E-portfolios: developing nurse practitioner competence and capability

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ABSTRACT

Objective
This paper aims to integrate nurse practitioner literature on competence and capability with post graduate and nursing literature on e-portfolios in order to demonstrate the potential merits of e-portfolios in nurse practitioner education for competence and capability development.

Primary Argument
In the *Nurse Practitioner Standards Project,* competence and capability were proposed as key criteria to assess candidates in nurse practitioner educational courses. Portfolios have traditionally been used to demonstrate competence in nursing and are integral to nursing education as well. An examination of the portfolio and electronic portfolio literature in postgraduate nursing education and professional practice indicates that these portfolios fall under two main structures, each with different purposes: 1) A *spinal column* structure, with evidence and reflective pieces aligned to competency standards or course objectives, for the purposes of meeting prescribed competencies, professional development planning and showcasing evidence for authorisation or potential employers; and 2) A *cake mix* structure, which consists of a reflective narrative tying evidence together, which enables a greater focus on personal learning journeys, reflection and the development of personal qualities. Finally, evidence from the general nursing literature suggests the complexity of e-portfolios in assessment and evaluation can be overcome by using qualitative research methods.

Conclusion
To meet the competence and capability needs of nurse practitioners, portfolios could be used, for competence and showcasing and for learning and capability. Further research would be useful to refine and explore the use of e-portfolios to meet the needs of NP candidates and their educators, clinical mentors, authorisation personal and employers. The current evidence on nurse practitioner education, competence, capability and e-portfolios points to the integration of the use of an e-portfolio into current nurse practitioner curriculum models to meet the unique needs of nurse practitioner candidates.

INTRODUCTION

In the *Nurse Practitioner Standards Project*, competence and capability were proposed as key criteria to assess candidates in nurse practitioner educational courses. Portfolios have traditionally been used to demonstrate competence in nursing and are integral to nursing education as well. The current evidence on nurse practitioner education, competence, capability and e-portfolios points to the integration of the use of an e-portfolio into current nurse practitioner curriculum models to meet the unique needs of nurse practitioner candidates.

Three outcomes for nurse practitioner (NP) policy and practice in Australia were achieved in a landmark 2004 report from the ANMC Nurse Practitioner Standards Project. Firstly, a consensus was reached on core role and practice competencies for nurse practitioners. Secondly, standards for NP education and program accreditation based on an audit of Australian and New Zealand university courses were identified. Lastly, standards for nurse practitioner authorisation were developed. However, Gardner et al (2004) noted the inherent complexity and depth of the NP role indicated that competence was not sufficient criteria for the education and evaluation of NPs and suggested the construct of capability to complement competence.

The demonstration of both competence and capability in NP introduces complexity into the assessment of NP education, as capability in addition to competence is required to be evaluated (Gardner et al 2006). A useful tool towards this end is a portfolio, which has been used in nursing to document and showcase education and competence (Andre and Heartfield 2007). Byrne et al(2007) suggested the use of portfolios to facilitate continuous assessable learning in response to changes and complexities in nursing practice and to foster personal qualities such as critical thinking and individual assessment and accountability. The purpose of this paper is to integrate the nurse practitioner literature on competence and capability with post graduate and nursing literature on e-portfolios in order to demonstrate the potential merits of e-portfolios in nurse practitioner education for competence and capability development.

COMPETENCE AND CAPABILITY IN NURSE PRACTITIONER EDUCATION

Nurse practitioner education in Australia and New Zealand

Gardner et al (2004) conducted a qualitative study, which trialled nurse practitioner education in practice. The four participants were advanced practice nurses who had completed a post graduate qualification in their specialty with at least three years experience and support from their employer and a clinical specialist team in their area. The educational program involved the nurse practitioners undertaking clinical practice, with support and education provided by mentors in their clinical support team. In addition, the nurse practitioners participated in action learning, which involved experiential learning and reflective practice and clinical research facilitated by clinical and academic mentors and experts. Group discussions on learning needs and issues and associated themes including contributions to the nurse practitioner, generic elements and specific learning activities provided a forum for data generation. These discussions were supported by clinical logs maintained by participants, who recorded learning needs and issues experienced during the previous week leading up to the clinical research day.

An ideal model of nurse practitioner education was proposed at the Masters level, following on from postgraduate specialist and advanced practice education and clinical experience. Gardner et al (2004a) suggested the incorporation of a specialist field of study in clinical practice within a nurse practitioner education course. This component would be undertaken as field work using experiential learning and learning contracts, supported by a clinical team and academic staff. Assessment goals for clinical practice would include clinical decision making and clinical performance. Generic nurse practitioner education would be developed to both enhance knowledge and scope and expand

the candidate's current role. This generalist education would be categorised as clinical sciences, covering clinical decision making, assessment and diagnosis and pharmacology; and nursing studies, incorporating evidence based practice and models of practice. Learning for these components would involve action and self directed forms of learning, to meet the objectives of knowledge acquisition and application in complex situations and development of a model specific scope of practice respectively.

The above model of nurse practitioner education represents a research informed curriculum and an audit of the 14 NP educational courses in Australia and New Zealand conducted by Gardner et al (2004a) revealed some commonalities in courses that concurred with Gardner et al (2006a), while other areas of course content were fragmented. Nine courses had a portfolio element, which was mostly an assessment piece.

Competency standards for nurse practitioners

The Australian national competency standards emerged of a synthesis of data, including in-depth interviews with current practicing NPs in Australia and New Zealand, literature review of nurse practitioner reports and submissions from national nursing bodies such as the Australian Nursing Federation (Gardner et al 2004a). Content of the competency standards is similar to the proposed content of nurse practitioner education, as identified in Gardner et al (2006b) research based the model of nurse practitioner education (p. 100):

The three competency standards are supported by competencies and indicators of competences, which are intended to guide curriculum development for NP education, as well as other NP issues such as practice and authorisation. The second NP education and program accreditation standard pertains to coverage of competency standards. It stipulates that curriculum content must demonstrate the indicators which relate to each competency and that specialty components are to be developed in consultation with appropriate specialty organisations.

Capability in NP Education

The final two standards for NP education and program accreditation relate to capability: its teaching and learning processes and assessment respectively. Capability was described by Hase (2000) as a holistic trait comprised of creativity, high self efficacy, appropriate social and communication skills to work well in a team, knowledge of how to learn and the ability to apply competencies in common and novel situations. Learning strategies conducive to capability learning reported by Gardner et al (2006) include learning contracts, problem-based learning, situated learning, experiential learning, clinical learning environment, flexible and responsive learning pathways and traditional approaches to supporting skills acquisition (p. 13).

Gardner et al (2008) conducted a deductive analysis of interview content of the NP sample from the NP standards project to determine evidence of capability in their practice. The use of a capability construct to inform NP education was supported by the salience of capability in practice. Knowledge of how to learn was exemplified by participant comments pertaining to knowing when and how to apply knowledge, understanding of deficits in knowledge and how to source and evaluate potential knowledge resources such as research literature. The respondents emphasised social and communication skills in several ways. These included personal empowerment to remain autonomous in multidisciplinary teams in order to contribute to teamwork, inclusion of all team members and the patient in clinical decisions and the ability to impart and share knowledge as an educator. Respondents articulated self efficacy from their autonomy, exercised through feeling confident and taking responsibility for their decisions. Creativity was reported to factor into the NP role in terms of obtaining evidence for diagnostic decisions and arranging additional support for patients. In a similar fashion, the NPs also recounted incidents whereby novel usage of knowledge and skills were needed, for example, in scenarios where standard procedures were unable to be performed.

ELECTRONIC PORTFOLIOS FOR NP COMPETENCE AND CAPABILITY

In the previous section, portfolios were identified as a general assessment tool in nurse practitioner education, which could be refined for competence and capability learning. Until recently, portfolios were also a requirement for nurse practitioner authorisation (Gardner et al 2004a). While successful completion of a Masters level course is now considered sufficient for authorisation by state and territory accreditation bodies (Gardner, personal communication), e-portfolios may be helpful for nurse practitioners for employment purposes and documenting lifelong learning (Byrne et al 2007).

Electronic portfolios have two main uses: formative, as a tool to document a process of learning or individual learning journey; or showcasing to present evidence of competence for employment or professional registration (Butler 2006; Marcoul-Bulinson 2006). The e-portfolio was initially used as a showcasing tool to guide professional development planning (PDP) and lifelong learning. With the advent of online learning, e-portfolios also became popular in educational settings. Learning e-portfolios differ from showcase portfolios in that reflection is involved (Hartnell-Young 2006; Marcoul-Bulinson 2006). While reflection has been defined in many different ways, most authors refer to Dewey's (1933, cited in Moon 1999) definition as a starting point:

The e-portfolio is intended to stimulate learning processes or outcomes in which reflection plays a role. For example, educational frameworks used in conjunction with e-portfolios, such as constructivism (Emmett et al 2005), adult learning (Joyce 2005) and deep learning (Doig et al 2006) rely heavily on reflection to generate desired learning outcomes. In nurse practitioner education adult and constructivist learning, or variations on these themes, are central to teaching and learning, which suggests an e-portfolio for learning and assessment would capitalise on current andragogical methods in NP education.

A UK based study identified four different types of portfolio structure used in educational courses (Endacott et al 2004), although it was not stated whether the portfolios were electronic. The simplest structure was called the *shopping trolley,* which was essentially a disorganised showcase portfolio. Reflective pieces were rarely included in shopping trolley portfolios and artefacts were not connected to competency standards or learning goals. Better structured was the *toast rack* portfolio, which was still essentially a showcase portfolio, although artefacts were organised under categories such as competencies or reflective accounts. The *spinal column* portfolio involved a series of competencies or learning goals, which served as the vertebrae in the metaphor. Artefacts were tied to each competency and candidates were required to demonstrate learning and competence via reflective writing pieces. As such the *spinal column* represents a learning portfolio, rather than simply showcasing competence. Lastly, the *cake mix* portfolio involved an underpinning reflective narrative written by the student that linked all of the artefacts together. This model was most frequently used in postgraduate or advanced practice courses.

Use of electronic portfolios in developing competence and personal qualities in postgraduate nurse education

The existing literature on e-portfolios in postgraduate nursing settings demonstrates the value of this tool in learning and showcasing competence. Capability was not explicitly researched in the e-portfolio and postgraduate nursing literature; however some studies mentioned personal qualities that alluded to capability traits.

Anderson et al (2008) reviewed the use of an e-portfolio designed by Gardner (2007) for use with nurse practitioner students at Queensland University of Technology. The portfolio followed the *spinal column* structure and used the national competency standards as anchors for reflective narrative and evidence. Student experiences of the e-portfolio were solicited via interview and survey. Thematic analysis of responses indicated the competency standards were of benefit to NP candidates in shaping learning and reflection, understanding the expanded scope

of the NP role and planning future professional development. Students identified additional uses of the e-portfolio including lifelong learning, an educational tool for subsequent cohorts of NPs and identifying research needs. While the sample size was small with only four participants, the study demonstrated the use of national competency standards for NPs was of value to students in their learning and professional development. The next study suggests an increased focus on personal qualities may raise awareness of and possibly develop capability.

A study by Naude and Moynihan (2004) at Curtain University, Western Australia provided an analysis of the e-portfolio experience amongst 32 postgraduate nursing students undertaking a Corporate Nursing Leadership Development program. The portfolio exercise included a student resume, an outline of personal and professional goals pertaining to the coursework and self assessment of coursework specific core competencies. Self reflection via activities such as evaluation of skills and setting learning goals was thought to be the most valuable aspect of the process, reported by 22 students. Practical applications such as applying for jobs and development of computer skills were also considered to be beneficial by students. However, pre-existent information communication and technology skills were limited amongst the cohort, which may have influenced the perception of students who described the task as time consuming and difficult. One student referred to the possibility of using the e-portfolio to demonstrate competence for professional registration. While Naude and Moynihan did not require students to link self reflective narratives to relevant competency standards for authorisation, the e-portfolio still represents a s*pinal column* structure as students were guided by coursework competencies and self directed goals.

The focus on personal goals and qualities may be beneficial to NP candidates in raising awareness of capability traits and their subsequent development. This was supported by student reports of enhancement of characteristics describable as capability including reflective thinking, confidence, self directed learning, new ways of thinking and team work (Naude and Moynihan 2004). Similarly, a case study described in Emden et al (2003/2004) implied that portfolios may be used to facilitate the development of capability in a professional setting. Specifically, portfolios were introduced to senior nursing staff at Whyalla Hospital and Health Services to promote personal and organisational development, which was also described as "personal and professional attainment of wisdom" (p.130). While the initial focus of the portfolio was to provide evidence of competence, the focus of the portfolio was rapidly shifted to personal development, which was deemed more meaningful by participants.

In international literature, there are two examples of e-portfolios in NP pre-registration courses. Joyce (2005) provides an example of a *spinal column* portfolio in a NP education setting. Specific aims of the portfolio were to create a bridge between theory and practice, provide evidence of core concepts and competencies stipulated by national standards and to facilitate personal development planning (PDP) amongst students. As a learning component of a clinical practice subject, students were prompted to recall and reflect on a clinical experience in their writing and link it to the core concepts and competencies.

The model of action learning and clinical practice has been used in Australian NP education (Gardner et al 2004a, 2004b) and the above study demonstrates how e-portfolios can be integrated into the existing model. In addition, the portfolio framework used by Joyce's (2005) students could be expanded upon to include reflective narratives to demonstrate capability in practice.

Hayes, Chandler, Merriam and King (2002) adopted a different approach to portfolios in their study and described the experience of one student who completed a *cake mix* style portfolio. The student was required to provide evidence of prior education and development to stimulate reflection. By beginning with employer references, educational certificates and awards, the student engaged with

the development of an e-portfolio in the form of a reflective narrative, supported by a mentor within the faculty. The construction of a reflective narrative based on personal work history may be especially beneficial to postgraduate students, both to affirm and validate their commitment to their career and reasons for commencing postgraduate study and to identify skill areas in need of further development (Tigelaar et al 2006).

PORTFOLIO ASSESSMENT

While the *spinal column* and *cake mix* portfolio structures benefit students by bridging theory and practice, facilitating skill development for reflective practice and providing evidence for authorisation, these structures are complex to assess. These complexities are also evident in the measure of competence in nursing, which is evaluated from a holistic perspective and views the professional in their practice context (McMullan et al 2003). Reliable and valid portfolio assessment is difficult due to the qualitative nature of content and the complexity of competence, which is not amenable to quantitative analysis. To overcome this issue Endacott et al (2004) and Webb et al (2003) suggested the use of qualitative indicators of research rigor. These are credibility, dependability, transferability and confirmability. Webb et al (2003) developed a qualitative portfolio assessment process based on triangulation of data in the form of multiple sources of evidence for each competency and a documented internal and external audit system involving several assessors and external examiners to ensure consistency between assessors. Data was further triangulated by implementing the process across four sites for undergraduate nursing and midwifery students. In Webb et al's (2003) study and similar research in the medical field (Driessen et al 2006; Driessen et al 2005) the focus of the research has been the assessment process, rather than portfolio content, however e-portfolio content for NPs would be required to be informed by NP educational standards (Gardner et al 2004a).

CONCLUSIONS AND IMPLICATIONS

In sum, the literature on e-portfolios suggests a combination of the more sophisticated *spinal column* and *cake mix* portfolio structures may be most useful to NPs in education and beyond. Anderson et al (2008) and Hayes et al (2002) demonstrated a *spinal column* format e-portfolio enables students to link evidence and reflective narrative to competency standards, which may be especially useful in guiding learning and enabling students to understand the expanded scope of their role. Professional development, showcasing and assessment may also be aided by this structure. Therefore, to meet the competence and capability needs of NPs, portfolios could be used, for competence and showcasing and for learning and capability. Current literature suggests e-portfolios could be integrated into a NP curriculum model alongside action learning and clinical practice, two key elements of NP education supported by prior research (Hayes et al 2002; Gardner et al 2004b) and assessment based on qualitative indicators (Endacott et al 2004; Webb et al 2003). Further research would be useful to refine and explore the use of e-portfolios to meet the needs of NP candidates and their educators, clinical mentors, authorisation personal and employers.

REFERENCES

Andre, K. and Heartfield, M. 2007. *Professional portfolios: evidence of competency for nurses and midwives*. Sydney: Churchill Livingstone, Elsevier.

Anderson, D., Ramsbotham, J. and Tones, M. 2008. Innovative strategies for promoting and developing the nurse practitioner role: trialling an e-portfolio. Personal communication.

Butler, P. 2006. *A review of the literature on portfolios and electronic portfolios*. Palmerston North, NZ: Massey University College of Education.

Byrne, M., Delarose, T., King, C.A., Leske, J., Sapnas, K.G. and Schroeter, K. 2007. Continued professional competence and portfolios. *Journal of Trauma Nursing,* 14(1):24-31.

Doig, B., Illsley, B., McLckie, J. and Parsons, R. (2006). Using e-Portfolios to enhance reflective learning and development. In A. Jafari and C. Kaufman (Eds.), *Handbook of Research on e-Portfolios* (pp.158-167): Idea Group Reference: Hershey.

Driessen, E.W., Overeem, K., van Tartwijk, J., van der Vleuten, C.P.M. and Muijtjens, A.M.M. 2006. Validity of portfolio assessment: which qualities determine ratings? *Medical Education,* 40(9):862-866.

Driessen, E., van der Vleuten, C., Schuwirth, L., van Tartwijk, J. and Vermunt, J. 2005. The use of qualitative research criteria for portfolio assessment as an alternative to reliability evaluation: a case study. *Medical Education,* 39(2):214-220.

Emden, C., Hutt, D. and Bruce, M. 2003/2004. Portfolio learning/ assessment in nursing and midwifery: an innovation in progress. *Contemporary Nurse,* 161(1-2):24-132.

Emmett, D., Harper, W. and Hauville, K. 2005. *QUT's E-Portfolio: enhancing student career prospects and promoting reflective learning*. Paper presented at the Australasian Educase Conference.

Endacott, R., Gray, M. A., Jasper, M.A., McMullan, M., Miller, C., Scholes, J., C., Webb,2004. Using portfolios in the assessment of learning and competence: the impact of four models. *Nurse Education in Practice, 4(4):*250-257.

Gardner, A., Hase, S., Gardner, G., Carryer, J. and Dunn, S. 2008. From competence to capability: a study of nurse practitioners in clinical practice. *Journal of Clinical Nursing,17(2):*250-258.

Gardner, G., Carryer, J., Dunn, S.V. and Gardner, A. 2004a. *Report to the Australian Nursing and Midwifery Council: Nurse Practitioner Standards Project.* Dickson, ACT: ANMC.

Gardner, G., Gardner, A. and Proctor, M. 2004b. Nurse practitioner education: a research based curriculum structure. *Journal of Advanced Nursing, 47*(2):143-152.

Gardner, G., Carryer, J., Dunn, S. and Gardner, A. 2006a. Competency and capability: imperative for nurse practitioner education. *Australian Journal of Advanced Nursing, 24*(1):8-14.

Gardner, G., Carryer, J., Gardner, A. and Dunn, S. 2006b. Nurse practitioner competency standards: findings from collaborative Australian and New Zealand research. *International Journal of Nursing Studies, 43(5)*:601-610.

Gardner, G., Gardner, A. and Proctor, M. 2004. Nurse practitioner education: a research-based curriculum structure. *Journal of Advanced Nursing, 47*(2):143-152.

Hase, S. 2000. *Measuring organisational capability: beyond competence*. Lismore: Southern Cross University.

Hayes, E., Chandler, G., Merriam, D. and King, M.C. 2002. The master's portfolio: Validating a career in advanced practice nursing. *Journal of the American Academy of Nurse Practitioners, 14*(3):119-125.

Joyce, P. 2005. A framework for portfolio development in postgraduate nursing practice. *Issues in Clinical Nursing*.

Marcoul-Burlinson, I. 2006. e-portfolio: constructing learning. In A. Jafari and C. Kaufman (Eds.), *Handbook of Research on e-portfolios* (pp.168-179): Idea Group Reference: Hershey.

McMullan, M., Endacott, R., Gray, M.A., Jasper, M., Miller, C.M.L., Scholes, J. and Webb, C. 2003. Portfolios and assessment of competence: a review of the literature. *Journal of Advanced Nursing, 41*(3):283-294.

Moon, J.A. 1999. *Reflection in learning and professional development*. London: Kogan Page Limited.

Naude, M. and Moynihan, C. 2004. *The implementation of an Electronic portfolio for nurses (Pilot 2)*. Perth: Graduate School of Business, Curtin University of Technology.

Phelps, R., Hase, S. and Ellis, A. 2005. Competency, capability, complexity and computers: exploring an new model for conceptualizing end user computer education. *British Journal of Educational Technology, 36*(1):67-84.

Tigelaar, D.E.H., Dolmans, D.H.J.M., de Grave, W.S., Wolfhagen, H.A.P. and van der Vleuten, C.P.M. 2006. Participants' opinions on the usefulness of a teaching portfolio. *Medical Education, 40(4):*371-378.

Webb, C., Endacott, R., Gray, M.A., Jasper, M.A., McMullan, M. and Scholes, J. 2003. Evaluating portfolio assessment systems: what are the appropriate criteria? *Nurse Education Today, 23(8):*600-609.