Integrating digital curriculum mapping and eportfolios to better respond to stricter initial teacher education accreditation requirements

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Abstract

The imposition in Australia of stricter regulatory conditions onto initial teacher education (ITE) institutions raises questions about the structures and procedures necessary to ensure effective, ongoing generation of valid evidence of graduate classroom competencies to meet both student certification and program accreditation. This paper presents the benefits from combining a digital curriculum design tool (CDT), that ensures alignment and structural calibration of graduate competency requirements at the design stage, with the artefact management and evidentiary output capabilities of eportfolios. Combined, they can stimulate new pedagogies where an improved collaborative and transparent course design and evaluation cycle assures quality, and guarantees the progressive, efficient production of authentic relevant evidence for accreditation and student certification. In addition to suggesting a point for effective eportfolio integration into course planning, the paper proposes an eportfolio integration model adaptable to other highly regulated professional studies programs.

Background

The Teacher Education Ministerial Advisory Group (TEMAG) Action now: Classroom ready teachers (2014) report catalogued a range of shortcomings in Australian initial teacher education (ITE), including ineffective application of, and assessment of graduates against, the Australian Professional Standards for Teachers (APST), and significant evidence of failures to apply solid research and best practice to ITE programs. Action now argued that successful completion of university academic units and practicum days alone were insufficient for graduation into the teaching profession. It recommended that programs move beyond course grades to provide ongoing, unambiguous, and multifaceted evidence of the professional competence of graduates capable of influencing student learning positively in school classrooms.
Consequent documentation prepared by the Australian Institute for Teaching and School Leadership (AITSL), such as the position paper Classroom ready: Demonstrating the impact on student learning from initial teacher education programs (AITSL, 2015), and the more critical Guidance for the accreditation of initial teacher education in Australia (AITSL, 2016), forcefully and clearly outlined the expectations of ITE graduates and programs. Graduates must evidence explicitly their achievement of all APST focus areas at the graduate level (TEMAG, 2014, pp. xi, xii, 29, 33; AITSL, 2015, pp. 2, 6-7; AITSL, 2016, p. 6). Individuals and programs have to prove classroom readiness to teach through rigorous and robust application of valid and reliable assessment of content knowledge, and teaching strategies and skills (TEMAG, 2014, pp. xi, xii, xiii, 17, 19, 29, 31, 33; AITSL, 2015, pp. 6-7). Furthermore, ITE students must generate clear evidence of their capacity to impact positively on classroom learning (TEMAG, 2015; pp. 2, 6-7, 9), and programs must demonstrate how academic outcomes facilitate such impact (AITSL, 2016, p. 42). Individual ITE students are required to develop comprehensive portfolios of developmental evidence that continue beyond graduation through to proficiency certification (TEMAG, 2014, pp. xvi, xvii, 33, 39). Meanwhile, using valid evidence across multiple years, programs need to demonstrate that they are designed well, coherent, and constructively aligned (Biggs & Tang, 2011), and apply rigorous quality assurance for continual improvement and production of high quality graduates (TEMAG, 2014, pp. xii, 8, 9, 41, 42; TEMAG 2015, pp. 3-5; AITL, 2016, pp. 12, 15, 46).

These significantly stricter mandated expectations for accreditation and reaccreditation raise some serious issues for ITE providers. Program and course management traditionally has been oriented towards a model where successful completion of assessment is equated with competency, and faculties have been neither organised nor equipped to plan for, accumulate, store, and produce on demand, diverse forms of student evidence over a period of years. In responding to the new regulatory changes, ITE providers have not just to collect program and student evidence, but also establish new organizational structures and procedures, and consider the logistical, workload, and personnel demands against what may seem currently an intangible future accreditation requirement. Critical to such adaptation will be the ongoing dynamic calibration of aligned learning outcomes at the course design end in order to ensure that competency outcomes are demonstrated consistently and clearly in pre-service and graduate teacher portfolios over time.

Whilst AITSL templates already contain a broad mapping requirement, the reaccreditation demand for specific high quality inputs that generate incontrovertible evidence of graduate capabilities strongly suggests some form of ongoing institutional curriculum mapping at the program design end. Teacher educators must be confident in advance, and be able to coordinate exactly, what consolidated program and individual course teacher performances they are seeking to establish and evidence on student graduation. Although calling for teacher performance evidence to be available in portfolios, TEMAG (2014) did not define the term, and there is no further guidance in AITSL documentation. However, the need for students to store, manipulate, display, and share large volumes of comprehensive multimedia evidence of teaching performance before and beyond graduation, and for the ITE provider to archive and access such evidence on demand,
both strongly suggest some form of digital platform – an eportfolio, defined by the Australian eportfolio Project as an “electronically stored collection (or archive) of a student’s experiences, achievements and artefacts, together with their reflections on learning” (QUT, 2009).

Literature Review

The design end - curriculum mapping

Curriculum mapping is not a new concept. Harden (2001) noted the benefit of curriculum mapping to discriminate between the declared – what is assumed students are learning, taught – what is presented, and learned curriculum – what the students actually learn (Ozdemir & Stebbins, 2015; Zelenitsky et al., 2104). Robley, Whittle, & Murdoch-Eaton (2005) report that mapping allows horizontal verification of alignment and the vertical tracking of skills development and assessment for both program designers and students (Steketee, 2015). Holycross (2006) cites Harden's (2001) description of the curriculum map as spatially manifesting curriculum components to reveal relationships and connections and to track what is taught, how, and when. Willett (2008) sees curriculum mapping as a roadmap to answer the simple question “Where do we teach what?” (p. 786) in a distributed, integrated curriculum. For Uchiyama & Radin (2009), curriculum mapping is a means of verifying who is doing what, to what standards, and how effectively and efficiently. Goff et al., (2015) identify mapping as a visual approach that reveals both patterns and difficult to detect subtleties in the management of course and program learning outcomes. They describe it as beneficial to evaluate outcomes, prioritise improvements, showcase quality, and document evidence for accreditation.

Despite reports of curriculum mapping efforts in higher education, particularly in medical schools (Willett, 2008), there appear to be few accounts of their application as a quality management tool (French, et al., 2014; Robley et al., 2005). Spencer, Riddle, & Knewstubb (2012) viewed the mapping of graduate capabilities as a relatively new phenomenon in the higher education sector, whilst Veltri, Webb, Matveedv, & Zapatero (2011) noted the lack of published studies on curriculum mapping in their own information systems field. In their review of the literature, Ervin, Carter, & Robinson (2013) concluded that curriculum mapping processes appeared “ad hoc and without proven methodological rigour” (p.316). Similarly, despite identifying high interest across 36 Australian universities, Oliver, Ferns, Whelan & Lilly (2010) judged curriculum mapping scholarship in higher education to be “somewhat limited” (p.81). Nonetheless, Oliver, Jones, Ferns, & Tucker (2007) discuss application of a tool to map course learning outcomes, graduate attributes, orders of thinking and assessment tasks, and Uchiyama & Radin (2009) describe faculty members applying a template to map current strengths, gaps, and overlaps in an education program.

The absence of curriculum mapping methodology and discussion (Ervin et al., 2013; French et al., 2014; Robley et al., 2005) appears to arise not from actual practices, but rather from
difficulties in communicating the detailed processes and practicalities (Ervin et al., 2013; Sumssion & Goodfellow, 2004; Veltri et al., 2011). This itself may stem from differing objectives, and most mapping efforts occurring in isolation, with participants re-treading the same road and confronting the same obstacles (Ang, D’Alessandro, & Winzar, 2014; Oliver, et al., 2010; Steketee, 2015). Although Hubball & Gold (2007) describe a scholarship of curriculum practice (SoCP), the literature provides inadequate guidance for educators seeking to respond to new teacher certification and program reaccreditation pressures.

The output end – eportfolios

Despite support for its use in professional certification (Hallam, Harper, McAllister, Hauville, & Creagh, 2010), there is minimal evidence of eportfolios being used for standards-focused certification of graduate teachers or accreditation of their programs, and TEMAG (2014) referring to portfolios generically is of little help. Nonetheless, Slade & Readman (2013) consider the eportfolio an excellent tool to meet accreditation, professional learning, and employability agendas. Meyer & Latham (2008) mention eportfolio use for accreditation of programs where student outcomes need to be aligned to mandated education standards, and identify the flexibility of the eportfolio to respond to national, local, or institutional requirements in ways beyond grades alone (Light et al., 2012). Hallam et al. (2008) do not address accreditation as such, but rather describe assessment eportfolios to evidence achievement of performance standards, and the trend towards portfolio approaches amongst professional associations concerned about graduate qualities and skills. Light et al. (2012) point to pressure from accreditation and other bodies to verify student outcomes, and the development of assessment cultures demanding authentic assessment, as factors behind the implementation of eportfolio programs.

The Australian ePortfolio Project (Hallam, et al., 2010) cited a range of factors undermining eportfolio implementation, including poor strategic and operational planning, inadequate funding and support, and insufficient understanding of eportfolio impact on learning outcomes. Meanwhile, capable faculty leadership is identified as essential to overcome entrenched academic cultural practices and lack of eCompetency, and to motivate organizational change and acceptance of eportfolio innovations (Coffey & Ashford-Rowe 2014; Hallam et al., 2010; Schneckenberg, 2010; Slade & Readman, 2013; Swan, 2009). Peacock, Gordon, Murray, Morss, & Dunlop (2010) see lack of staff buy-in and understanding of eportfolio objectives as obstacles, and stress the need for clear and consistent purpose guidance across whole programs. Clear purpose figures significantly across a number of studies (Carson & Robertson, 2008; Author, 2016; Light et al., 2012; Meyer & Latham, 2008; Oakley, Pegrum, & Johnston, 2014).

Introduction of eportfolios to respond to the new certification and accreditation pressures is likely also to be insufficient without adequate consideration of the pedagogical impact of what is described as a disruptive technology with the potential to create new e-learning spaces (Ayala, 2006; Slade & Readman, 2013). Whilst some call for the eportfolio to be fully embedded into the
curriculum (Hallam, et al., 2010), others urge a reconstitution of the roles of student and teacher within a renegotiated democratic and shared pedagogy where the eportfolio is an authentically integrated part of the curriculum, rather than an appendage (Bhika, Francis, & Miller, 2013; Cambridge, 2012; Slade & Readman 2013). ePortfolio integration attention and efforts easily can be misdirected to dealing with the technological dimension alone, rather than encouraging academic staff to embrace it fully for teaching and learning (Carson & Robertson, 2008). Academics need to accept a more comprehensive responsibility for student learning within a broader and more collaborative eportfolio teaching paradigm that integrates learning within the classroom, across the curriculum, and beyond the program (Cambridge, 2012; Swan, 2009). Bhika et al., (2013) go further, portraying the eportfolio as a student-driven vehicle for autonomy with the capacity to share and comment on learning, provide increased opportunities for peer learning, and construct communities of practice not evident in traditional teacher-centered models. They advocate an integrative social pedagogy to develop student ownership of learning, enhance stakeholder engagement, and extend professional learning (Light et al., 2012; Peacock, et al., 2010).

Exploring digital curriculum mapping

The researcher has for some time strongly advocated both design-focused curriculum mapping (Kertesz, 2015), and effective integration of eportfolios to evidence teacher competencies (Kertesz, 2016). A conference presentation by RMIT University staff of a Curriculum Design Tool (CDT) to support management of accreditation of engineering programs across different jurisdictions introduced the researcher to the potential for relational databases to automate and enliven the curriculum management process, particularly with respect to its application to dynamic course design. Initial sandpit (research with non-live data) access to the RMIT-CDT in 2015 allowed the author to explore basic data loading and management processes and to expand his understanding of digital mapping. Impending accreditation of his own ITE program in 2016 under the new and more stringent AITSL guidelines focused the researcher’s thoughts towards the potential for integration of curriculum mapping and eportfolios to meet both certification and accreditation demands progressively and continually. However, there was no evidence in literature of higher education providers linking the program management benefits of curriculum mapping with the evidentiary capabilities of the eportfolio. This may be due partly to the fragmented development of curriculum management relational databases despite their benefits (Willett, 2008), and curriculum mapping being perceived as two-dimensional tables or a spreadsheet requirement that appears only during “summative data-gathering frenzies for institutional or accreditation reviews” (Hubball & Gold, 2007, p.11) rather than as a dynamic framework for continuous curriculum review. It also may reflect the popularity of eportfolios not living up to the initial surge of interest that prompted the Australian ePortfolio Project (Hallam, et al., 2010).
Subsequent sandpit access to the RMIT-CDT revealed the capacity of the tool to readily accommodate and manipulate multiple accreditation requirements. In addition to generating a range of reports aligning accreditation to program parameters (Appendix A), the RMIT-CDT also provided useful pie-chart displays, such as expected cognitive engagement (Appendix B), and assessment authenticity (Appendix C).

The ability to concurrently and continually access comprehensive program data in turn suggested that digital mapping might reduce the compartmentalisation of learning, and support design-oriented dynamic curriculum mapping in ITE and other professional degrees. This further raised the possibility of course managers moving beyond merely vetting and approving unit outlines at the end of the planning cycle, to working collaboratively through a staged design sequence where every course could be reviewed progressively for relevance and program consistency, with planned evidentiary performance outputs verified for relevance prior to delivery. Curriculum mapping could then move from an occasional display function utilised by few for accreditation submissions alone, to becoming a crucial living element of curriculum design, management, and evaluation. In turn, enhanced program and course design might indicate the best point for eportfolio integration, and encourage academics to see the eportfolio as not just a digital display book, but as a versatile tool for the construction, assembly, and management of student professional competency achievement and accreditation data. The challenge flowing from these possibilities was to develop a framework where digital mapping and eportfolio together could yield such positive outcomes.

The new perspectives gained from RMIT-CDT access, and previous eportfolio knowledge and experience, encouraged conceptualisation of a CDT-eportfolio flowchart model to improve teaching and learning whilst addressing regulatory demands (Appendix D). Notably, this model was developed with only limited access to the RMIT-CDT, and prior to any experience of the PebblePad ATLAS environment.

**A possible CDT-eportfolio linkage model**

**Digital mapping**

Within the proposed structure, the CDT (on the left in Appendix D) becomes the central support for program planning. Course coordinators initially load their learning outcomes and assign professional standards focus areas. Collaborative review of course learning outcomes against program objectives and threshold learning outcomes for the discipline ensures consistency (Heath, 2011). Cognitive and performance requirements also can be checked against relevant taxonomies of learning. Confident of where their course fits into the program plan, and how it contributes to graduate development, course coordinators can next design assessment tasks that directly evidence standards, and generate, or contribute measurably to, valid eportfolio artefacts that conform to the AITSL (2016) certification and accreditation guidelines. Further
collegial review ensures assessments generate best program evidence of student professional capabilities. Significantly, the concurrent horizontal and vertical strategic program display in the CDT supports contextualised constructive criticism, and consideration of performance evidence consolidation across courses.

Concurrent display, as in Appendix A, of learning outcomes, assessment tasks, teaching and learning activities, and professional standards, makes the CDT an ideal tool for managers and course coordinators to verify not just that all courses are designed well and in accordance with program learning outcomes, but also that assessments will yield standards-focused competency evidence for quality graduates (Pink in Appendix D). Consequently, accreditation becomes not an end in itself, but the culmination of an ongoing rigorous quality management process that permeates the whole program. Most importantly, folio thinking (Light et al., 2012) can be built in early, with course planners forced through every planning cycle to consider eportfolio integration into student learning and development, the linking of theory and practice, and conformity to standards and accreditation requirements.

ePortfolio

Moving beyond the display dimension of the eportfolio should facilitate greater appreciation of the multiple functions it can perform on behalf of both students and programs. In particular, integration of the eportfolio into the design process allows for consideration of the critical backstage eportfolio management functions (on the right in Appendix D) that easily can be overlooked by academics as a technical matter, but which in fact are essential for student and program success. During course delivery, students submit assessment artefacts to a course workspace that records and freezes each at the time of submission (Blue in Appendix D). Grading and feedback within the eportfolio are returned to the student and recorded within the same workspace. On course completion, these workspaces form an archive that in turn feeds the program archive. Unlike traditional approaches where essays and examination papers become irrelevant to the student after successful grading, each eportfolio artefact remains live, relevant to, and owned by the student, and available for improvement in response to both teacher feedback and developing professional competencies (Green in Appendix D). This blurs the distinction between types of eportfolios - working, learning, assessment, and showcase - because each eportfolio artefact transitions between purposes seamlessly. This is not merely desirable, but essential as students consolidate all performance evidence across the duration of the program, in preparation for submission to a program workspace of a summative Teaching Performance Assessment (TPA) exit eportfolio. The competency grading and feedback in the TPA workspace in turn forms part of both the student's graduate eportfolio and the program eportfolio archive. Whereas graduation might have been the end of institutional involvement previously, the new AITSL (2016) accreditation directive that programs track graduates to proficiency certification means that ITE providers must now be able to access graduate eportfolios as part of program validation and impact data collection. Consequently, the TPA exit eportfolio forms the foundation
of each graduate teacher’s professional learning and eventual proficiency certification portfolio. The final outcome is a complete standards-evidenced picture of teacher growth from student to mature practitioner.

The mapped course curriculum, artefacts from the eportfolio course archive, and student feedback surveys represent key data for comprehensive evaluation of course effectiveness and the achievement of APST focus area outcomes (Broken lines in Appendix D). Evaluation again becomes a collaborative and collegial process where course coordinators openly share successes and failures. The suggested CDT-focused open design process can be effective only when all educators acknowledge what did not work well across the program, and apply their collective knowledge and skills to support coordinated remedial action. The coverage and accessibility of linked reports in the CDT mean that faculty leadership in turn can evaluate the program at a strategic level with the inclusion of TPA exit eportfolios, program exit surveys, and graduate proficiency eportfolios.

Conclusion

The CDT-eportfolio linkage proposed in this paper generates a number of positive outcomes. Firstly, it shifts the focus away from the technology to pedagogy. As has been shown in literature, eportfolio initiatives often fail because of the reluctance of academics to engage with the technology. Similarly, it has to date been easy for individual course coordinators to relegate curriculum mapping to a management responsibility, and to ignore wider program coherence issues. In the approach suggested here, teacher-educators have no option but to engage with both tools combined, because they constitute the normal program planning routine. Failure to engage with the technology is to openly let colleagues and students down, and undermine program viability through threats to reaccreditation. The second benefit is the creation of open and interactive teacher education pedagogies. Through the collaborative design and approval of courses, program members share collective responsibility for effective teaching and ITE student success, and eventually reaccreditation; academics move from concerns about my course to our courses in our program. This impacts on the third positive, continual comprehensive quality assurance. Through collective analysis and certification at each stage of the design process, program teams reinforce their own knowledge of professional standards, take ownership of accreditation requirements, and ensure the progressive and incremental improvement of their own teaching. Rather than relying on student satisfaction surveys alone, members can focus in collaborative evaluations on how well course outputs achieved learning outcomes and contributed to the collective advancement of student development measured against professional standards. Furthermore, with the full integration of eportfolios and the transfer of ownership of learning, student feedback can grow from inconsistent simplistic satisfaction responses to evaluations of how courses contributed to the growth of their pedagogical skills and professional independence.
No doubt the proposed or any similar CDT-eportfolio model would confront entrenched traditional practices, and have to justify the investment of time and money now against what some may consider a distant amorphous reaccreditation demand. However, future reaccreditation requirements must start being addressed and evidenced now; it will not be possible to reverse engineer the necessary evidence later. Technological solutions, such as digital CDT and eportfolios, present attractive solutions to generate efficiencies and ease the reaccreditation workload, but they are unlikely to fulfill their potential without consideration of the new pedagogical environments required for their effective utilisation.

This model situates the eportfolio within a comprehensive accreditation response framework adaptable beyond ITE, embeds pedagogical considerations into the educational planning process, and establishes a formal structure where program design, student evidence, and continuous critical evaluation ensure qualitative improvement. The CDT-eportfolio model establishes a framework where changes in accreditation requirements can flow automatically to student portfolio outputs, whilst concurrently continually justifying eportfolio relevance. As mentioned earlier in this paper, this model was developed with but limited CMT access and no experience of PebblePad ATLAS. Nonetheless, it subsequently has proved its value in setting Australia’s first fully accredited ITE course on a firm portfolio evidence footing, and enabled PebblePad workbooks to be constructed, contextualized, and prepared for implementation within a very short space of time. With a new perspective of coordinated accreditation design and portfolio output, this model has potential to benefit both Education and other faculties striving to respond to a more regulated and competitive professional degree landscape.

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References


Appendix A: RMIT-CDT alignment of accreditation and program parameters (© 2017 RMIT University. Curriculum Design Tool (CDT) reproduced by permission of RMIT University).
Appendix B: RMIT-CDT visual display of course cognitive engagement (© 2017 RMIT University. Curriculum Design Tool (CDT) reproduced by permission of RMIT University).
Appendix C: RMIT-CDT visual display of assessment authenticity (© 2017 RMIT University. Curriculum Design Tool (CDT) reproduced by permission of RMIT University).
Appendix D: CDT– eportfolio integration model.