary/metabolic conditions (n = 6706)

Hypertension (12.4%) and type 2 diabetes mellitus (10.8%) were the only two cardiopulmonary/metabolic conditions logged over 10% during clinical exercise physiology student professional placement. Other conditions such as liver disease, tachycardia and hypotension were logged with an incidence below 1%.

Other conditions (n = 2462)

Mood affective disorders (e.g., depression, bipolar and anxiety) (17.1%), post-traumatic stress disorders (11.6%), cancer (9.1%), vestibular complaints (8.7%) and gastro-oesophageal reflux disease (7.9%) were the highest logged other conditions that students reported being engaged with. Schizophrenia, McArdle syndrome, dementia and psychosis disorders were all reported at below 3%. Other conditions, such as low confidence, personality disorder, obsessive compulsive disorder, suicidal, jaundice, prostate and Down’s syndrome condition, were logged with an incidence below 1%.

Summary of conditions

Of the total 202 pathologies/conditions and 17,760 logged incidences during the 2013 student professional clinical placement, osteoarthritis (10.5%) had the highest frequency (Figure 2). The spectrum of conditions that were logged above 1% are regarded as the most commonly occurring conditions in the health sector.

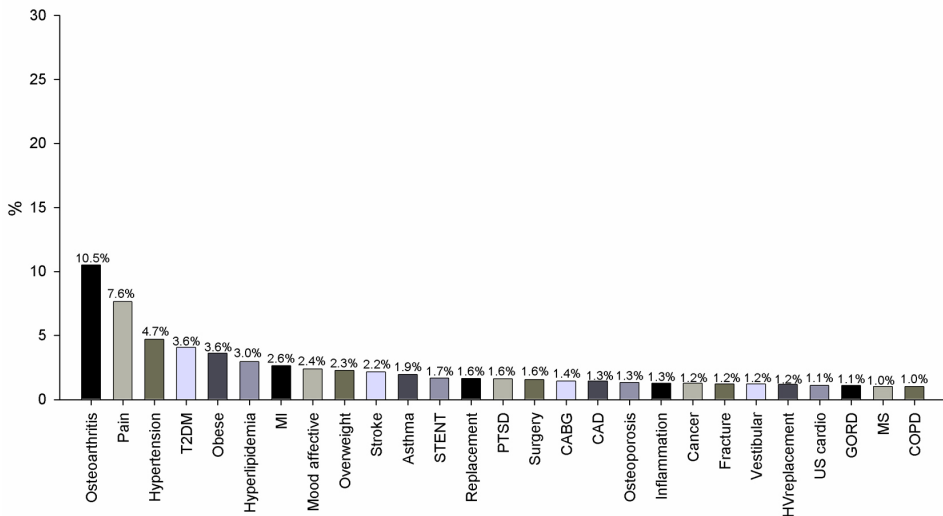


Figure 2. Summary of conditions logged by clinical exercise physiology students during professional practicum placement.

Key:

T2DM (type II diabetes mellitus); MI (myocardial infarction); PTSD (post-traumatic stress disorders); CABG (coronary artery bypass graft); CAD (coronary artery disease); HV/replacement (heart valve replacement); US cardio (unspecified cardiovascular condition); GORD (gastro-oesophageal reflux disease); MS (multiple sclerosis); COPD (chronic obstructive pulmonary disease)

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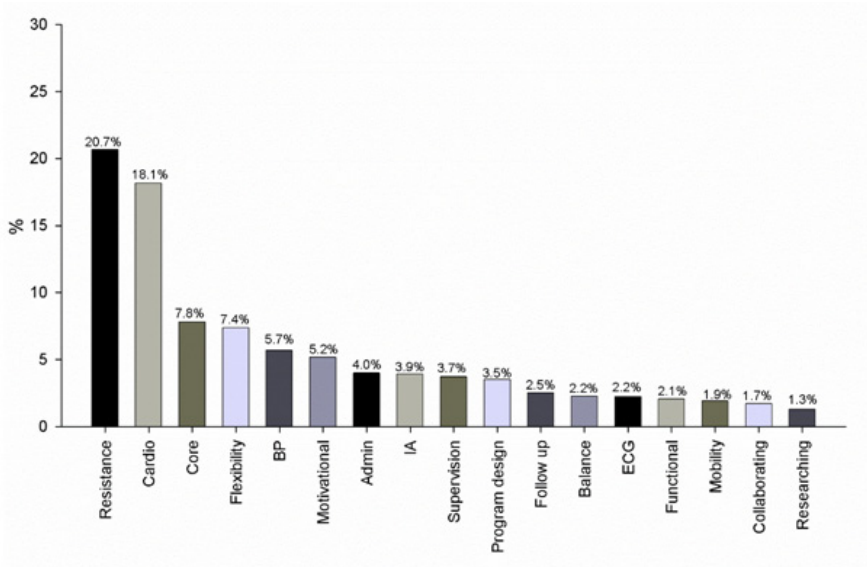


Figure 3. Assessment and prescription activities that clinical exercise physiology students logged during professional practicum placement.

Key:
BP (blood pressure); IA (initial assessment); ECG (electrocardiography)

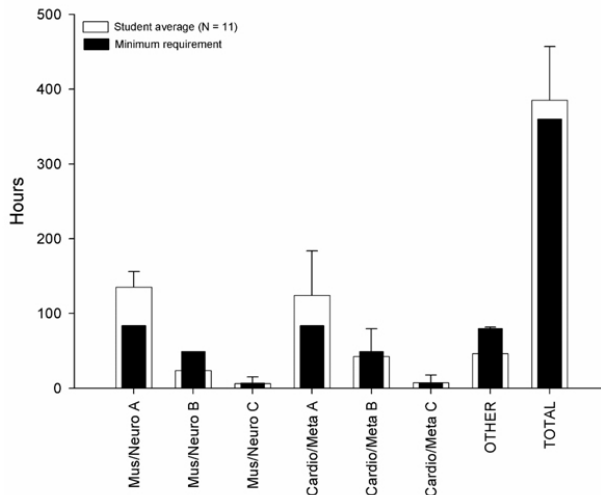


Figure 4. Average hours completed by the student cohort for each target pathology.

Key:
Mus/Neuro (musculoskeletal/neuromuscular/neurological conditions); Cardio/Meta (cardiopulmonary/metabolic); OTHER (other health-related activities); TOTAL (total average of hours completed); A (category A—face-to-face delivery of exercise services); B (category B—preparation for face-to-face exercise delivery); C (category C—administrative tasks)

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Assessment and prescription

Students spent most of their time undertaking resistance (20.7%) and cardio (18.1%) prescription training. In regards to assessment, blood pressure (5.7%) and programme design (3.5%) were the most common assessments (Figure 3). Other assessment and prescription activities, such as stress tests, home visits, case meetings and phantom reports were logged with an incidence below 1%.

ESSA practicum categories

Students (n = 12) were able to complete the “practicum categories” requirements established by the professional accreditation body (ESSA), and for face-to-face delivery of exercise services, students actually achieved more hours on average than was required (Figure 4).

Discussion

The purpose of this research project was to provide a snapshot of the scope of clinical experiences that student’s reported exposure to during their clinical professional placement in the specific area of clinical exercise physiology and to investigate the alignment of logbook data with the professional bodies’ accreditation requirements and the contribution of the current logbook process to assuring institutional learning outcomes are met.

Scope of clinical experience

Just over half of the 17,706 logged placement incidents were identified as 1-hour sessions, and two-thirds were for individual client services. Less than 3% of activities logged lasted less than 25 minutes, which aligns with the minimum Medicare billable service duration of 20 minutes (Australian Government Medicare Australia, 2009). Most of these short sessions incorporated either reviews or assessment activities. As expected, with the known age-related increase in chronic disease prevalence (Australian Institute of Health and Welfare, 2014), 67% of the activities where client age was specified were for clients aged 50 years or older, with the largest proportion of clients being in their seventh decade. Approximately 20% of logged activities did not include identification of client age and/or client gender, while 14% did not identify whether the session was for an individual client or a group of clients. In some cases, this missing information may be due to students’ perception that this detail was irrelevant, for example when performing Category A tasks such as supervised exercise prescription session/s with multiple individuals in a resistance weight setting (e.g., gym).

Cardiopulmonary/metabolic and musculoskeletal/neuromuscular/neurological conditions accounted for 45% and 43% of logged pathologies/conditions, respectively, with 12% assigned to other, including mental health, cancers, vestibular complaints and GORD. Of the 202 pathologies/conditions identified from the logbooks, the 10 most frequently reported conditions included three from musculoskeletal/neuromuscular/neurological (osteoarthritis, pain, stroke), which makes up 16% of Australia chronic disease burden, six from cardiopulmonary/metabolic (23% of Australia’s chronic

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disease burden) (Australian Institute of Health and Welfare, 2003) and one from other. The “other” condition was mood affective disorders, accounting for 2.4% of total logged incidents. The relatively high proportion of experiences that students receive in mental health has been reported previously by placement supervisors and aligns with the prevalence of mental health disorders in Australia (13% of Australia’s major health burden) (Australian Institute of Health and Welfare, 2003). A national survey revealed that 31% of responding clinical exercise physiology placement supervisors provided mental health exercise prescription experiences to students (Sealey et al., 2014), while approximately 20% of Australians experience a common mental disorder within a 12-month period (Australian Bureau of Statistics, 2008). In light of this data, it would be timely for the accrediting body to investigate the inclusion of mental health as a stand-alone clinical placement category, alongside cardiopulmonary/metabolic and musculoskeletal/neuromuscular/neurological. Sealey et al.’s (2014) study also identified the provision of cancer and occupational rehabilitation exercise prescription services by 34% and 26% of placement supervisors, respectively, despite being less prevalent than mental health conditions in the current student logbooks. This should also be considered for further investigation.

Alignment to accreditation requirements

In order to be eligible for professional accreditation, students must complete an accredited programme and 500 hours of professional placement, including at least 360 hours of placement with clinical conditions. When students are given the opportunity to log a specified maximum number of clinical placement hours in Categories B, C and “other”, and can therefore substitute these hours with additional Category A hours, the current logbook analysis indicates that students undertake, on average, an excess of 50 Category A hours and log below the maximum cut-offs for Categories B, C and “other”. These results indicate that students are receiving additional experience in face-to-face exercise service delivery, but less experience in preparatory and administrative tasks. The emphasis on face-to-face exercise delivery during the culminating practicum experience aligns with Kolb’s (1984) experiential learning framework, which culminates in creating and actively trialling new knowledge, and indicates the practically-oriented nature of the clinical placement experiences.

Contribution to assuring learning outcomes

The logbooks (signed by supervisors) provide evidence of the completion of the practicum hours required for accreditation and details regarding the scope of activities/observations afforded during placement. The logbooks alone, however, provide no indication of the student’s level of performance, confidence associated with professional practice or the range of professional competencies demonstrated by the student while undertaking placement. Indeed, of the four learning outcomes assigned to the clinical placement subject under examination in this study, only the first learning outcome is partially achieved via the logbook as indicated in italics—Learning outcome 1: “*hands on and observational student experience including assessment and monitoring, exercise prescription/intervention design, communication and leadership, and safety*”.

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The remainder of the first learning outcome and the other learning outcomes, that is, “application of code of conduct, ethical, legal privacy, consent and confidentiality responsibilities, mentoring, reporting and referrals, interpersonal relationships and self-management”, “critical reflection of clinical experience” and “evaluation of clinical site” are instead evaluated via additional assessment items. While the current logbooks provide evidence of the duration of exposure to authentic learning experiences, the additional practicum-based assessments that have been developed by the university (but are not standardised by the professional body) provide evidence that authentic learning has been achieved. For the degree programme involved in this current study, students are required to submit a portfolio along with their logbook. Students record their placement experiences in the logbook, which then forms the basis of a student reflection and competency portfolio. The portfolio consists of a must-pass professional skills and attributes competency framework completed by supervisors to assess student placement competence and a must-pass personalised comprehensive reflective practice piece that includes self-reflection and student evaluation of the practicum site and experience. It is these additional assessment items that enable assessment of the students’ competence and confidence associated with professional practice, specifically the four stipulated learning outcomes.

The inclusion of critical reflection as a key component of professional placement has gained momentum within the work-integrated learning literature and is strongly aligned with the educational theories of constructivist learning and experiential learning, both of which are underpinned by the process of active and lifelong learning. Constructivist theory emphasises the construction of knowledge through activity and understanding, with the ability to self-assess as an important step in the learning process (Biggs & Tang, 2007). Lifelong learning and self-assessment are especially important in professional degrees, as today’s students are likely to be tomorrow’s placement supervisors. Piaget’s (1985) constructivist approach also focuses on the ongoing equilibration between assimilated (familiar) and accommodated (new) learning experiences. This is played out during placement experiences when students are confronted with new conditions and variations to treatment options. Critical reflection is required before these new experiences are integrated into students’ updated knowledge construct. Experiential learning theory, as extensively reported by Dewey (1938) and Lewin (1964), has since been adapted to Kolb’s (1984) integrated model. Kolb sees the workplace as “a learning environment that can enhance and supplement formal education and can foster personal development through meaningful work and career-development opportunities” (p. 4). Kolb’s experiential learning theory emphasises the individualistic nature of active learning. The use of personalised portfolios for placement assessment lends itself well to this unique learning experience, as students provide a personalised view not only of their experiences but also of their learning processes.

While a portfolio (written or electronic) is recommended as a multi-faceted tool for the assessment of overall clinical placement learning and professional competency achievement, the logbook provides the data/evidence from which the student can construct their portfolio. Incomplete or inaccurate information and variations in the use of terminology, however, may limit the validity of the logbooks. The logbook and

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portfolio are also submitted retrospectively (after the completion of all professional placement hours at the placement site), and therefore the formative feedback opportunities are limited to those provided throughout placement by the supervisory team. We recommend the development of a standardised online logbook, such as InPlace *Logbook*, (QuatumIT, Melbourne, Australia), and/or e-portfolio to routinely and consistently capture descriptive data for each log entry and to provide real-time updates of student progress across the required clinical placement domains. We also recommend that consideration be given to the development and implementation of a national standardised professional e-portfolio that provides evidence of the achievement of competency-based professional practice learning outcomes and reduces the need for “hours” of experience.

There are limitations of the current research project that need to be addressed for future work in the area. Firstly, the current research project only examined 1 year of student logbooks. Additional comparison across multiple years and institutions would provide a more detailed analysis in the area of student skills and experiences during professional practicum placement. Secondly, only cumulative counts of incidence of conditions/pathologies and skills undertaken was captured, not frequency for each student. Although this has provided some interesting data about student learning during professional placement, it is not possible to determine if all students undertake practical experience with every condition. This individual and comparative frequency analysis was outside the scope of this initial snapshot study. With the development of online practicum control systems such as *Logbook*, a module associated with InPlace (QuatumIT, Melbourne, Australia), the breadth and depth of student placement experiences could be tracked in real time instead of being laboriously completed by hand. It is expected that the future integration of real-time online logbook tracking and portfolio reflective piece submissions will enhance the overall student learning experience, as it will allow for the provision of timely, formative feedback and will strengthen the assurance of professional learning outcomes.

Conclusion

Overall, this study has revealed that students undertake clinical placement experiences across a wide range of client demographics and presenting conditions and apply a variety of services, as reported in logbooks. The logbooks do contain missing information and are limited by the retrospective nature of assessment; however, they provide an evidence-based platform for the completion of authentic placement portfolio assessment tasks. The introduction of online, real-time data collection is likely to improve the educational experience for students and supervisors.

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