

Bramley Andrea (Orcid ID: 0000-0003-2009-051X)
McKenna Lisa (Orcid ID: 0000-0002-0437-6449)

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E-portfolios and Entrustable Professional Activities to support competency-based education in Dietetic Education

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EPA's in Dietetic Education

Authors Names

Andrea Louise BRAMLEY, BSc Mast Nutr Diet. Grad Cert. Health Service Management. Advanced Accredited Practising Dietitian

Colleen J THOMAS, BSc(Hons), PhD, Grad Cert. Higher Education Curriculum, Teaching and Learning.

Lisa MC KENNA, PhD MEdSt RN RM FACN

Catherine ITSIOPOULOS, BSc(Hons) Grad Dip Diet MPH PhD APD

Corresponding Author

Andrea Louise Bramley. Senior Lecturer Department of Dietetics and Human Nutrition. Health Sciences Building 3. La Trobe University Kingsbury Drive Bundoora Victoria 3086

a.bramley@latrobe.edu.au Ph +61 3 9479 2283

ORCID ID

0000-0003-2009-051X

Institutional Affiliations

Andrea Bramley is a senior lecturer in the Department of Dietetics and Human Nutrition, School of Allied Health and Human Services, College of Science, Health and Engineering, La Trobe University.

Colleen Thomas is an Associate Professor (Physiology) in the Department of Physiology, Anatomy and Microbiology, School of Life Sciences, College of Science, Health and Engineering, La Trobe University.

Professor Lisa McKenna is Head of School of Nursing and Midwifery, College of Science, Health and Engineering, La Trobe University.

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Professor Catherine Itsiopoulos is the Pro Vice Chancellor and Executive Dean College of Science, Health, Engineering and Education Murdoch University and an Adjunct Professor of Dietetics La Trobe University.

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Abstract

Entrustable Professional Activities, a recent concept pioneered in medical education have emerged to support the implementation of **competency-based education**. Although competency-based frameworks are widely used in healthcare professional education to develop outcomes-based curricula, assessment of student competency in professional placement settings remains challenging. The novel concept of Entrustable Professional Activities together with established methods of competency assessment namely e-portfolios and self-assessment was implemented in the '[removed for blind peer review]'University Dietetic program in 2015-2016. This study aimed to appraise the e-portfolio and evaluate the use of Entrustable Professional Activities to assess competence. A mixed-methods evaluation using qualitative and quantitative surveys, with follow-up structured consultations was conducted with final year dietetics students and their supervisors.

Dietetics students were comfortable with Entrustable Professional Activities and competency-based assessment whereas supervisors preferred Entrustable Professional Activity based assessment. All stakeholders valued student self-assessment and the ongoing use of structured e-portfolios to develop and document competency. The use of structured e-portfolios, student self-assessment and the emerging concept of Entrustable Professional Activities are useful tools to support **dietetics** student education in professional placement settings.

Key Words: Entrustable Professional Activities, e-portfolio, **dietetics, competency-based education, competency-based assessment**

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1. INTRODUCTION

The increasing complexity of healthcare has ramifications for the education of health professionals. To execute safe and effective practice, practitioners must possess comprehensive discipline-specific knowledge and clinical, communication, reasoning, research and management skills (Campion et al., 2011; Epstein & Hundert, 2002; Frank, 2005). Several health professions including medicine, nursing and allied health profession have developed competency frameworks describing the attributes, skills and qualities of their discipline (Frank, 2005; Batt et al., 2019). These frameworks define and communicate professional standards to the public, members of the profession, employers and students and help inform curriculum development in educational institutions (DAA, 2017, SPA, 2017, Nursing and Midwifery Board Australia, 2019). The Dietitians Association of Australia has developed National Competency Standards for Dietitians which define the breadth of skills and capabilities required for Dietetic practice in Australia. These standards were established in 1993, with multiple revisions capturing the evolution of the profession (Ash & Phillips, 2000; DAA, 2009; DAA, 2015).

1.1 Challenges in Competency-Based Assessment

A challenge in implementing a competency-based framework into a university curriculum lies in assessment as competencies describe professional behaviours and attributes rather than observable actions (ten Cate, 2013a). Health profession education involves periods of supervised practice in a work-based setting. In this dynamic environment student supervision and assessment is often the responsibility of practicing professionals known as clinical educators, preceptors or from here on in, supervisors, who are usually non-academics. Competency-based assessment (CBA) can potentially

lead to high stakes subjective judgement of performance, increasing student stress and anxiety and potentially detracting from appropriate patient-centred care (i.e., when students prioritise their need to demonstrate a competency above a patient's individual care needs indicated by the clinical situation) (Bearman et al., 2012). Furthermore, by definition, competency-based education is outcome-based rather than time sensitive, yet professional practice placements are a finite time limited resource (Englander et al., 2016; Frank et al., 2010). Assessment-focused students wanting to develop competence can be inclined to view each patient care interaction as an opportunity to demonstrate one or more of their competencies, irrespective of the fact that it may not be possible or appropriate to demonstrate all competencies in all patient groups or healthcare setting (Palermo et al., 2018). Students may ignore a "completed" competency in subsequent patient interactions or view each competency as a task to tick off rather than as a holistic description of a practitioner.

From an assessor perspective competency-based assessment is not straight forward. Standards of practice and interpretation of competency standards can vary between different clinical educators and there may be additional differences in expectations of student performance between supervisors and the university (Palermo et al., 2014). Furthermore, the definition of competent practice is context dependent and challenges exist in making judgements about students demonstrating inconsistent performance or extrapolating competence from one setting to another (Bearman et al., 2012; Boyd et al., 2018). This can contribute to perceived conflicting feedback from different assessors, can negatively impact the student/ supervisor relationship potentially inhibiting student competence development (Maher et al., 2015).

1.2 Assessment strategies in Competency-Based Assessment

Several strategies have been proposed to tackle assessment challenges in CBA, including the widely adopted strategy of paper or electronic portfolios (e-portfolios) to collate evidence of student learning and competency attainment (Green et al., 2014). Compared to other assessment methods such as examinations or assignments, it is argued competency portfolios suit an outcome-based curriculum by allowing students to prove how they have met the competencies or requirements of the education program (Driessen, 2017). In this way, portfolios are student-centred as they facilitate individualisation, accommodate individual learning needs and promote student self-development and reflection (Cordier et al., 2015, Heeneman et al., 2019). Portfolios may be unstructured or structured with forms and templates and include a variety of evidence or learning artefacts ranging from observation records, verified personal references / statements of attainment and self-reflections of practice (Cordier et al., 2015, Bevitt et al., 2016). Portfolios can facilitate the development of learning goals and reflective practice, crucial attributes of an effective practitioner post training (Volders et al., 2010, Garrett et al., 2013, Heenemann et al., 2019). Challenges of a portfolio-based approach include the considerable time requirement for development and assessment and logistical challenges of submitting potentially large documents for assessment. E-portfolios utilising electronic formats to collect and collate evidence of student learning for assessment overcome some of the logistical challenges, but do not address challenges related to subjectivity or intra-assessor variation related to interpretation of performance standards associated with CBA (Cordier et al., 2015, Berendonk et al., 2013).

An emerging strategy to address challenges in CBA is the concept of Entrustable Professional Activities (EPAs). EPAs are statements describing work that is done by a competent professional in a specific context (ten Cate & Scheele, 2007; ten Cate, 2013b). EPAs are linked to multiple competencies, usually in a matrix, and allow learners to demonstrate performance against several competencies simultaneously and holistically driven by the needs of the patient interaction. This reduces temptation to tick off competencies and places the patient's care needs in the centre of the interaction. Student performance is assessed by how much support is required by the supervisor to execute the activity at a defined standard. When a learner has attained the EPA, they are trusted to perform independently with *post hoc* or distant supervision. EPAs are becoming increasingly adopted by European and American medical schools and are gaining acceptance in disciplines outside medicine, including nursing and pharmacy (Foret Giddens et al., 2014; Surjad et al., 2019; Haines et al., 2017). The appeal of EPAs to entry level medicine, nursing and allied health professions lies in overcoming some challenges associated with CBA as EPAs describe familiar, observable, work-based activities that a new graduate could be expected to do without direct supervision (Chen et al. 2015).

In 2013, the four-year double degree Bachelor of Applied Science/Masters of Dietetics program at '[removed for blind peer review]' University implemented competency-based assessment, informed by the Dreyfus model (Dreyfus, 2004). The final year of the program consists predominantly of a practicum component with students completing >110 days of supervised placement across the practice area of dietetics. Three separate structured e-portfolios were developed in Pebblepad® e-portfolio software for each of the three practice areas of dietetics: Clinical, Food Service Management and Community and Public Health Nutrition for competency-based assessment of students completing professional placements. Included in the practicum program are three clinical

placements of 4-5 weeks duration termed A, B and C placement. Students are expected to be assessed as ready for unsupervised practice against the competencies mapped to clinical dietetics by the end of their final C placement in order to graduate. A feature of the clinical e-portfolio was embedded student self-assessment fields requiring students to evaluate their performance and attainment of competency. In response to user feedback that the e-portfolio was lengthy and unwieldy, and assessment against competency standards was too abstract and impractical, assessment using EPAs were trialled in the first clinical placement A. An experienced clinical dietitian and academic developed EPAs and a supporting competency matrix (Supplementary Material 1) specific to clinical dietetics. At the time, there was no reported literature regarding EPA use in dietetics, therefore implementation was limited to a single placement (placement A) as a pilot. In the second (placement B) and final placement (placement C) students continued to be assessed using existing CBA methods. Since this pilot study there has been one published example of EPAs in dietetic education (Wright & Capra, 2017) suggesting our institution may be among the first to adopt this novel assessment approach and highlighting a gap in the evidence-base for use of EPAs outside medicine.

1.2 Aim

The aim of this study was to conduct exploratory formative research to inform future assessment practices within the education program. The objectives were to explore students and supervisor perceptions of assessment, the use of EPAs as an assessment strategy in professional placements, and to evaluate the utility and acceptability of the current e-portfolio, specifically the inclusion of student self-assessment and reflection.

2. METHODS

2.1 Study design

This exploratory mixed methods study was conducted between August and November 2016 with final year dietetics students and their clinical placement supervisors from large metropolitan teaching hospitals, metropolitan private hospitals and rural public hospitals (Schifferdecker & Reed, 2009). The lead author, a clinical dietitian and member of the teaching faculty with over 15 years' experience including clinical placement assessment, quantitative research and project evaluation, led the project. The project team consisted of senior dietetic faculty members experienced in qualitative, quantitative and mixed methods research who contributed to survey and consultation question design and to interpretation of results. Statistical support was provided by a university statistician. A two-stage mixed methods approach was developed to obtain broad feedback on assessment methods (EPAs and CBA), inclusion of student self-assessment and user satisfaction using surveys, with scope for expanded discussion on issues such as preferred assessment scales and technical issues such as e-portfolio navigation provided by follow up stakeholder consultations (Johnson & Onwuegbuzie, 2004; Garrett et al., 2013, Schifferdecker & Reed, 2009). Ethics approval was obtained by the "[Removed for blind peer review]" Human Research Ethics Committee (#S16-198).

2.2 Data Collection

All final year students (n=38; comprising 37 females and 1 male) and their supervisors (n=20; comprising 19 females and 1 male) were invited to complete separate electronic surveys distributed by anonymous weblink to provide initial quantitative and qualitative feedback. Surveys consisted of

24 questions with five-point Likert scale responses, three qualitative response sections and three demographic questions. Topics evaluated included e-portfolio usability, structure, functionality, infrastructure, assessment methods, frequency and timing, the effectiveness of EPAs for assessment, the effectiveness of CBA compared to EPA, preferred methods of rating performance and the efficacy of student self-assessment and reflection. Areas for free-text responses were included to obtain additional qualitative feedback regarding self-assessment, assessment methods and other comments. The project lead developed the survey (Supplementary Material 2), with face validity established through consultation with the project team and **experienced dietetic academics outside the team. Prior to distribution the survey was pilot tested with other academic staff members familiar with placement assessment.** Surveys sent to students and supervisors were similar to enable comparisons between groups. Surveys opened **just prior to graduation** in the last week of the **final clinical placement C** and remained open for three weeks, with a reminder sent via email one week before closing. Anonymous survey results were collated and distributed to the research team to inform development of discussion prompts for subsequent stakeholder consultations. The e-portfolios and assessment approaches used in **the entire practicum (clinical, food service management and community/public health placements)** were evaluated as part of this study, **however,** only the results of the clinical placement **assessment methods and eportfolio** evaluations **are** presented in this paper.

Building from the survey results, a series of discussion prompts were developed to structure the student and supervisor stakeholder consultations. Face validity was established via consultation with senior academics with qualitative research experience. Questions were designed to capture views

regarding timing and frequency of assessment, expectations regarding assessment time commitment, documentation and e-portfolio structure and utility (Supplementary Material 3). Different placement assessment practices used by dietetics and other health professions including **assessment rating scales** were discussed (Figure 1), including case examples of implementation in related health professions (ten Cate, 2013; Dalton et al., 2009; Bondy, 1983; McAlister et al., 2013; Benner, 2004). Stakeholders were probed about the practicalities of CBA and EPAs for assessment.

Insert Figure 1

A convenience sample of eleven clinical supervisors who had supervised students in the preceding 12 months from the largest clinical placement sites were recruited to participate in stakeholder consultations. The project lead facilitated discussions and participant responses were audio-recorded and transcribed. All final-year students were invited to participate in stakeholder consultation groups, with four students recruited. Due to the lower than expected student response rate, study methods were revised to include evaluation of clinical, food service management and community/ public health e-portfolio in the one consultation group, contrary to the original intention of evaluating each portfolio separately.

2.3 Data analysis

Survey results were analysed using statistical software (SPSS, IBM version 23). Likert responses were converted to numerical scales with comparative statistics, means and standard deviation, used to describe the results. The authors adhered to the Good Reporting of a Mixed Methods Study (GRAMMS) checklist (O’Cathain et al., 2008).

3. RESULTS

3.1 Survey Results

A total of seven students and eight supervisors returned the clinical survey, representing an 18% and 40% response rate, respectively. All were female. The average number of years of dietetic experience for supervisors was 10 ± 6 years, with 7 ± 5 years student supervision. (Table 1). Owing to the small sample size or completed surveys, statistical analysis was limited to descriptive analysis only. Both students and supervisors reported student self-assessment enhanced learning, with mean response scores of 3.29 and 3.50 out of a maximum of 5, respectively. This finding was confirmed by additional anonymous qualitative survey responses from students. e.g., *“I’m a strong advocator for self-assessment. It allows me to judge my competency level at that current moment, what I need to work on and where I need to be by the end of the placement”*, and anonymous comments from supervisors: *“It makes the student reflect on their own performance and experience prior to doing the final/mid-way assessment”*.

Insert Table 1 here

Both students and supervisors evaluated the use of EPAs positively and reported they helped students take charge of their own learning. Supervisors indicated lack of confidence assessing students using CBA with the current rating scale and this was confirmed by students’ responses to the matching question. Overall satisfaction with the e-portfolio was significantly different between student and supervisors with the mean overall satisfaction score for supervisors being 1.88 out of 5, indicating a high level of dissatisfaction compared to students (3.57 out of 5). Students and supervisors reported the time required to complete the CBA based Placement B and C portfolio

sections was excessive. Students reported preference for a structured paper portfolio, with 57% indicating this as their preference, 29% preferred a structured e-portfolio and 14% indicated preference for an unstructured e-portfolio. Supervisors indicated preference for a structured e-portfolio (50%) with 25% indicating preference for an unstructured e-portfolio, 12.5 % preferred a structured paper portfolio or an unstructured paper portfolio respectively. Supervisors reported barriers to access, with 25% reporting their workplace had insufficient information technology infrastructure. One supervisor commented: *“A hardcopy would allow for a more private assessment as given all our computers are in a public space, privacy can be difficult”*.

3.2 Stakeholder consultation results

Four students attended a stakeholder consultation and reported a preference for EPAs compared to CBA *“ I think it was clearer. I think it was more obvious what you needed to do”* (P4) and *“less open to interpretation by your supervisor”* (P3). Additionally, students reported variations of supervisor expectations regarding competency assessment *“There was different ideas as well... some people said that their supervisors were expecting them to show every single competency with the patient, whereas at my placement... we just had to show them throughout your placement”* (P3). Students expressed a preference a Bondy scale or entrustment approach compared with the current Dreyfus model or other methods (refer to Figure 1) as this would be less subjective and clearer for supervisors *“I think it would be easier for supervisors as well ...“Did I step in much there?”(P3)*. The inclusion of formative assessment and goal setting was valued: *“I found that really beneficial doing the weekly reviews....it made you...have a look at...where you’re tracking, what you should be working on”* (P2) (Bondy, 1983; Dreyfus, 2004).

Consistent with survey results, supervisor stakeholder consultations revealed preference for EPAs compared to CBA *“that works well for the students as well because quite often those competencies, they really struggle to understand how that translates to practice... Whereas in the skill descriptors (EPAs) it’s very transparent to the student, it’s very transparent to the supervisor exactly the tasks they need to be able to do”* (2P1). Supervisors expressed preference for a Bondy or Entrustment-based assessment scale: *“I like it ...it’s quite practical with, you know, are you observing them, are they doing it assisted or unassisted and you can give them feedback.”* (1P3). In contrast to general dissatisfaction with the e-portfolio reported in the survey, supervisors were in support of an e-portfolio: *“sticking to the electronic format if we can get away from printing out reams of paper that’s probably the ideal thing”* (2P1). Comments were made expressing the need to improve e-portfolio navigation and all groups suggested that planned improvements in hospital electronic infrastructure would overcome access issues.

4.DISCUSSION

This is the first study, to our knowledge, to evaluate implementation of EPAs in dietetic education and the second description of **the** use of EPAs in a dietetic context (Wright & Capra, 2017). Our results suggest EPAs were well accepted by this cohort of final year dietetic students and preferred by supervisors when compared to CBA. Continued use of e-portfolios to record competency development was supported by both students and supervisors with opportunities to improve

structure, usability and access identified. All participants reported self-assessment was valuable to develop personalised learning goals and should be retained.

Advantages and limitations of e-portfolios have been well documented, and our study results are consistent with other reports (Garrett et al., 2013). Advantages such as multi-user access, environmental sustainability and ability to promote student self-assessment and reflection through portfolio design were confirmed, but disadvantages such as navigation issues, training requirements and usability were also reported. Students rated their overall satisfaction of the e-portfolio significantly higher than supervisors possibly due to in-class training and familiarity with Pebblepad® through repeated use. Although training materials were provided for supervisors, they may have lower proficiency compared to students due to infrequent use and limited face-to-face training. Limitations in workplace technology, infrastructure and access to computers may be further factors accounting for decreased supervisor acceptance. Despite poor overall experience reported, supervisors indicated via survey a preference for a structured e-portfolio workbook over other options, with this theme repeated in the consultations suggesting support for continued use of an e-portfolio, albeit with improvements.

A benefit of assessment using a portfolio, independent of format, is that learning is student-centred (Weddle et al., 2002). Students are required to collect evidence of learning and justify competency promoting engagement and active participation in learning. Our results indicate that student self-assessment is valued by both students and supervisors, though some variation in student engagement was reported. An enhancement possible in e-portfolios, including ours, is that

supervisor access can be prevented until students have engaged in self-assessment thereby increasing student responsibility for learning and compelling students to develop personal learning goals (Tochel et al., 2009).

Our existing e-portfolio used a four-point scale from: 1-not yet demonstrated to 4-exceeds expected standard modelled on the **Dreyfus model of skill acquisition**. A qualitative description of a student at “pass” level was provided to guide supervisor judgement. Discussion in our stakeholder consultation groups regarding **assessment scales** used in CBA (Figure 1) indicated support for a modified Bondy/Entrustment **assessment scale** with respondents suggesting decreased subjectivity, a frustration expressed by students with our current scale. Although other disciplines such as Physiotherapy (Dalton et al., 2009) and Speech Pathology (McAllister et al., 2013) use a Dreyfus model, national adoption, large amounts of supporting materials and training manuals may reduce subjectivity and inter-assessor variation. Dietetic supervisors, via survey response, highlighted concern with the Dreyfus model: *“I found that with competent/ not competent it can be really difficult for students, so when you’re going through (formative assessment) for instance and you put in not competent... the student’s actually developing and progressing”*. Other words of support for the Bondy/Entrustment **scale** were reported in the surveys *“it matches what we are actually doing on the ground...better than novice, advanced beginner, competent”*.

Our findings indicate preference amongst supervisors for the use of EPAs compared to CBA with students confirming supervisors were more comfortable assessing using EPAs. Taken in conjunction with preference for the Bondy/ Entrustment assessment scale, these results highlight a need for

professional placement assessment to be easily understood by assessors, comprehensive and as objective as possible, with subjectivity commonly reported as a criticism of CBA. To guide assessors, the 2015 National Competency standards for Dietitians contained additional observable measurable actions, examples of strategies used to build competence and guidance on entry level requirements (DAA, 2015). However, it does not yet approach the level of support provided by professions with national standardised tools for placement assessment (Dalton et al., 2009; McAllister et al., 2013). Work is underway in the dietetics profession to expand resources to assist implementation of competency-based assessment in curriculum, including the development of profession-wide EPAs and milestones (Begley et al., 2019).

Our results are consistent with other literature reporting EPAs being highly acceptable to clinician educators charged with assessment as EPAs describe observable actions that students must be able to perform independently to provide safe and effective care in a specific setting (Gerhard-Szep et al., 2016; Lohenry et al., 2017). In the workplace, attainment of EPAs provides evidence of the fundamental supervisor question “Is this student safe for independent practice?” Our results support the utility of EPAs in practice-based learning as EPAs are clear, specific and describe observable actions applicable to the workplace as opposed to CBA which can be broad, less explicit and describe attributes of a person. Uptake of EPAs in undergraduate and post-graduate medicine has been rapid and adoption outside medicine is growing (Englander et al., 2016; Wright & Capra, 2017; Pittenger et al., 2017, Lomis et al., 2017; Jurd et al., 2015). EPAs provide a practical and valid way of implementing a competency framework and this study supports implementation in an entry level dietetic curriculum. Although this study is limited to a single cohort of final year dietetic students and their supervisors, these results may be applicable to other dietetics or health disciplines reviewing assessment practices in a competency-based curriculum.

Although our results suggest preference for using EPAs, particularly amongst supervisors, this could be interpreted as a criticism of CBA rather than true support of the EPA model of assessment. There has been criticism of CBA in health professional education (Pilj-Zieber et al. 2014; ten Cate, 2013) and the initial development and inclusion of EPAs in our portfolio was triggered by consistent supervisor feedback obtained via regular course advisory meetings that CBA was too long, abstract and confusing for students and supervisors. In response to this feedback, we developed and implemented EPAs in the first of three clinical placements and provided additional tutorials regarding CBA for students prior to their final clinical placement to increase understanding of CBA and placement requirements. The impact of this training is evident as survey results demonstrate a difference in EPA acceptance compared to CBA indicating that students were more comfortable CBA compared to supervisors.

4.1 Limitations

There are several limitations to our study. This was an exploratory study that was limited to a single cohort of students and their supervisors at a single institution therefore results must be interpreted with caution. Larger, longitudinal studies across multiple student cohorts are required to explore the feasibility and utility of EPAs as an assessment method and these are planned. Furthermore, this study was conducted in a single profession in an Australian context that may limit generalisability to other countries. Nevertheless, numerous countries have competency standards for Dietitians and require supervised practice (Palermo et al., 2016) and the novel concept of EPAs present a way of operationalizing competency frameworks into work-based assessment (Shorey et al., 2019).

As the surveys were anonymous it not known if survey respondents were represented in the stakeholder consultations. **Poor engagement from students was evident by the low student response rate despite incentives to participate.** As the study was timed with the end of final year, students were fatigued, preparing for final exams and may have been disinclined to participate in research which did not benefit them directly. The response rate amongst supervisors was higher indicating greater engagement, similarly the number of supervisors recruited for stakeholder consultations was high increasing the confidence of our results. **The lead author who was responsible for data collection was a member of teaching staff and a professional colleague to the supervisor participants. This may be a risk for social desirability bias and is a potential limitation.**

4.2 Conclusion

Our study adds to the body of knowledge regarding assessment of dietetics students on clinical placements and may be applicable to other health professions. To our knowledge there is only one other example of EPAs in dietetic education (Wright & Capra 2017). **The results of this exploratory study suggest** incorporation of EPAs into a competency-based curriculum in dietetics has been well accepted by users **although larger studies are required to determine feasibility and educational efficacy.** **EPAs assist** students and supervisors to have shared understanding of performance expectations of a competent student. Based on the results of this study, EPAs, student self-assessment and a modified Bondy Scale /Entrustment assessment scale model have been embedded in a revised e-portfolio. This novel EPA-driven e-portfolio will be piloted and evaluated for efficacy in student competency development in future studies **across multiple cohorts.** The model has broader

applicability across education in other health professions and in settings outside Australia that include competency frameworks and supervised clinical placements as part of their curriculum.

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AUTHOR CONTRIBUTIONS

Study design: A.B. and C.I.

Data collection: A.B.

Data analysis: A.B.

Manuscript writing and revisions for important intellectual content: A.B., C.I., C.J.T. and L.M.

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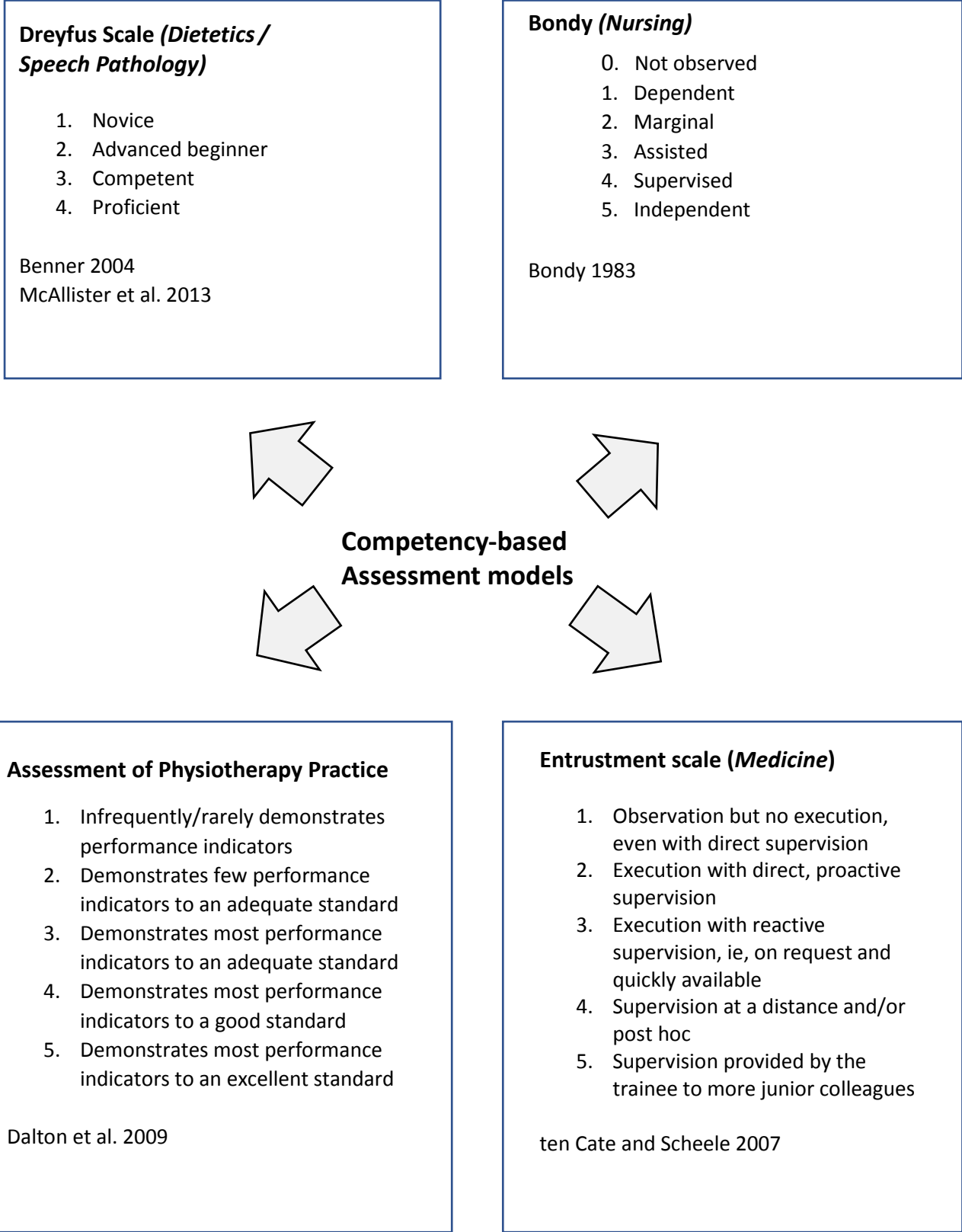


Figure 1. Assessment scale commonly used in competency-based assessments in healthcare professions.

Table 1. Supervisor and Students experience of e-portfolios and assessment during Individual Case Management professional placement.

Survey Question	Students Mean (\pm sd)	Supervisors Mean (\pm sd)
I liked the fact that I was assessed against EPAs rather than directly against the graduate entry competencies	4.00 (0.82)	3.38 (1.061)
The EPAs helped me identify my strengths and weaknesses.	3.71(0.95)	3.25 (1.17)
The EPAs helped me understand what I /my students needed to achieve on placement	4.29 (0.49)	3.38 (1.07)
The EPAs helped me / my student take charge of my /their own learning needs	4.00 (0.58)	3.13 (1.13)
The EPAs accurately assessed my/my students performance on placement	3.29 (0.76)	3.13 (0.91)
My supervisors appeared / I was comfortable with interpreting the skill descriptors and rating my performance	3.43 (0.98)	3.50 (0.76)
My supervisors appeared comfortable with using the Placement A † section of the eportfolio	2.71 (0.95)	3.38 (0.74)
I liked the fact that I was assessed against entry level competencies rather than against EPAs	4.14 (0.64)	2.50 (0.93)
The competencies helped me identify my strengths and weaknesses.	3.86 (0.90)	3.13 (0.84)
The competencies helped me understand what I needed to achieve on placement	4.29 (0.49)	2.88 (1.13)
The competencies accurately assessed my performance on placement	3.43 (0.98)	2.63 (1.06)
The competencies helped me take charge of my own learning needs	3.71 (0.95)	2.38 (1.06)
My supervisors appeared /I was comfortable with interpreting the competencies and rating my performance	3.00 (1.00)	2.63 (0.74)
My supervisors appeared/ I was comfortable with using the e-portfolio	2.71 (1.11)	3.50 (0.76)
Self-assessment enhanced my / my student's learning?	3.29 (0.76)	3.50 (0.76)
The amount of time taken for me to complete the Placement A section of the e-portfolio was reasonable	Reasonable 4/7 Too much 3/7	Reasonable 4/8 Too much (4/8)
The amount of time taken for me to complete the Placement B and C section of the e-portfolio was reasonable	Reasonable 1/7 Too much 6/7	Reasonable (1/8) Too much (7/8)
Overall I would describe my experience using the Pebblepad® e-portfolio as positive	3.57 (0.54)	1.88 (0.84)

Surveys were constructed using a Likert scale with a range of 1-5; 1 indicating highly dissatisfied to 5 indicating highly satisfied. A total of 7 students and 8 supervisors completed the survey, representing a response rate of 18% and 40%, respectively. † EPAs were used for assessment in placement A, whereas competency statements were used in placements B and C. EPA, entrustable professional activity. Placement A-first clinical placement; Placement B-second clinical placement; Placement C-final clinical placement.

Title page

Manuscript Category

Original Research

Short Title

E-portfolios and Entrustable Professional Activities to support competency-based education in Dietetic Education

Short running title

EPA's in Dietetic Education

Authors Names

Andrea Louise BRAMLEY, BSc Mast Nutr Diet. Grad Cert. Health Service Management. Advanced Accredited Practising Dietitian

Colleen J THOMAS, BSc(Hons), PhD, Grad Cert. Higher Education Curriculum, Teaching and Learning.

Lisa MC KENNA, PhD MEdSt RN RM FACN

Catherine ITSIOPOULOS, BSc(Hons) Grad Dip Diet MPH PhD APD

Corresponding Author

Andrea Louise Bramley. Senior Lecturer Department of Dietetics and Human Nutrition. Health Sciences Building 3. La Trobe University Kingsbury Drive Bundoora Victoria 3086

a.bramley@latrobe.edu.au Ph +61 3 9479 2283

ORCID ID

0000-0003-2009-051X

Institutional Affiliations

Andrea Bramley is a senior lecturer in the Department of Dietetics and Human Nutrition, School of Allied Health and Human Services, College of Science, Health and Engineering, La Trobe University.

Colleen Thomas is an Associate Professor (Physiology) in the Department of Physiology, Anatomy and Microbiology, School of Life Sciences, College of Science, Health and Engineering, La Trobe University.

Professor Lisa McKenna is Head of School of Nursing and Midwifery, College of Science, Health and Engineering, La Trobe University.

Professor Catherine Itsiopoulos is the Pro Vice Chancellor and Executive Dean College of Science, Health, Engineering and Education Murdoch University and an Adjunct Professor of Dietetics La Trobe University.

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Bramley, AL; Thomas, CJ; Mc Kenna, L; Itsiopoulos, C

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