# Design Develop Implement (DDI)—A Team-Based Approach to Learning Design

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In complex organisations like universities, the ways in which faculties and disciplines integrate technology into their curricula is far from consistent, with the quality of the outcomes varying considerably. The reasons for this include the diverse learning and teaching needs in faculties, the variety of pedagogical traditions in disciplines, and also the lack of accessible learning design processes for academic and professional staff. This raises significant challenges but also offers opportunities to review existing practices to inform future developments using design patterns for learning with technology as a lever. The aim of this paper is to introduce a learning design process, namely the Design, Develop, Implement (DDI), which Macquarie University piloted to support curriculum development underpinned by design thinking principles. This paper openly addresses the challenges and successes of the DDI process for different disciplines using data gathered directly from the participants including focus groups and Critical Incident Questionnaires over a period of one academic year. It will conclude with an overview of achievements, challenges and lessons learned.

## Introduction

Universities across the globe and in Australia are increasingly looking towards reviewing their undergraduate and postgraduate programmes with an overall aim to meet the challenges of widening access, a growing diverse student population and their need for flexible provision, educational globalisation, and the development of employability and lifelong learning skills. To this end, policy initiatives and research agendas have evolved from an emphasis on learning technologies primarily through Learning Management Systems (LMS), to student-centred approaches to learning through instructional design models and guides, to the role of academics and educational development support for technology enhanced learning (Amundsen & Wilson, 2012; Gibbs, 2013; Lim, 2009; Smith, 2005; Stesa, Min-Leliveld, Gijbels, & Van Petegema, 2010). While most institutions have champions of good pedagogical practice in areas such as employability in the curriculum, blended and online learning and teaching, and instructional approaches (e.g. case-based learning, evidence-based or inquiry based learning), they have yet to achieve critical mass in understanding and implementing pedagogically informed programme and unit (a "unit" in this paper is a component of a programme of studies leading to a university award) development processes to enhance how academics teach and learners learn (Kirkwood & Price, 2013). In such a context, learning design has been recognised as one of the key development processes to enhance the learner experience through systematically designed and aligned programmes and units (Goodyear & Dimitriadis, 2013; Laurillard, 2012). The university-wide Design, Develop, Implement (DDI) project was initiated to engage with these challenges.

## The underpinning principles of the DDI

Developing or renewing university programmes or units is often approached by academics as a bureaucratic task that involves the completion of numerous templates and forms and often in isolation from their colleagues (Moon, 2002). It is, for example, common for a Programme Director to be asked to decide on major or minor changes in the programme with the rest of the members of the programme team to only contribute their ideas at the unit level. This approach, while reflecting the practical realities of many institutions, has been questioned by scholars in the area of curriculum development (Newton, 2000; Raban, 2007). Most recent literature in the area calls for a team-based approach to university curriculum development that has the potential to provide dynamic and deliberative university programmes (Dempster, Benfield & Francis, 2014; Gregory & Salmon, 2014; Voogt et al, 2011; Stigmar, 2008; Timperley & Alton-Lee, 2008; Webster-Wright, 2009; Wolf, 2007). It is imperative that academics work together with other university teams, the community and industry to be able to foresee the new waves of innovation and translate them into knowledge and skills for students (Desha & Hargroves, 2014). The

DDI process is founded on such principles of collaborative professional learning and design thinking (Goodyear & Dimitriadis, 2013; Hokanson, & Gibbons, 2014; Razzouk & Shute, 2012).

## What is DDI?

DDI is a team-based learning design process that is activity based, iterative, forward-looking, and grounded in everyday educational practices. The DDI process is situated in a supported social learning environment—a "habitat" (Wenger, White & Smith, 2009, p. 38)—providing programme teams the space and time to explicitly integrate the language, practice and tools for learning design with access to expertise required for that context. The programme teams collaborate to develop design patterns that work with what is practical in context, rather than on a theoretical view of what could be effective in theory in the future. It involves an action research approach to 'hothouse' and 'ring-fence' the design and development of design patterns for learning (Dick, 2002).

The DDI process draws on elements of the 'Carpe Diem' model developed at the University of Leicester (Salmon, Jones, & Armellini, 2008); community orientations of digital habitats (Wenger, White & Smith, 2009); and tools from our collective professional experience (e.g. the 3E Framework, Smyth, Bruce, Fotheringham & Mainka, 2011).

## How does DDI work?
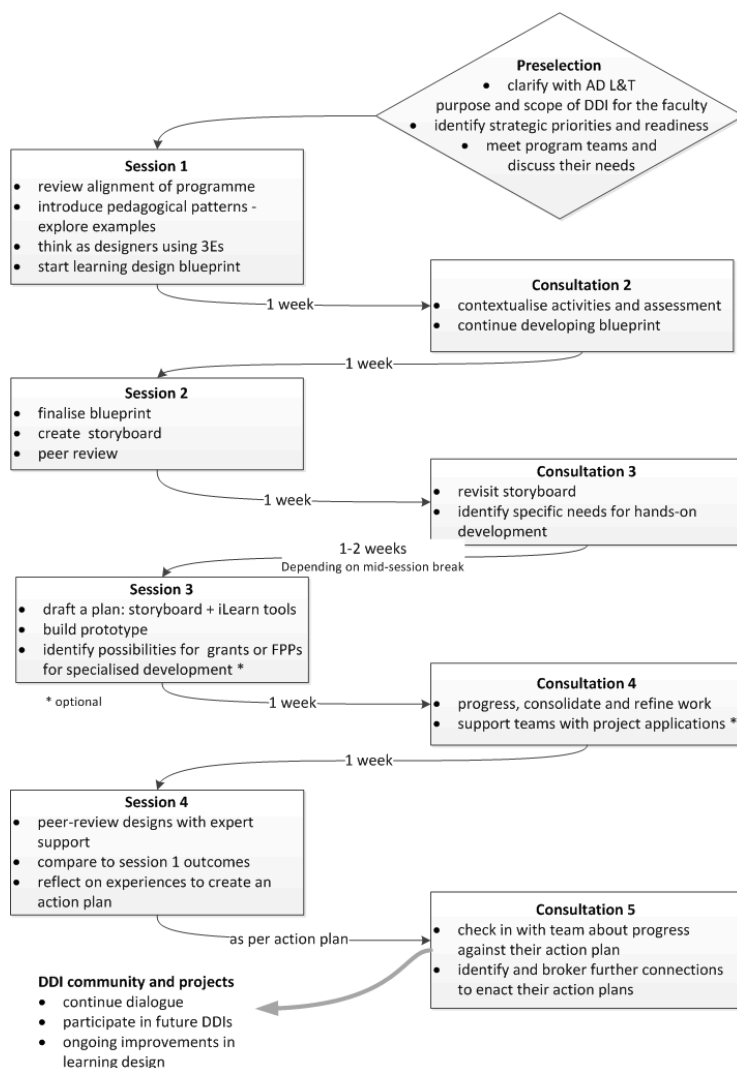


*Figure 1*. The DDI Process

The DDI comprises four stages that follow a spiral and holistic approach to curriculum development. Figure 1 outlines the stages and provides a short description of the steps involved within each stage. One of the powerful additions to the DDI process, when compared with other models, are the 'consultations'. These consultations allowed the necessary time for the teams to embed the outputs of the DDI into practice and supported the community configuration.

There were three iterations of the DDI process. We integrated feedback and lessons learned from each iteration about what was required to support academic teams to (re)develop their programmes and also about the process of supporting educational development itself with the view to sustainable practices. The project was implemented drawing together principles for effective organisational change and learning for quality improvement of blended and online learning and teaching (Kezar, 2014; Ellis, Jarkey, Mahony, Peat, & Sheely, 2007).

## What did the DDI project achieve?

The project proposed to pilot the DDI at Macquarie, a large metropolitan Australian university, to enable an active and informed self-sustaining learning and teaching community, who would become advocates of a collaborative approach to digital curriculum development. The intent was to build capability in learning design based on priorities as identified by the Faculties. Table 1 outlines the objectives and achievements of the project.

Table 1.
*Project objectives and outcomes*

| Objective | Achievements |
|---|---|
| 1. To test, evaluate and suggest for wider implementation, an active and collaborative learning design process for academic and professional staff. Moreover, the process will go on addressing and meeting the demands of the digital curriculum by harnessing the current and emerging technologies of the time in innovative, productive and educationally transformative ways. | Eight teams from all four faculties and the library worked at all levels of curriculum development—programme, unit, and activity—to develop learning designs and prototypes for undergraduate and postgraduate awards. By the end of the second iteration it was clear from the increased, interactive and more focussed participation that the modifications we had adopted in response to feedback from iteration one ensured there was active and sustained participation. |
| 2. Support participants and advisors, test new and existing models for blended and online learning, harness case studies, publish academic papers, develop practical guides and resources; and provide professional learning events offered to sector. | A number of academic and professional staff from across the Faculties and the various learning and teaching support teams have been involved in the process. A variety of learning designs incorporating new and emerging technologies in fully online and blended including flipped models have been developed to meet contextual needs and constraints. Dissemination activities include presentations and publications. A DDI website is being developed, which will house academic papers, guides and resources as well as vignettes of participant experiences. |

## How was the DDI managed and evaluated?

The DDI was managed within a structure that drew on expertise and experience through an Academic Developer, an Educational Developer, and an Advisory Group who collectively have significant experience in institutional capability building and scaffolding processes for academic programme teams. The core team members had clear roles and responsibilities for successfully executing the project, guiding development, maintaining close communication with each other via meetings and the project wiki, regularly reviewing progress and plans in response to feedback, and reporting to the Advisory Group. The Advisory Group, which included Learning and Teaching Centre (LTC) staff, the Pro Vice-Chancellor

(Learning, Teaching & Diversity), Associate Deans Learning and Teaching, and independent international advisors in learning design, helped to align the project with the University's strategic direction and international positioning of the results.

This shared approach to implementing the project was based on the premise that greater efficiencies and better outcomes would be achieved through the development of institutional and faculty partnerships. This would facilitate the pooling of resources in a joint approach to achieve the agreed outcomes, based on local priorities at the faculty level. Such an approach provided coherence between the University and faculty-based initiatives, with an implementation plan that was balanced and sustainable and used existing infrastructure and programmes. (Ellis et al, 2007)

The team adopted an action research approach (Dick, 2002; Robson, 2002), which included continuous iterations of the process based on feedback by all participants. Feedback was collected using focus groups and a critical incident questionnaire (Brookfield, 1995). The team is currently undertaking content analysis of the data, which will be reported in a future publication. However, from a first thematic analysis of the data, some lessons learned have been drawn and presented in this paper.

## What did we learn?

There are three main lessons that our thematic analysis revealed. The first lesson is that relationships and the role of external facilitators have been key in developing the planned and unexpected collaborations that teams undertook. Having strong relationships is vital, indeed a number of collaborations have stemmed from this project, building on the outputs achieved through the DDI programme as illustrated by participants:

> …it's been a really valuable exercise for a host of reasons. It's been the relationship-building component of it, and those opportunities for collaboration. (DDI participant)

> It would still make sense for you to get someone from outside the department to be the facilitator (DDI participant)

> we're also talking about within an institutional framework where there's quality and standards requirements and those kinds of things.  So the value of having your specialist learning and teaching person to guide that I think is - shouldn't be underestimated.  We're— by and large--we're discipline specialists, most of us.  (DDI participant)

The second lesson is about empowering the participants to bring together discourses, tools and practices with an overall aim to improve their programmes. As another DDI participant reported:

> …giving us some of the language and concepts to really start to move our own internal conversations forward… (DDI participant)

> …helped us visualise how our modules are to be, and the sequence and everything else that goes with it – but having the examples that we could look at that are actually working, that are similar to the ideas that we have. Seeing things that actually work online has been really, really helpful (DDI participant)

The last lesson is about bringing academics together for set periods of time to focus on learning design and providing the necessary structure to focus the team on specific 'outputs'. The DDI templates have been instrumental in enabling this to happen.  The templates prompted the teams to think as designers and address both pedagogical and practical opportunities and challenges in their disciplines and departments.

> From the very beginning – there was a tight focus on specific outcomes (DDI participant)

> To have a three-hour workshop that you go to, I think is really good because you can invest the time in trying different things and building something different (DDI participant)

> It really helped consolidate what we'd done, and think a bit further and pushed us along (DDI participant)

Some of the participants have gone on to cascade the process in their own contexts:

> …it's turned out that this process is very viable for other projects that we're doing… expectations achieved, and some, beyond wildest expectations really. (DDI participant)

## Conclusion

We believe we have some compelling evidence of the impact of DDI as a viable model for learning design thinking – in encouraging people to create, collaborate and share learning design patterns and lessons learned. At the time of writing this paper, a review of the DDI model as a university curriculum design and development process is underway. The aim of this project is to review the process to date for effectiveness and sustainability and to develop a clearly identifiable framework for delivering the DDI. Global experts in the area of learning design and professional learning have also endorsed the DDI project. Some of their key points are summarised in the following excerpts:

> From my perspective, the DDI initiative exemplifies the ideal way of working with colleagues to develop (or further develop) their curricula. It is needs-based (i.e. contextualised to the courses that individuals or teams are themselves leading), and is also learning and teaching led in that colleagues begin by reflecting on their learners, their subject, and what they are hoping to achieve before then considering how they might get there. (Keith Smyth, Professor of Pedagogy, UK)

> The greatest value of DDI is that it is clearly rooted in the growing tradition in Higher Education which recognises that an approach to designing learning for future needs (rather than delivery of information or exhortation) is essential to positively impact on students' learning experiences in Higher Education, and secure value from digital and physical learning environments. (Professor Gilly Salmon, PVC Education (Innovation), UWA)

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## References

Amundsen, C. and Wilson, M. (2012). Are We Asking the Right Questions?: A Conceptual Review of the Educational Development Literature in Higher Education. *Review of Educational Research, 82*(1), 90-126.

Brookfield, S. D. (1995). *Becoming a Critically Reflective Teacher*. San Francisco: Jossey-Bass

Dempster, J. A., Benfield, G., and Francis, R. (2012). An academic development model for fostering innovation and sharing in curriculum design. *Innovations in Education and Teaching International, 49*(2), 135-147.

Desha, C. J., and C. Hargroves. (2014). Higher Education and Sustainable Development: A model for curriculum renewal. New York: Routledge.

Dick, B. (2002). *Action research: action and research* [On line]. Available at http://www.aral.com.au/resources/aandr.html

Ellis, R., Jarkey, N., Mahony, M. J., Peat, M., & Sheely, S. (2007). Managing quality improvement of elearning in a large campus-based university. *Quality Assurance in Higher Education*, *15*(1), 9-23.

Gibbs, G. (2013). Reflections on the changing nature of educational development. *International Journal for Academic Development 18*(1), 4-14.

Goodyear, P. & Dimitriadis, Y. (2013). In medias res: reframing design for learning. *Research in Learning Technology Supplement, 21:* 19909 - http://dx.doi.org/10.3402/rlt.v21i0.19909

Gregory, J. and G. Salmon (2013). Professional development for online university teaching. *Distance Education, 34*, 256-270.

Hokanson, B. and A. Gibbons (2014). Design in Educational Technology: Design Thinking, Design Process, and the Design Studio. Springer International Publishing.

Kezar, A. J. (2014). Higher education change and social networks: A review of research. *The Journal of Higher Education, 85*(1), 91-124.

Kirkwood, A. and L. Price (2013). Technology-enhanced learning and teaching in higher education: what is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology, 39*(1), 6-36.

Laurillard, D. (2012). Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology. New York: Routledge.

Lim, C. (2009). Formulating guidelines for instructional planning in technology enhanced learning environments. *Journal of Interactive Learning Research, 20*(1), 55-74.

Moon, J. (2002). The Module & Programme Development Handbook. New York: Routledge.

Newton, J. (2000). Feeding the Beast or Improving Quality?: Academics' perceptions of quality assurance and quality monitoring. *Quality in Higher Education, 6*(2), 153-163.

Raban, C. (2007). Assurance versus enhancement: less is more? *Journal of Further and Higher Education*, *31*(1), 77-85.

Razzouk, R. and V. Shute (2012). What is design thinking and why is it important? *Review of Educational Research, 82*(3), 330-348.

Salmon, G., Jones, S., & Armellini, A. (2008). Building institutional capability in e-learning design. *ALT-J, Research in Learning Technology, 16*(2): 95-109.

Smith, J. (2005). From flowers to palms: 40 years of policy for online learning. *ALT-J Research in Learning Technology, 13*(2), 93-108.

Smyth, K., Bruce, S., Fotheringham, J., and Mainka, C. (2011). *Benchmark for the use of technology in modules*. Edinburgh Napier University, Edinburgh Napier University. http://staff.napier.ac.uk/services/vice-principal-academic/academic/TEL/TechBenchmark/Documents/3E_Framework_Nov_2011.pdf

Stesa, A., Min-Leliveld, M., Gijbels, D., Van Petegema, P. (2010). The impact of instructional development in higher education: The state-of-the-art of the research. *Educational Research Review, 5*, 25-49.

Stigmar, M. (2008). Faculty development through an educational action programme. *Higher Education Research & Development, 27*(2), 107-120.

Timperley, H. and A. Alton-Lee (2010). Reframing teacher professional learning: An alternative policy approach to strengthening valued outcomes for diverse learners. *Review of Research in Education, 32*, 328-369.

Voogt, J., Westbroek, H., Handelzalts, A., Walraven, A., McKenney, S, Pieters, J. & de Vries, B. (2011). Teacher learning in collaborative curriculum design. *Teaching and Teacher Education, 27*(8), 1235-1244.

Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research, 79*(2), 702-739.

Wenger, E., White, N., & Smith, J. D. (2009). *Digital Habitats: Stewarding Technology for Communities*. Portland, OR: CPsquare.

Wolf, P. (2007). A model for facilitating curriculum development in higher education: A faculty-driven, data-informed, and educational developer–supported approach. *New Directions for Teaching & Learning, 112*, 15-20.

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