JOURNAL OF INTERACTIVE MEDIA IN EDUCATION

Dobozy, E and Dalziel, J 2016 Transdisciplinary Pedagogical Templates and their Potential for Adaptive Reuse. *Journal of Interactive Media in Education,* 2016(1): 8, pp. 1–11, DOI: http://dx.doi.org/10.5334/jime.402

ARTICLE

Transdisciplinary Pedagogical Templates and their Potential for Adaptive Reuse

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This article explores the use and usefulness of carefully designed transdisciplinary pedagogical templates (TPTs) aligned to different learning theories. The TPTs are based on the Learning Design Framework outlined in the Larnaca Declaration (Dalziel et al. in this collection). The generation of pedagogical plans or templates is not new. However, the creation and sharing of web-based pedagogical templates is underpinned by a re-use philosophy and the notion that such material can be adopted or adapted for various purposes by learning designers and developers. This article will exemplify the importance of pedagogical clarity by showcasing how different teacher and learner roles are instantiated in different TPTs that subscribe to behaviourist, cognitivist, or social learning theories. A key goal is to demonstrate that the TPTs constructed based on the Learning Design Framework (LD-F) introduced in the Larnaca Declaration, are easy to be re-used or modified to suit specific learning situations and contexts.

Keywords: Learning Design; transdisciplinary pedagogical templates (TPTs); Larnaca Declarataion; generic design; pedagogy; knowledge-transfer; LAMS

Introduction

> *The ultimate goal of Learning Design is to convey great teaching ideas among educators in order to improve student learning . . . successful sharing of good teaching ideas can lead not only to more effective teaching, but also to more efficient preparation for teaching.*
>
> (Dalziel et al. in this collection)

Transdisciplinary pedagogical templates (TPTs) provide a way to implement Learning Designs across disciplinary boundaries (Dobozy, Dalziel & Dalziel, 2013). They contain specific, ready-to-be-used information or content related to the pedagogical decision-making and instruction to educators and students and offer many advantages to time-poor educators at all levels of the education system. TPTs or pedagogical design templates are generic designs that may or may not align to specific learning theories. Their key feature is that they are discipline independent. In this article, we illustrate how they can streamline and simplify pedagogical planning.

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Transdisciplinary pedagogical templates (TPTs) can assist educators in providing a productive learning environment where students are supported throughout their academic maturation. At the university level, many educators are discipline specialists, familiar with their discipline specific literature and discipline specific rules and procedures. However, often, they are less interested in, or knowledgeable of, contemporary learning theory and Learning Design principles that underpin pedagogical design decisions (Dalziel, 2008; Dobozy et al., 2013). In the past, the most common mode of content delivery was through a traditional lecture format. Even in the digital age, traditional content delivery through live or recorded lectures is widely accepted as an efficient and effective pedagogical model. Hence, video lectures as a form of online learning content presentation have gained popularity in higher education. Armstrong (2012) notes that Coursera, a leading MOOCs provider, "pledges to work to develop best practices for online presentations and share them with instructors, and the [host] university promises to present the video lecture content 'chunked' into short videos" (p. 1).

The collection of facts, rules and procedures that a lecturer aims to 'impart' using the traditional lecture format is aligned with a classical instructionist teaching and learning paradigm. Munz (1993) notes that "the concept of instruction is modelled on the push-and-pull causality of classical mechanics" and adheres to an epistemology which postulated that "knowledge is generated by

pushes, exercised by the world on the mind" (p. 147) as a kind of information processing machine. Despite the long lasting popularity of the instructionist teaching and learning model in higher education, increasingly, universities are adopting a more diverse range of pedagogical practices. Universities aim to offer more learner-centred and personalised learning experiences, which complement or sometimes disrupt formal teacher-centric educational practices (Metcalfe & Fenwick, 2009). In other words, there is growing demand for diversity of teaching and learning practices that fit disciplinary requirements for deep, profession-specific or technical content knowledge, but also allow for the development of less tangible soft skills, such as cooperative learning, communication and critical thinking skills. These new, non-technical skill sets have often been referred to as '21st century skills/ competencies' and linked to the requirements of highly trained knowledge workers, ready to engage with as yet unknown problems (Shechtman, deBarger, Dornsife, Rosier, & Yarnall, 2013). The global knowledge economy requires 21st century knowledge workers with a mix of technical and generic knowledge, skills and attitudes, and a readiness to engage with, and be tolerant of, difference and diversity in views, values, and experience (Dobozy, 2011; Shechtman et. al., 2013). The new field of Learning Design (LD) has emerged as a specialised field of education to assist university teachers in the preparation of 21st century knowledge workers. LD can help university lecturers in the design of virtual learning spaces and learning activities that are engaging and lead to better learning outcomes.

In broad terms, contemporary lecturers, irrespective of their disciplinary backgrounds, will need to be willing to acknowledge the legitimacy of different teaching and learning paradigms, based on different learning theories. The different paradigms and learning theories bring with them a plurality of methods and rules of teaching and learning practice. Investigating the paradigm ascribed to a particular learning activity sequence is important, because "to be locked in a particular paradigm is to view the world in a particular way" (Burell & Morgan, 1974, p. 24). The design of a learning activity sequence, based on a particular epistemological and ontological model, is referred to as Learning Design Practice (LD-P) within the Larnaca Declaration on Learning Design (Dalziel et al. in this collection).

This article is structured as follows: First, Learning Design principles as outlined in the Larnaca Declaration are introduced. Second, the need for pedagogical clarity is explored and three different learning and teaching paradigms are introduced. Third, 'transdisciplinary pedagogical templates' (TPTs) are proposed as a possible model to assist educators in providing pedagogical clarity and deciding how to teach without the need for additional pedagogical training. Fourth, various TPT models are introduced, which illustrate how different teacher and learner roles are instantiated in different TPTs that subscribe to different learning theories, illustrating the attractiveness of TPTs, underpinned by a re-use philosophy, and the notion that such material can be adopted or adapted for various purposes by other learning designers and developers.

The Larnaca Declaration Learning Design principles

The educational field of Learning Design (LD) emerged out of the need to study and describe the development, implementation and adaption of particular learning designs, created in various contexts and for multiple purposes (Conole, 2013). LD as a specific field of education is concerned with the pedagogical approaches taken that support the learning of narrow profession-specific technical information and/or broad generic knowledge and skills (Dobozy, 2012). More specifically, its purpose is to "assist educators to describe effective teaching ideas so that they can be shared with, and adapted by, other educators" (Dalziel et al. in this collection). In other words, the aim of LD, similar to architectural design, involves the planning and construction of physical or virtual spaces and objects, and in education these designs may lead to improvements in teaching and learning effectiveness, learner engagement and learning outcomes.

One key defining feature of LD, as described in the Larnaca Declaration on Learning Design (Dalziel et al. in this collection), is its "provocative aspiration towards pedagogical neutrality", meaning that its attractiveness may lay in its ability to accommodate multiple teaching and learning approaches. LD should therefore be "viewed as a layer of abstraction" (Dalziel et al. in this collection) that is independent of paradigmatic restrictions, methods and rules of practice. Similar to a musical notation, the Learning Design Framework (LD-F) as introduced in the Larnaca Declaration on Learning Design (Dalziel et al. in this collection) is a framework that is made up of multiple elements that taken together aspired to be free from representational and/or values constraints (see Dalziel & Dobozy, 2016).

Despite the values neutrality ascribed to the Learning Design Framework (LD-F), there is a clear acknowledgement that the epistemological and ontological assumptions of specific learning design sequences (Learning Design Practice or LD-P) are based on a variety of views of reality. For example, social constructivist and/or connectivist learning theory is based on a view of reality that is subject to interpretations and personal meaning making. This view of reality is quite different from one in which knowledge is independent from the person and perceived as stable, fixed and verifiable through objective testing and simple observation (which is ascribed to a positivist view of the world and aligned with instructionism, also often referred to as behaviourist learning theory).

Hence, if a lecturer subscribes to a non-positivist view of reality and learning, classical transmission education may be devalued as something that is at best ineffective and at worst something that distorts the concept of what it means 'to know'. Consequently, a reusable learning activity sequence complete with learning content that is based on an instructionist paradigm would most likely not be

viewed as an acceptable solution by this lecturer, even if the learning content would be aligned to the curriculum requirements. The reason is that the sequence's set of pedagogical principles do not align with the lecturer's view of reality – her or his view of what knowledge is, what is valuable and the relationship between the knower and what is to be known. Pansiri (2005, p. 96) explains:

> "Paradigms have been defined as 'world views' that signal distinctive ontological (view of reality), epistemological (view of knowledge and relationships between knower and to-be known), methodological (view of mode of inquiry), and axiological (view of what is valuable) positions."

Therefore, the transdisciplinary pedagogical templates (TPTs) captured as reusable "great teaching ideas" (Dalziel et al. in this collection) will need to fulfil one of two functions: either they need to be perceived as 'neutral', in the sense that they do not privilege particular ontological and/or epistemological values, or they need to incorporate a range of options that would allow for a plurality of views of reality (epistemological and ontological values) and aligned learning theories.

The need for pedagogical clarity

The above discussion demonstrates the need for pedagogical clarity in the advancement of learning design practice and research. This point has also been made in the Larnaca Declaration on Learning Design (Dalziel et al. in this collection):

> [I]t is possible to conceive of a framework for describing many different types of teaching and learning activities, and that this framework could appropriately aspire towards being pedagogically neutral, even if this goal is unachievable in an absolute sense. The practical goal is a framework of sufficient accuracy and expressiveness that it can describe many different examples of teaching and learning activities (which are themselves based on different pedagogical theories). . . . The ultimate rationale for Learning Design is that it can convey great teaching ideas among educators in order that learners may learn more effectively. This improved learning arises from their educators adopting new, effective teaching strategies for designing learning experiences. The conceptual difficulty is that the Learning Design framework tries to avoid privileging any particular pedagogical theory over another . . . and yet almost all educators who could use Learning Design would wish to use it to improve learning, and improving learning requires a theory of how students learn.

Here, we have opted to illustrate the importance of pedagogical clarity through the exploration of the three major educational paradigms or ways of teaching and learning according to specific views of reality and knowledge; and exemplified by what is valued as desirable competency. The chosen paradigms provide a way to illustrate the significant differences that exist in design. As Thomas Kuhn (1996) explains:

> More is involved, however, than the incommensurability of standards. Since new Paradigms are born from old ones, they ordinarily incorporate much of the vocabulary and apparatus, both conceptual and manipulative, that the traditional paradigm had previously employed. But they seldom employ these borrowed elements in quite the traditional way. Within the new paradigm, old terms, concepts, and experiments fall into new relationships one with the other. The inevitable result is what we must call, though the term is not quite right, a misunderstanding between the two competing schools. (p. 149)

The above quote may explain why there is much confusion about what similarities and differences exist among the great variety of learning theories and traditions outlined by, or attributed to, educational thinkers and if, for example, Albert Bandura should be classed as a behaviourist (McLeod, 2007) or cognitivist (Slavich & Zimbardo, 2012). Nevertheless, there is a general acceptance that learning theories rather than being unified accepted theories of teaching and learning, are a collection of overlapping general ideas based on epistemological and ontological realities; for example, the relationship between instructionism and behaviourism, cognitivism and information processing theory, and social constructivism and connectivism. For reasons of simplicity and clarity, we opted to refer to three distinctively different educational paradigms as follows:

- Instructionism
- Cognitivism
- Social Constructivism/Connectivism

The definitional constructs, key characteristics, and functions of the three distinct educational paradigms as we currently understand them will form the basis of our exploration of TPTs and LD-Ps (see **Table 1**).

Transdiciplinary Pedagogical Templates

The generation of pedagogical plans or templates has a long tradition in education. Nevertheless, the creation and sharing of web-based pedagogical templates among educators is relatively new and has enjoyed great popularity in recent years (Sampson, Zervas & Sotirion, 2011). The transdisciplinary pedagogical templates (TPTs) we introduce here (see below) are aligned to the three different schools of thought explored above. The creation of TPTs is underpinned by a re-use philosophy and the notion that such material can be adopted or adapted for various purposes by other learning designers and developers. It exemplifies the idea that creating and sharing 'good teaching ideas' (Dalziel et al. in this collection) is related to learning objects, "whereby learning content is broken down into discreet amounts of learning and material which can be

	Instructionism	Cognitivism	Social Constructivism / Connectivism
Definition	"Learners learn through listening, watching and reading, i.e. learning through acquisition of knowledge and concepts." (example from Laurillard, 2010, p. 21)	"Knowledge can be seen as schema or symbolic mental constructions. Learning is defined as change in a learner's schemata. . . .The architecture of the brain's cognitive processes can be likened to the standard engineering model for computer information processing: input; processing; storage; output. This is not to say that the brain is patterned like a computer; rather it is to say that we have, consciously or unconsciously, designed computers to work much as our brains do." (Cognitive Approaches to Learning, 2008, p. 1)	Both contemporary learning theories foreground student autonomy, agency and relatedness (Community of Practice model or Personal Learning Environment). Learning as knowledge sharing, and meaning making through experience and exchange, embracing authenticity, intentionality, diversity and openmindedness. (Mok, 2013) "A learner will always be subjected to influences from the social and cultural setting in which the learning occurs, which will also define at least partly the learning outcomes. This view of learning focuses on the way knowledge is distributed socially." (Mayes & de Freitas, 2010, p. 9)
Key characteristic	Behaviourist – stimulus-based learning theory	Information processing theory, individualist, mind-body connection	Relativist, situated, relational and transformative learning theories
Centricity	Teacher-centric	Teacher/Learner-centric	Learner-centric
Learning focus	Predominantly content	Content/Process	Predominantly process
Teacher role	Knowledge teller	Knowledge teller using step-by-step instruction and mentor	Knowledge curator and mentor
Student role	Tabula rasa, consumer of pre-packaged information	Some prior knowledge acknowledged and misconceptions expected, consumer of pre-packaged information	Producer and sharer of dynamic knowledge, building on collective prior knowledge of team, challenging and displacing individual misconceptions
Purpose	Substantial 'just-in-case' knowledge and skills development	Substantial 'just-in-case' knowledge and skills development	Mainly 'just-in-time' knowledge and skills development
Interaction pattern	Primarily teacher to student	Primarily teacher to student	Primarily student to student
Thinking skills (Bloom's taxonomy)	Primarily lower-order thinking (knowledge and application of knowledge and skills)	Some lower-order thinking (knowledge and application of knowledge and skills) and some higher order thinking	Higher-order thinking (analysing, synthesizing, critiquing, redesigning and applying information to new contexts)
Power/Agency	Teacher in charge of content and process decisions – low student agency	Teacher in charge of content decision, but students may have input into process decisions – medium to low student agency	Student in charge of content and process decisions – high student agency
Assessment	Summative – high stakes	Summative – high stakes and/or formative, authentic	Authentic, formative and summative

Table 1: Three different educational paradigms.

brought together to deliver different learning outcomes" (Akeroyd, 2005, p. 161).

Earlier work with TPTs (Dalziel, Mason & Dalziel, 2009; Dobozy, et al. 2013) has observed that some educators seem uncomfortable populating an empty shell (pedagogical template) designed by a learning design expert. The need to see how various learning theories (instructionism; cognitivism; social constructivism/connectivism) are applied in practice, and a real learning situation, has inspired us to showcase two different design examples for each theory. Dalziel et al. (2009) have termed them 'local designs' and 'generic designs'. The primary difference between local and generic learning designs is the role of content.

A *local design* is termed as one which combines discipline-specific content and pedagogical decision-making and action on the part of the educator and student, resulting in a 'ready to be used' learning design by a colleague from the same discipline area. A *generic design* is structured in a way that encourages educators to insert their relevant discipline-specific content into a generic pedagogical template (see **Table 2**).

Our generic designs will contain specific information (content) related to the pedagogical decision-making and instruction to educators and students. This pedagogical information is sometimes referred to as metadata in the context of web-based learning design repositories

	Local designs	TPTs – Generic designs
Discipline-specific curriculum content	Included	Not included
Pedagogical advice and instructions	Included	Included
Ready-to-be-used	Yes	No

Table 2: Local and Generic designs.

(Akeroyd, 2005; Oliver, 2004), however in the current context this advice includes pedagogical instructions inside individual activities within the overall generic design (not just design-level descriptive meta-data). It is important to note that the TPTs are, by definition, generic in nature. Although they contain pedagogical advice, they are free from discipline-specific content information.

The key difference between generic and local designs for educators who use them is the need for sophisticated pedagogical knowledge in conjunction with discipline-specific knowledge (for generic designs) versus the need for highly specialist content knowledge and skills only (for local designs). The attractiveness of generic designs is the potential for easy application in various disciplinary contexts with minimal effort and cost. The next section will illustrate the ease with which discipline-specific curriculum content can be inserted into specific TPTs that align with one of the three learning and teaching paradigms explored above.

Various models of Transdiciplinary Pedagogical Temples

This section illustrates how curriculum specialists can choose a particular template design and simply insert their discipline-specific curriculum content into the pre-designed sections. We have chosen LAMS as a platform to exemplify the use and usefulness of TPTs. The first TPT (generic and local) designs are aligned with the instructionist paradigm (see **Figure 1**), whereas the second TPT design is underpinned by a cognitivist approach to learning and teaching (see **Figure 2**), and the third TPT design adheres to social constructivist and/or connectivist learning and teaching principles (see **Figure 3**).

The curriculum content chosen to exemplify how a discipline specialist can use the TPTs is drawn from teacher education. More specifically, it pertains to the Mathematics Learning Area and focuses on the topic of 'number sequence and the Fibonacci numbers'. In each of the three examples, the learning design sequence is entitled: *An investigation into Fibonacci numbers.* It seeks similar discipline-specific (profession-specific technical) learning outcomes, but also incorporates the learning of generic competencies, which will feature more prominently in the second and especially third pair of learning design examples (LD-P). Nevertheless, all three LD-Ps deal with the same discipline-specific learning content, which was adapted from a free online lesson sequence provided by the MENSA Education and Research Foundation (2009) designed to extend the learning of gifted and talented primary school-aged children (see **Table 3**).

It is worth emphasising that this illustration of local and generic designs for the three educational philosophies (giving six permutations in all) is not specific to the teaching of mathematics – indeed any discipline area could be analysed in a similar way. For the sake of illustration, it is most useful to consider one specific topic (in this case, Fibonnaci numbers) in all six permutations (or 3 pairs) in order to illustrate the differences across each permutation, rather than to give several different topic examples without showing all six permutations for each. We leave it to future authors to explore similar examples of the six permutations in other discipline areas.

What follows is an illustration of the first pair of permutations based on an instructionist approach. The generic design is provided on the left, with supplementation of the generic design with specific discipline-specific content shown on the right. Only the highlighted sections of the content pages are changed. The pedagogical instructions are kept intact, meaning a content specialist can use this pedagogical information "as is" (i.e, without needing change) while focusing on adding content information. (The complete LAMS sequence can be accessed here: http://lamscommunity.org/lamscentral/sequence?seq_id=1869791).

Following the illustration of an instructionist learning design, we introduce the second pair of permutations based on a design that is modelled on a cognitivist educational paradigm, using the same learning area and subject-specific content. As outlined in **Table 1**, the cognitivist approach focuses on the individual student's current knowledge base and how to extend it. Hence, the lesson sequence commences with a real-world example to tap into the student's understanding and alerting the teacher to difficulties. The key idea is to acknowledge that students come to learning with many experiences and a rich knowledge based. Hence it is important to not only acknowledge existing knowledge, but also to displace misconceptions and build new discipline-specific and critical thinking knowledge and skills through engagement with the learning activities. (The complete LAMS sequence can be accessed here: http://lamscommunity.org/lamscentral/sequence?seq_id=1869794).

Finally, we introduce a design that is modelled on a social constructivist/connectivist educational paradigm, using the same learning area and subject-specific content. As outlined in **Table 1**, the social constructivist/connectivist approach focuses on the idea of 'intersubjectivity'. Through social activities, such as discussion and debate, students share their ideas, which are transformed into internal mental models. Hence, students' thinking is gradually transformed through observation and participation in social interactions. This kind of knowledge scaffolding is quite different from other educational paradigms – according to this view of learning, students need each

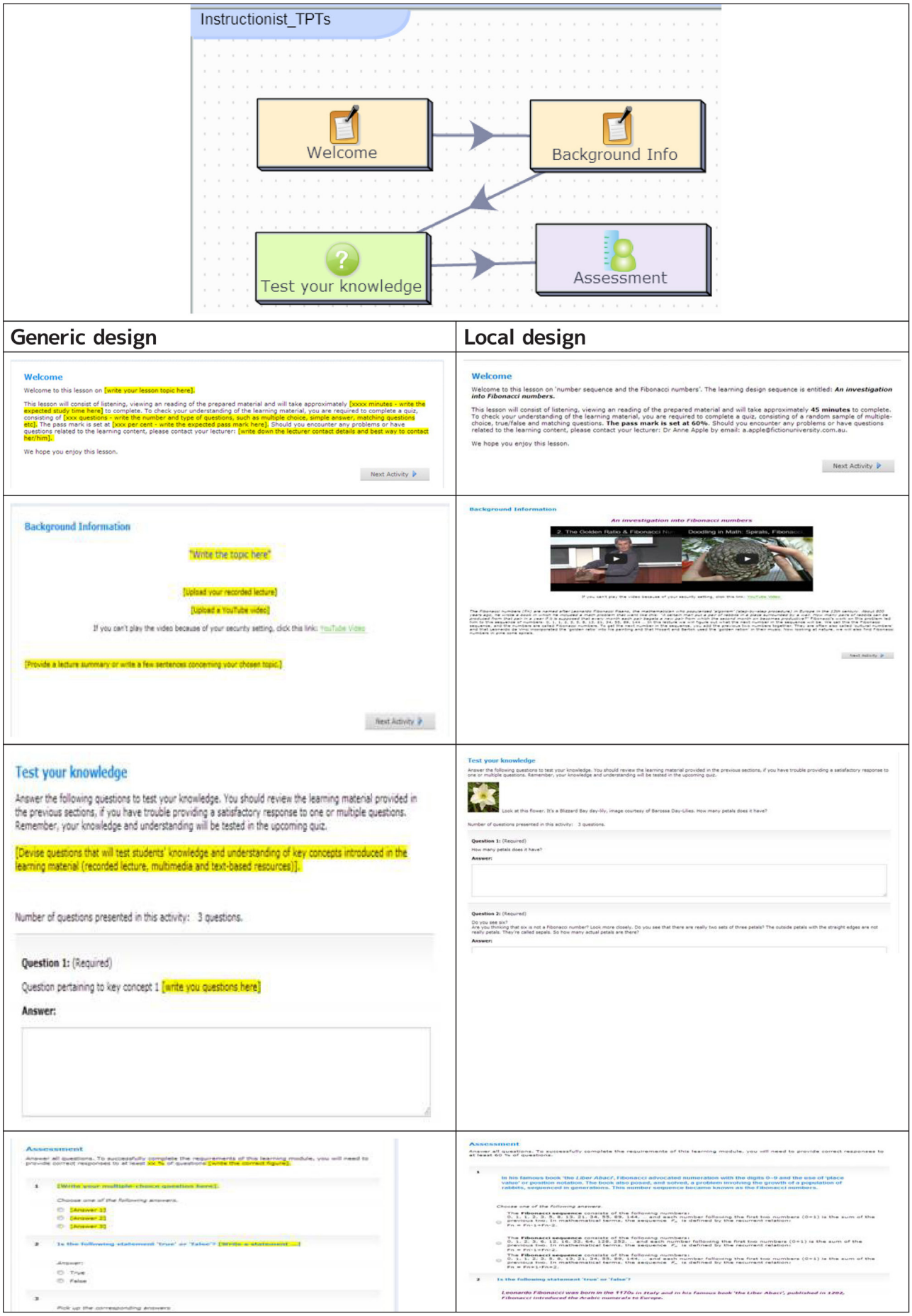

Figure 1: Instructionist TPTs.

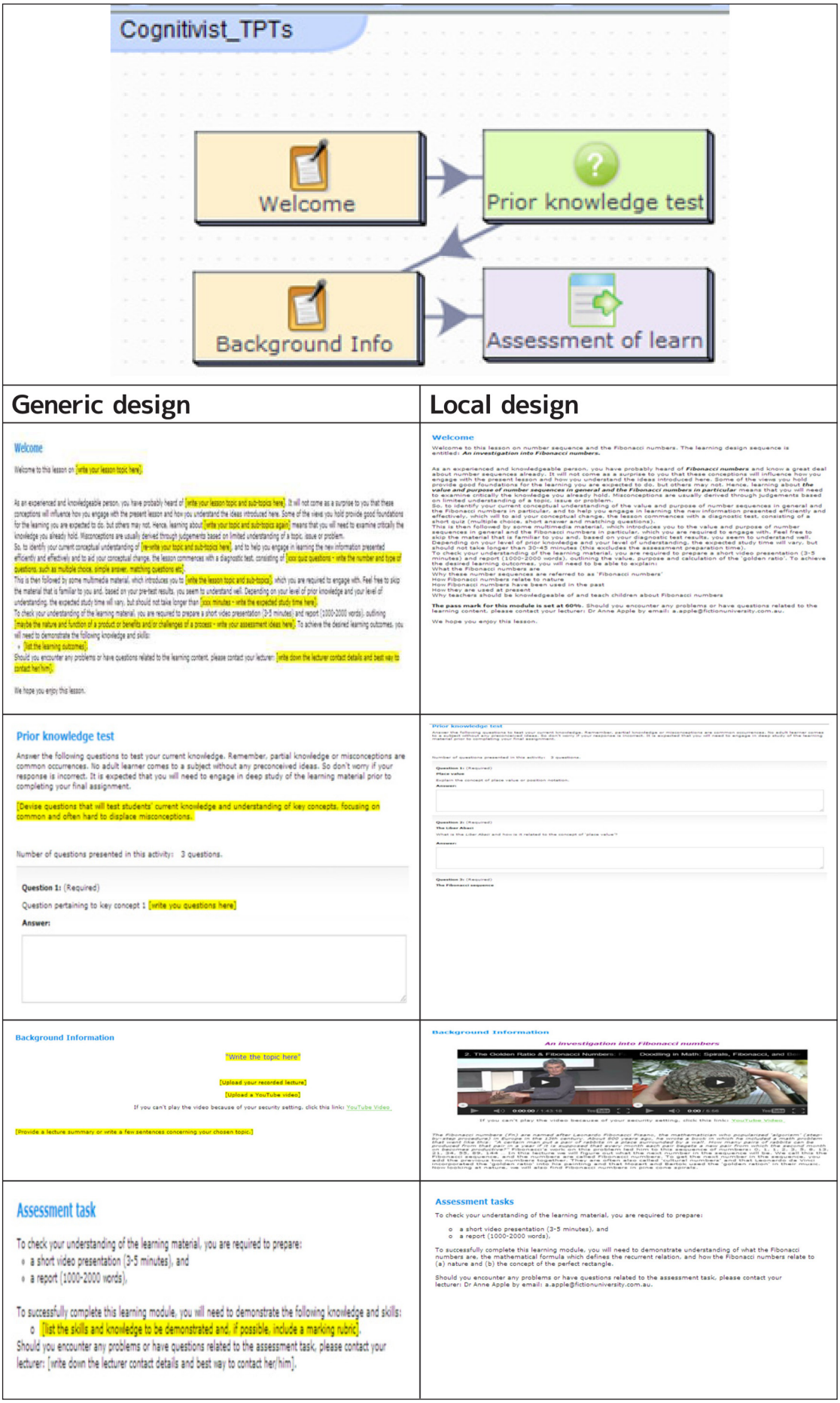

Figure 2: Cognitivist TPTs.

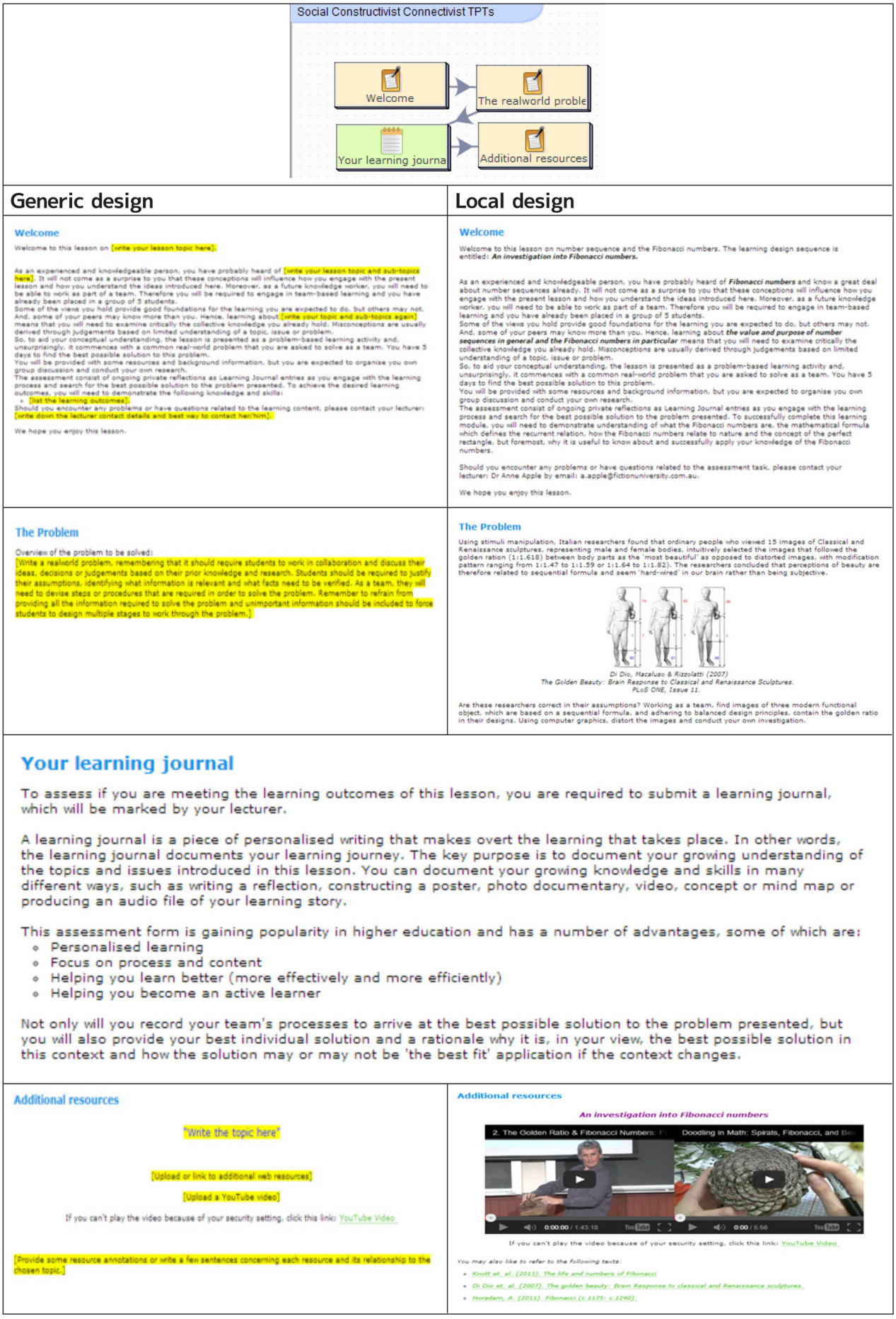

Figure 3: Social Constructivist / Connectivist TPTs.

Discipline	**Teacher education**	
Learning Area	Mathematics	
Topic	Number sequence	
Lesson focus	Fibonacci numbers	
Learning outcomes	To understand and explain what the Fibonacci numbers are, the mathematical formula which defines the recurrent relation, and how the Fibonacci numbers relate to nature and the concept of the perfect rectangle.	
	Learning content	
Who was Fibonacci? *The Fibonacci numbers (Fn) are named after Leonardo Fibonacci Pisano, the mathematician who popularized 'algorithm' (step-by-step procedure) in Europe in the 13th century. About 800 years ago, he wrote a book in which he included a math problem that went like this: "A certain man put a pair of rabbits in a place surrounded by a wall. How many pairs of rabbits can be produced from that pair in a year if it is supposed that every month each pair begets a new pair from which the second month on becomes productive?" (Liber abbaci, pp. 283–284, cited in MENSA, 2009, p. 2).*	**Fibonacci in nature** *Fibonacci numbers are an interesting mathematic idea. The prevalence of their appearance in nature and the ease of understanding them makes them an excellent principle for young children to study and understand the relationship between school-based mathematics learning and nature.*	**The 'golden ratio'/the perfect rectangle** *The really interesting thing about making rectangles is that the ratio (the number that shows how the sides relate to each other) stays the same, no matter how big the rectangle gets. This ratio gives us rectangles that relate to the 'golden ratio'. The golden ratio can be found by dividing the long side by the short side. So if you have a rectangle that is 3 x 5, you would divide 5 by 3. This will give us a number right around 1.61 (the Greek letter phi). The ancient Egyptians and ancient Greeks already knew the number and, because they regarded it as an aesthetically pleasing ratio, often used it when building monuments (e.g., the Parthenon). The pentagram so popular among the Pythagoreans also contains the golden ratio. It is also used in modern buildings and constructions. The golden ratio plays a role in human perception of beauty, as in body shapes and faces.*

Table 3: Discipline-specific curriculum content of exemplar TPTs.

other to learn most effectively. Hence, the lesson sequence commences with a real-world, ill-structured problem. Students are required to function as a team to work through the problem, testing their ideas and building on the knowledge of others. They learn to understand that the knowledge they hold together is more powerful than the knowledge they individually possess. (The complete LAMS sequence can be accessed here: http://lamscommunity.org/lamscentral/sequence?seq_id=1870176).

The three examples of the application of TPT designs in teacher education make overt the alignment of the pedagogical design to a specific educational paradigm. Irrespective of the preference for a particular pedagogical style, which is underpinned by a specific learning theory, and embedded within a common educational paradigm, the user of the design does not need to possess sophisticated pedagogical knowledge. Instead he or she simply needs to follow the steps in each section of the sequence and insert the discipline-specific content as noted in the highlighted sections of the TPTs.

Re-use Philosophy

The central idea of designing pedagogical templates is their potential for adaptive reuse. Adaptive reuse is a common architectural design strategy (Conejos, 2013) that seems attractive also for pedagogy. The adopted generic template (instructionist TPT, cognitivist TPT or social constructivist/connectivist TPT), while open to modification as a pedagogical 'blueprint', provides a workable pedagogical solution that can be applied in many different contexts. Hence, we argue that the potential of TPT design lies with the ease of user application of these examples of LD-P in various disciplinary contexts, with minimal effort and cost. However, as TPTs become more widely known and used, their strengths and weaknesses, structural integrity and the breadth, depth and appropriateness of elements will need to be evaluated.

As noted in some early studies on re-use of Learning Designs (e.g. Dalziel et al., 2009; Dalziel, 2013) the benefits of TPTs are not limited to the direct use of these templates in preparing teaching materials; they can also assist with the professional development of educators in pedagogical concepts. For example, educators who review TPTs often comment on how the exploration of the generic and local versions of the design assisted them with understanding the underlying pedagogical assumptions of the templates; and even when they do not plan to use the given TPT in a specific teaching situation, they retain the 'essence' of the idea for later adaptation in another teaching context (Dalziel et al., 2009). Hence, the exploration of TPTs can be a useful component of professional learning for educators even apart from specific plans for implementation with students.

Conclusion

The complexity of pedagogical decision making has been acknowledged in higher education in combination with a growing understanding that some subject specialists

need support to bring their teaching methods into the 21st century. Whereas some lecturers seek assistance so that they can offer more interactive learning experiences, built on social constructivist/connectivist learning theory, others are interested in infusing their teaching with Web 2.0 applications, gradually moving from an instructionist approach to teaching and learning to a cognitivist approach as they focus on the teaching and learning of foundational knowledge. In this article, we not only provided an argument for the adoption of TPTs, but illustrated the attractiveness of pedagogical template design. Moreover, we introduced the Larnaca Declaration on Learning Design (Dalziel et al. in this collection) and explored the idea of a layer of abstraction, making possible a view of LD that is on the one hand 'neutral' or independent of paradigmatic restrictions (see LD-F), and on the other hand, acknowledges that epistemological and ontological assumptions that guide a lecturer's belief about good teaching are most often aligned with specific learning theories (see LD-P). Hence, the TPTs introduced here as examples of generic designs align to different educational paradigms to provide choice to educators. As a busy lecturer with in-depth subject specific knowledge, it is not necessary to engage in time-consuming and costly upskilling in order to create new pedagogical templates from scratch. Instead, he or she can choose from the bank of pre-designed TPTs that provide a 'best fit' with her or his epistemological and ontological beliefs about good teaching and then easily populated the selected TPT with discipline-specific content without the need for complex pedagogical knowledge. Educators' time is, so we argue, better spent adapting and modifying 'ready-to-use' templates for their specific contexts, rather than holding on to 'old' teaching methods, because they may lack the time and expertise to develop something that is better suited to the contemporary educational market place. Nevertheless, educators intending to modify TPT designs may not necessarily be proficient in certain pedagogical paradigms and teaching techniques, which may result in changes being made that alter the pedagogical approach of the design – further research is required to investigate the practical use of TPTs.

Competing Interests

The authors declare that they have no competing interests.

References

Akeroyd, J 2005 Information management and e-learning: Some perspectives. *ASLIB Proceedings*, 52(2): 157–168. DOI: http://dx.doi.org/10.1108/00012530510589128

Armstrong, A 2012 Coursera and MITx – sustaining or disruptive? *Changing Higher Education*. Available at: http://www.changinghighereducation.com/2012/08/coursera-.html.

Cognitive Approaches To Learning 2008 Definition. Available at: http://www.sparkplug9.com/etec512/sparkplug9.com/etec512/2008/09/28/definition/index.html.

Conejos, S 2013 *Designing for Future Building Adaptive Reuse*. PhD thesis. Institute of Sustainable Development and Architecture. Available at: http://epublications.bond.edu.au/theses/72/.

Conole, G 2013 *Designing for learning in an Open World*. New York, N.Y.: Springer. DOI: http://dx.doi.org/10.1007/978-1-4419-8517-0

Dalziel, J 2008 Learning Design: Sharing Pedagogical Know-How. In: Iiyoshi, T and Kumar, M S V (Eds) *Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge*. Boston: MIT Press.

Dalziel, J 2013 Implementing Learning Design: A Decade of Lessons Learned. In: Carter, H, Gosper, M and Hedberg, J (Eds.) *Electric Dreams. Proceedings ascilite 2013 Sydney*. pp. 210–220.

Dalziel, J, Conole, G, Wills, S, Walker, S, Bennett, S, Dobozy, E, Cameron, L, Badilescu-Buga, E and **Bower, M** 2016 (in this collection) The Larnaca Declaration on Learning Design. *Journal of Interactive Media in Education*.

Dalziel, J and **Dobozy, E** 2016 Reflections on metaphors for Learning Design. In: Dalziel, J (Ed.), *Learning Design: Conceptualizing a Framework for Teaching and Learning Online.* New York: Routledge, pp. 63–77.

Dalziel, B, Mason, G and **Dalziel, J** 2009 Using a template for LAMS in a medical setting. In: *Proceedings of the 4th International LAMS Conference.* Opening Up Learning Design. 3–4th December 2009. Sydney: LAMS Foundation, pp. 65–71.

Dobozy, E 2011 Resisting student consumers and assisting student producers. In: Nygaard, C, Courtney, N and Holtham, C (Eds.) *Beyond Transmission: Innovations in University Teaching.* Faringdon, UK: Libri, pp. 11–26.

Dobozy, E 2012 Typologies of Learning Design and the introduction of a 'LD-Type 2' case example. In: Ullmo, P and Koskinen, T (Eds.) *eLearning Papers – Special Edition 2012: Opening Learning Horizons*. Barcelona, Spain.

Dobozy, E, Dalziel, J and **Dalziel, B** 2013 Learning design and transdisciplinary pedagogical templates (TPTs). In: Nygaard, C, Branch, J and Holtham, C (Eds.) *Learning in university education – Contemporary standpoints.* Faringdon, UK: Libri Publishing, pp. 59–76.

Kuhn, T 1996 *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press. DOI: http://dx.doi.org/10.7208/chicago/9780226458106.001.0001

Laurillard, D 2010 *An Approach to Curriculum Design*. Available at: http://www.lkl.ac.uk/ltu/files/publications/Laurillard-An_Approach_to_Curriculum_Design-WIP.pdf.

Mayes, T and **de Freitas, S** 2010 JISC e-Learning Models Desk Study: Stage 2: Review of e-learning theories, frameworks and models. Available at: http://www.jisc.ac.uk/uploaded_documents/Stage%202%20Learning%20Models%20(Version%201).pdf (23 August 2013).

McLeod, S A 2007 *Behaviorism – Simply Psychology*. Retrieved from http://www.simplypsychology.org/behaviorism.html (18 August 2013).

MENSA Education and Research Foundation 2009 4th Grade Lesson Plan — Fabulous Fibonacci and his

nifty numbers. Available at: http://www.mensaforkids.org/lessons/fibonacci/mfklessons-fibonacci-all.pdf (Accessed 25 August 2013).

Metcalfe, A and **Fenwick, T** 2009 Knowledge for whose society? Knowledge production, higher education, and federal policy in Canada. *Higher Education*, 57(2): 209–225. DOI: http://dx.doi.org/10.1007/s10734-008-9142-4

Mok, S 2013 Which Learning Theory would be most appropriate for our Education System? Instructivism, Constructivism, or Connectivism? Blog post. Available at: http://suifaijohnmak.wordpress.com/2013/03/27/which-learning-theory-would-be-most-appropriate-for-our-education-system-instructivism-constructivism-or-connectivism/.

Munz, P 1993 *Philosophical Darwinism: On the origin of knowledge by means of natural selection*. New York, NY: Routledge. DOI: http://dx.doi.org/10.4324/9780203419687

Oliver, R 2004 *Factors impeding institutional design and the choice of learning designs in online courses*. (ONLINE). Available at: http://elrond.scam.ecu.edu.au/oliver/2003/workshop_paper.pdf. (Accessed 25 August 12).

Pansiri, J 2005 Pragmatism: A Methodological Approach to Researching Strategic Alliances in Tourism. *Tourism and Hospitality Planning & Development*. 2(3): 191–206. DOI: http://dx.doi.org/10.1080/14790530500399333

Sampson, D, Zervas, P and **Sotirion, S** 2011 COSMOS: A web-based repository of learning designs for science educators. *Advanced Science Letters*, 4: 11–12, 3366–3374. DOI: http://dx.doi.org/10.1166/asl.2011.2047

Shechtman, N, deBarger, A, Dornsife, C, Rosier, S and **Yarnall, L** 2013 Promoting Grit, Tenacity, and Perseverance: Critical Factors for Success in the 21st Century. Draft Report prepared by the Centre for Technology in Learning, U.S. Department of Education Office of Educational Technology. Available at: http://www.ed.gov/edblogs/technology/files/2013/02/OET-Draft-Grit-Report-2-17-13.pdf (accessed: 27/03/2013).

Slavich, G and **Zimbardo, P** 2012 Transformational teaching: Theoretical underpinnings, basic principles, and core methods. *Educational Psychology Review,* 24(4), pp. 569–608. DOI: http://dx.doi.org/10.1007/s10648-012-9199-6

How to cite this article: Dobozy, E and Dalziel, J 2016 Transdisciplinary Pedagogical Templates and their Potential for Adaptive Reuse. *Journal of Interactive Media in Education,* 2016(1): 8, pp. 1–11, DOI: http://dx.doi.org/10.5334/jime.402

Submitted: 27 October 2015 **Accepted:** 14 December 2015 **Published:** 10 February 2016

]u[*Journal of Interactive Media in Education* is a peer-reviewed open access journal published by Ubiquity Press.

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