

# Developing curriculum in a new educational world

## ABSTRACT

In 2010, the Flinders University School of Nursing & Midwifery decided to develop a new Bachelor of Nursing curriculum that took into account contemporary understandings of educational practice. These include blended learning, inclusion of national health priorities (Australian Institute of Health and Welfare [AIHW] 2011), ANMC competencies for registered nurses, university graduate qualities, and the demands of a complex health care context in which nurses need to practice comprehensively.

This paper describes and explores the development of the virtual learning environment within the new Flinders University Bachelor of Nursing curriculum. The new BN curriculum was planned over three years and implementation commenced in 2013. The paper describes the process of curriculum development, identifies some of the challenges faced in designing a contemporary curriculum and the strategies used to ensure that the course responds to the 'changing face' of higher education, whilst maintaining the requirements of a practice-based discipline. Central to the curriculum has been the implementation of the PodCase project, which has involved the development of extensive e-learning resources consisting of pods and cases. Pods are curated collections of third party resources used in conjunction with unfolding cases that simulate the clinical setting (Page et al. 2010). These cases present students with rich contextual information, reflecting multiple disciplinary perspectives (Yousey 2012). The paper concludes with an overview of the challenges faced and implications for other educators.

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# Background

University curricula for nursing and health sciences need to respond to changing regulatory environments, technological advances, diversity and increased specialisation in health care practice and limited available clinical placements.

This complex environment provides the context for the backward design of the new Bachelor of Nursing curriculum. Wiggins & McTighe (2005, p18) outline stages of background curriculum design being: “1. Identify desired results 2. Determine acceptable evidence and 3. Plan learning experience and instruction”. This backward design led the curriculum planning group to an emphasis on authentic learning tasks using case based learning and pods. Pods – curated collections of links to third party resources are presented in Moodle using a specific template including specifications for referencing, hyperlinks, layout and readability, videos, styles, images and quizzes. For example, the evidence based practice pod includes resources addressing established steps for evidence based practice, linking to relevant multimedia such as videos and interactive quizzes while explaining the critical appraisal of content extracted from linked research evidence databases. The case based learning (CBL) approach is delivered through CaseWorld – a virtual learning environment initially built upon PHP: Hypertext Preprocessor software, a general purpose programming language designed for web development. While CBL and pods are not entirely new concepts, the way in which they have been introduced in the BN is novel.

CBL, problem-based learning and scenario-based learning are some of the terms used to describe teaching and learning approaches that aim to develop students’ clinical problem-solving ability (Barrows 1996). Thistlethwaite et al. (2012, p. 434) define the goal of CBL as being “to prepare students for clinical practice, through the use of authentic clinical cases. It links theory to practice, through the application of knowledge to the cases, using inquiry-based learning methods.” Their systematic review of the use of CBL for health professionals’ education found that students overwhelmingly enjoyed CBL and believed it enhanced their learning.

## DEVELOPMENT, CHALLENGES AND STRATEGIES

The philosophy underpinning the development of the BN curriculum is backward design (Wiggins & McTighe 2005), typically involving the design of experimental instructional learning modules, testing of the modules, review, framework for these modules, and their dissemination (Carl 2008 p. 70). Specifically, academic leaders of the project ‘hand-picked’ staff believed to be open to change to form a curriculum group. They set aside previous curricula and designed the ideal learning experience that complements the complex and comprehensive environment of clinical practice. Within that aim, the curriculum group explored conditions for students to be able to develop into adept professionals, equipped to transcend the challenges of cultural, social, political, technical and contextual factors within a changing industry. At least six months was spent on brainstorming this stage. This involved identifying desirable characteristics of the graduate nurse and checking these against Nursing and Midwifery Board of Australia competencies, university graduate qualities and accreditation standards, which were modified by deletion, addition and refinement. This was then formulated into a set of skills, attitudes and knowledge with assessment ideas flowing from this ideal nurse descriptor. Learning strategies were then developed, from where a draft of the whole curricular could be drawn up. The draft was disseminated to the whole School for feedback and consultation. Topic development teams were then formed and team leaders identified as content experts, to guide the process. The outcome of this backward design process was a novel curriculum with strong emphasis on pods and cases.

The development of pods and cases commenced in March 2012 with the instigation of a project called PodCase that included the creation of both pods and CaseWorld combined. The directive was to launch the virtual environment for first semester 2013. The timeline was tight, however, aside from resource and budget limitations there were very few constraints imposed on the project regarding creative development. While project deadlines were met, the scope of the project was extended to include phases of staff development, integration and establishing sustainability. This approach was inspired by valuable expert input that was sought in the early stages of the project from the Flinders University Centre for University Teaching. This advice emphasised the need to focus on human rather than technical aspects of the project (Stam & Stanton 2010). It is anticipated that working towards the original nine-month timeline for completion of e-learning resources for the entire undergraduate BN curriculum, would not have produced such 'buy in' from staff and would have also potentially impacted upon the quality of the project. While the detailed project planning increased the chance of success it also expanded the scope of the project and increased the workload. For example, rather than simply developing cases as initially planned, the PodCase team worked with subject teaching staff to integrate cases and help design assessment and tutorial activities. An unanticipated benefit of this collaborative work has resulted in academic staff outside the project contributing significant work and innovation to PodCase. Consequently, the PodCase project is increasingly perceived as an innovation owned by the entire School of Nursing & Midwifery, further cementing its resilience for long-term use.

While human aspects of project implementation were critical to success, there were numerous technical challenges during the project. Regular university wide software upgrades necessitated retesting and modification of both Pods and CaseWorld on several occasions. These changes also altered functionality of CaseWorld on different devices such as iPads and tablets. Likewise some time was lost when free access software used for Pod development was modified. A further potential challenge related to the emergence of new software or resources that would make CaseWorld obsolete. For example, location of freely accessible high quality case studies with the complexity of CaseWorld would make ongoing development of CaseWorld pointless. All of these factors combine to describe an environment where technology is constantly changing. Therefore it was not possible to develop Pods and CaseWorld according to a static project plan. There was a need

to constantly modify and forward plan so there was sufficient flexibility built into programming to allow efficient future modification. Major technical decisions influencing CaseWorld were made after expert consultation with reference group members, external commercial specialists and senior staff from the Flinders University Centre for Education Information Communication Technology.

## A CONTENT-RICH APPROACH

Pods and CaseWorld comprise two key strategies in facilitating student learning within the new curriculum. Outside of the classroom, students learn concepts and content, while inside the classroom they are encouraged to practice high-level thinking. For example, teachers can construct activities around pods to later re-engage students by testing their thinking and skills in analysis inside the classroom. Pods are likely to be revisited at various points within the curriculum and their use forms an integral part of the curriculum. This model shares commonalities with the flipped classroom (Bergmann & Sams 2012) as students are required to work independently on assigned tasks that are then discussed in tutorials.

The use of pods can be applied to a variety of content. Evidence-based practice is an area of importance across many nursing subjects (Ciliska et al. 2001; Krugman 2003) and an evidence-based practice pod has been developed that includes identifying searchable questions, critical appraisal and clinical practice improvement. For example, when students are studying a subject addressing clinical governance and the application of the evidence to practice, they are able to independently study background theoretical content about evidence-based practice through the pod, as preparation for tutorials. Alternatively, tutorial sessions may focus on a national priority area for quality and safety, such as medication management, where students can discuss the critical appraisal of relevant research and policy addressing medication management, gained through the pod. In this way pods are used to provide background theoretical content that is then applied to specific examples in tutorials. Other pods are developed around mental health, cultural safety, law, ethics and a variety of practice areas.

Each pod also includes an online 'gateway' to targeted resources that can assist students with rapid problem solving. For example, the evidence-based practice pod gateway links to the Cochrane Library and The Joanna Briggs Institute. These pod gateways are designed to assist students to solve problems when undertaking case-based learning activities.

CaseWorld represents a virtual learning environment that provides simulation of the health care environment and holds the potential for use across disciplines within the university. Currently, it houses between 10 and 20 cases in various stages of development. Some of these involve the disciplines of nursing, paramedics, occupational therapy and physiotherapy with current developments in the storyline introducing social work, speech pathology and dietetics into the mix. This trajectory holds further potential.

CaseWorld contains a map and provides students with the ability to locate patients within the defined geographical parameter, zooming in to see their house and living circumstances. Entire families have been built in CaseWorld to allow students to understand the often dysfunctional relationships in the family and the impact this has on physical and psychological health (Young et al. 2006). This mapping approach focuses the students' attention towards community and the positioning of the patient within that context, taking into consideration available resources such as hospitals and community centres. This adds further complexity that is synonymous with authentic clinical situations. In addition, students are able to view expert clinician interviews. Instead of a few students having clinical placements with a specific clinical expert, this will allow all 1,200 students the opportunity to carefully listen to, observe and replay video content. Cases are also being developed to link to simulated electronic health records. Professionally, this approach supports the notion of the 'ideal nurse' who can work effectively with the range of professionals and situations reflected in authentic practice.

Educationally, this use of unfolding cases provides rich context for developing problem-solving/clinical decision-making skills (Yousey 2012). The use of discussion forums at decision points in case studies can offer the opportunity for interprofessional collaborative decision-making. For example, students from nursing and physiotherapy could be asked to post research evidence to the discussion forum to help them make a simulated discharge planning decision related to a case. The learning is linked to practice and provides opportunities to teach clinical decision-making, where students are provided with additional information available in the clinical setting, such as case notes and simulated handover audio. The development of cases can potentially evolve weekly in response to student and topic needs through 'branching' options, offering a multiple choice variety of directions that a case can take.



**Figure 1: Community map for Simon's case, showing facilities in context of his living arrangements**



**Figure 2: Profile for Greta's case, outlining her familial context, health background and other details**

From a user perspective, students may select one case with several options, for example, Greta. They then view text descriptions of learning aims, explore Greta's house to gain an understanding of the social determinants of her health as well as environmental factors that may impact on her health and recovery, hear her audio or view her diary to gain an understanding of her condition from a patient perspective. Additionally students can view Greta and her families photos, access the multi-disciplinary team's assessment, undertake nursing assessments, and view and record in her medical record.



## IMPLEMENTATION VERSUS INNOVATION

The PodCase project was unusual because its large-scale implementation occurred simultaneously with its prototype development. After nine months of developmental work, 12 pods and a family of cases were completed, with more than 500 clinical video interview segments recorded and over 1,600 subtopics addressed within pods. The pod and case content were made available for use by 600 students at the start of 2013. This process contrasts with the standard approach towards learning and teaching implementation supported by funding bodies, which usually involves prototype development, small-scale implementation and plans for broader uptake and dissemination that may or may not occur. The need to meet curriculum implementation deadlines and provide content that is easily accessible for large numbers of staff and students across multiple browsers and devices was a major factor for consideration. Therefore, checklists were developed for content appraisal, factoring in a research evidence basis, currency and accessibility. Each of these factors were appraised in detail. For example, technical appraisal examined reliance on software for access, download times, cost, the need for registering to access content, likely longevity of the resource, copyright and need for staff intervention.

The priorities of CaseWorld focus upon a diverse critique of content from multiple perspectives with continuous improvement and modifications to development and process, in accordance with student and staff feedback. Writers of CaseWorld's content template can balance the level of structure between authentic versus more structured cases, depending on the learning requirements.

Organisationally and politically, PodCase facilitates enhanced clinical links for Flinders University in the recruitment of its industry experts who are featured in CaseWorld. Student access to clinical expertise is maximised as the CaseWorld format allows one clinician to reach 1,200 students at a time. Furthermore, that one clinician is sometimes a 'star' practitioner from whom students and early professionals may not have the opportunity to otherwise learn, where the option to replay information allows for enhanced learning outcomes. CaseWorld is also effective in promoting the star practitioner and may encourage students to want to become star practitioners in the future. Other efficiencies include the pre-preparation of content for tutorial purposes, and the consistency and relevance

of clinical content for part-time and academic staff (Landeem et al. 2013).

Cases generated address priority areas for health care nationally, and can potentially be shared nationally. Activities within the learning design could then be linked to local university assessment items and curricula.

## IMPLICATIONS FOR OTHER EDUCATORS

Initial development of the PodCase project has been a valuable experience with apparently strong interest and support for case based learning from many staff and students. While case based learning has been long established in health sciences, Pods and CaseWorld provide a novel approach as the online environment is used to provide low level simulation of the health care setting. The approach used is potentially transferable across disciplines and can be used with large student numbers studying online or in a blended learning environment. The major lessons learnt include a) the need for the development of a detailed project plan incorporating change management processes and b) maintaining very high levels of flexibility and adaptability to maximise innovation within this structured plan. Unique to this project has also been the allocation of non-grant funding for a novel teaching and learning approach so that innovation becomes mainstream activity with the School. Crucial to this development has been the BN curriculum document with Pods and CaseWorld heavily embedded in documentation. An important final point relates to planned project evaluation. While survey and focus group evaluation will inform formative evaluation of the project, success will also be measured in terms of internal uptake and engagement and interest generated external to the School. Although it is too early to report detailed evaluation data, the level of external interest suggests there will be an impact on teaching and learning practice across disciplines and beyond Flinders University.

## CONCLUSION

PodCase, comprising CaseWorld and its associated pods, has been in its pilot release for less than one year and represents one medium through which the university's new BN is being delivered. PodCase is currently being evaluated for its technical and content use and it will be officially launched in 2014. Evaluation of the new BN curriculum is also being undertaken in tandem with PodCase evaluation, comprising student surveys and focus groups, along with academic teaching staff surveys.

This paper has explored the background to the development of a new BN and has outlined the advantages of using specific virtual mediums to deliver a flexible, innovative, efficient and resilient solution. The potential for use in interdisciplinary education is one of the key features and benefits of PodCase, encouraging collaboration and authentic case-based learning, albeit within the virtual space. Crucially, however, underpinning this approach is an emphasis on the human value of the project, focused on staff development and cultural uptake as key drivers to its success. The academic leaders behind PodCase also acknowledge that such success is equally dependent upon effective communication among staff and between disciplines, strong organisational skills and continuous evaluation (McCabe et al. 2012).

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