

Discussion paper

Students services for TaLe – a theoretical framework for development

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Introduction

The NSW DET Teaching and Learning exchange (TaLe) portal has been offering a range of resource discovery services for parents and teachers since 2004. However three years on the context is changing because of the development of web 2 technologies; engaging an emerging student audience. However two trends are catching up on TaLe; one is the need for more 'grassroots or user based' information and services, and secondly, the need for more directly oriented student services. Both these trends will require services provisioned broadly under the term of *Web 2.0 technologies*.

The focus of this discussion paper is how to provide a conceptual framework for the development of student services for TaLe for 2007-9. This paper is premised on the need for recognition of the changing nature of student learning¹ and the expectations which accompany the associated and emerging learning technologies. The need for a conceptual framework for TaLe, is to ensure the development of student services for TaLe are not a disparate collection of technologies, but rather a coherent platform for the delivery of relevant, motivating and potent teaching and learning services for students anchored in a sound theoretical context. By ensuring this, TaLe can offer a holistic ecology; providing a bridge between the world of formal (school oriented) and informal (student directed) learning.

As TaLe is mandated to provide information and resources directly relating to teaching and learning²; there is a need to examine the changing nature of how our students are learning in both these formal and informal contexts as life long learners.

For the purposes of this paper formal learning is that which is initiated, guided, managed, assessed or regulated by a teacher. Usually the activities will be related to the curricula as set down by the educational organisation(s) within which the student is studying. Informal learning is initiated, guided, sustained and organised by the learners own interests and motivation. Informal learning is not necessarily related to any formal curricula³.

In this analysis, it is important to accept the proposition in the dichotomy relating to either 'formal' or 'informal' learning; acknowledging for example that there are many instances where a teacher or syllabus can prescribe informal modes of learning. By using this categorisation, its easier to conceptualise models of interaction and associated services around a theoretical continuum.

¹ Related discussion Paper pending

² Original obligation stated in Vinson Report (2004)

The changing nature of student learning

Mark Prensky's (2001) *Digital natives, digital immigrants*, clearly describes a new generation of learners and their increasing disconnect with mainstream education. This is a generation of students who think and process information differently. A 'Net' generation described by Oblinger et al⁴ whose values are experiential learning, and social networking. Students are now independently exposed to information which is rapidly changing, and generated by communities or networks of learners. In a recent report *Their Space: education for a digital age*, Green and Hannah describe a new generation of learners who have completely normalised the new digital technologies: "a generation who have made the shift from consumers to creators of knowledge utilising the power of peer to peer informal networks of learning" (2007:10).

Knowledge and information are abundant and fast changing. In this environment, the emphasis of our teaching must shift away from content to instead focus on helping students build their own networks of trusted sources through which they can find and evaluate relevant content on their own. Learning is not content consumption. Learning happens during some process of interaction, reflection. Content then can be a lead into learning-or a by product of the learning process. The value of connection tools lies in their ability to enable reflection, representation, reconstruction, and scaffold understanding. Content is knowledge frozen at a certain time, whereas a connection/network provides a continuous flow of knowledge.

TaLe services to meet these emerging requirements

Given the new order of knowledge construction by our 'digital natives' what might a set of student services look like for TaLe? Before this can be answered, a number of assumptions must be declared.

Assumption 1: the present model of schooling (for school students at least) will not change in the foreseeable future.

Assumption 2: a 'duty of care' will remain paramount in such educational systems.

Assumption 3: the role of teachers as primary educators will also be retained with parents increasing their role as partners in the learning process.

Assumption 4: increasing accountability of the education system ensuring the current continuation of assessment practises is retained.

Assumption 4: new technologies will be paramount in influencing the method, content, communication, assessment and delivery of learning.

Assumption 5: students roles, expectations, access to new technologies, behaviours, motivation and approaches to learning will keep challenging our existing method of learning.

Assumption 6: labour market pressures will necessitate deep/constant reforms in the focus, accountability and delivery of our formal education systems.

⁴ Oblinger, D. & Oblinger J. *First steps toward understanding the Net generation in Educating the Net Generation*. EDUCAUSE, 2006.

If we accept the above assumptions, one thing is a given:

Students + new (social) technologies = new ways of learning (within existing boundaries of our current education systems). In other words, while acknowledging the restraints of our current formal education systems, new technologies can provide the opportunity to provide a bridge to the informal domains of learning. Fundamentally we must accept that to engage the 'digital native' will require educational systems to be more flexible, trusting, responsive, open, dynamic – recognising the capacity of new learning technologies to enhance learning.

What then are the formal and informal requirements for student learning? Siemens (2005) suggests to deliver relevant learning an environment should offer:

- Space for experts
- Space for self expression
- Space for debate and dialogue
- Space for archived knowledge
- Space to learn in a structured manner
- Space to represent knowledge
- Space to learn in a structured manner
- Space to communicate new information and knowledge
- Space to nurture ideas, test new approaches, prepare for competition, pilot processes
- Space for self assessment
- Space for peer assessment

Perhaps we could also add:

- Space for self assessment (reflection)
- Space for peer assessment (review)
- Space for portfolio building (evidence)

To achieve this we need to view TaLe as a platform of services; an ecology. Such an ecology would/should accommodate not only for formal structured knowledge creation (and its support networks), but also the informal learning support networks⁵.

These places need to build bridges between the formal and informal spaces for all these activities.

Learner in the digital knowledge space

Diagram 1 (page 5) is an exploration of the existing knowledge world of the learner and their relationship to both formal and informal spaces of knowledge construction. It positions the learner at the centre of their own learning space; open not bounded. The individual both manages and interacts with formal knowledge provided by their respective education provider(s) and the 'everyday' world of knowledge acquisition through online engagement. The more mature the learner, the more they fluctuate between the two worlds.

The outer circle surrounding the learner is representative of the teachers' facilitation of their learning (left side) and their own offline experiences as an individual in a social world. The online knowledge world is shown as a continuum of influences of Virtual learning environments (formal education based) represented on the left of the diagram and Personal Learning Environments (PLE) the informal everyday knowledge acquisition on the right.

⁵ The concept of an ecology is appearing more recently in commentaries Downes p13/Siemens P42 2005, Siemens, Learning ecology, communities and networks Oct 17 2003., Graeme Attwell, 2006)

As a student moves through their formal education experiences they will increasingly become more independent learners, acquiring and actualising their knowledge from external sources (to the right of the diagram) engaging in a more complex mix of personally focused and determined experiences.

The diagram shows the students' PLE and how it interacts with more formal education services such as institutional portals like TaLe. The outer rings represent the context of learning, including teacher influence, delivery devices (mobile applications), sphere of moderation (dotted line), and face to face engagement with external experts.

Reading this indicates that the sphere of influence from teachers diminishes as the learner 'matures' from decreasing dependency on formal education (teacher centric) to self directed higher education (multiple expert dependencies). Also contained in this 'context' layer are the delivery devices from classroom based (desktop computers, IWBs) to the more personal devices (laptops, PDAs mobile phones).

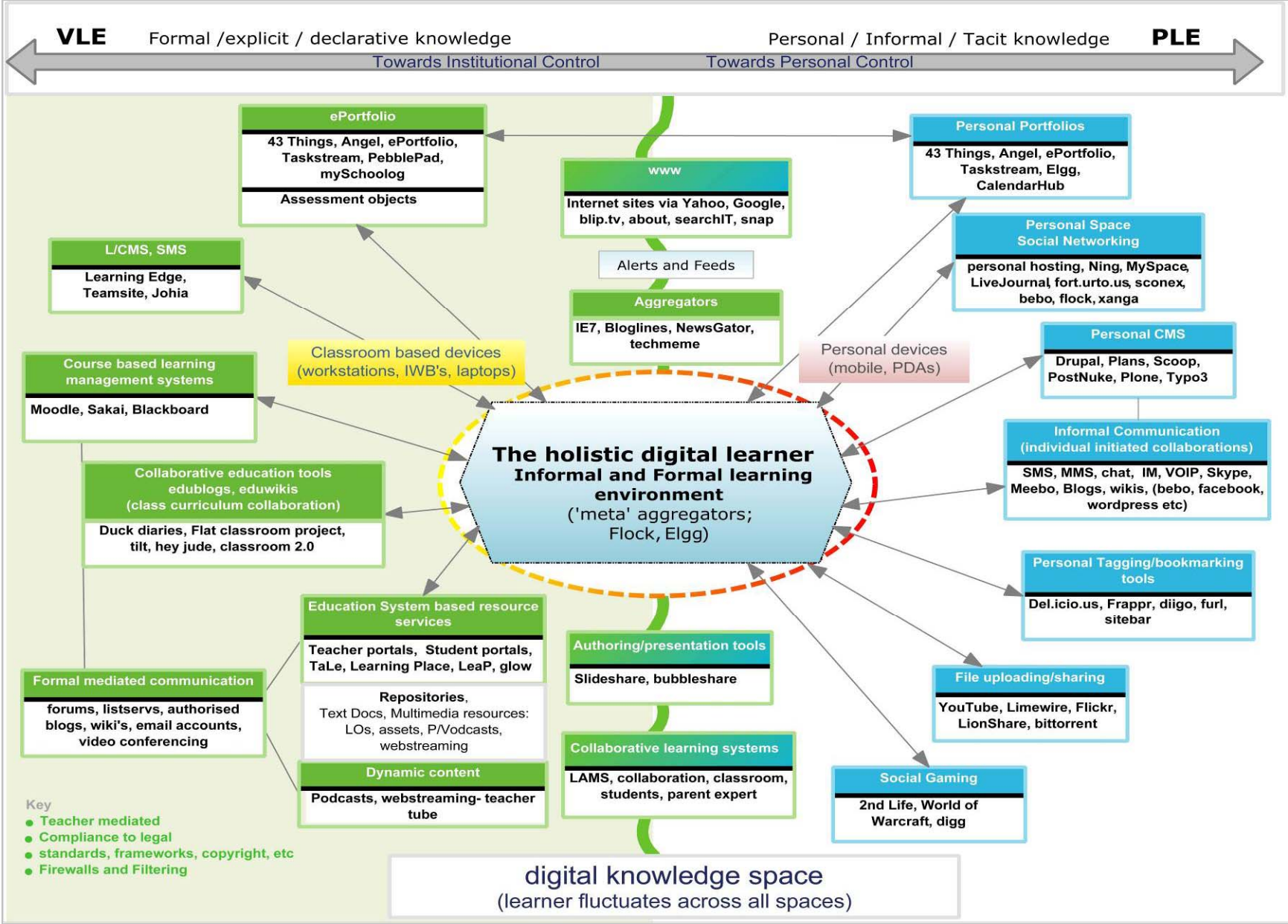
The PLE shows applications which would enable the student to discover, describe and organise their resources, collaborations, publish their own material, develop their own portfolios and personal aggregators for these social technologies. It would constitute their own learning environment which interacts with institutional educational portal services such as those provided by a platform such as TaLe [described in more detail in the full paper] and learning managements systems .

This constitutes the broader ecology of a true_PLE, acknowledging both the blended needs of both the individual learner in the broader formal context of the education system in which they are participating. Nevertheless the essential characteristic is that the emphasis shifts from the institution to the individual as the key determinant of what network eLearning services they engage in. The dependencies between institution and 'open/autonomous/independent' learning, will depend on a number of factors including the type of learning engaged in (independent or course based), maturity of the learner and overall access to these services.

Like most representations, this is necessary simplification of the actual knowledge world. One of the difficulties arises when we analyse applications such as LAMS. While it is an application which is designed for teacher moderation, its learning sequences can also incorporate tools which are independent of teacher intervention. Hence the positioning of such applications closer toward the independent area of the diagram.

What we can draw from such depictions, is that the distinctions between VLEs and PLEs will become increasingly blurred. The traditional notion of VLEs are no longer making sense, as social networking tools are increasingly being incorporated into the domain of learning or content management systems, possibly to supplement their course content based orientation. The area of ePortfolios also blurs the distinction between the two, as individuals take charge of their own creation as lifelong learners. A key challenge with portfolios will clearly be in relation to managing the boundaries between the student based portfolio and their institution portfolio. And social networking tools become fundamental to each type of portfolio creation. One distinction is clear; the digital learning world is trending away from content consumption (VLEs) to that of content creation (PLEs).

Diagram 1: Learner in the digital knowledge spaces



TaLe contributing to a PLE

All of this is not to imply that the formal VLE domains are less relevant to students than the emerging personalised social technologies. The true PLE we would argue is in fact accounted for by all the systems depicted in diagram 1. The 'holistic digital learner' in order to be truly 'autonomous' might reference many of the systems both in the formal and informal spaces. While the concept of a PLE is still being shaped by various commentators⁶, it serves a useful purpose if it is conceptualised as collections of applications/tools which are relevant to **both** formal or informal modes of learning.

A true PLE should account for all forms of learning the Web 1.0 technologies are just as valid in this broader concept of a PLE space as those in the Web 2.0 domain. Web 2.0 merely builds upon the standards and foundation principles of Web 1.0. Tales emerging role should be to accommodate services across this technical continuum enabling students to access, organise and manage their learning requirements depending on their needs, requirements, access, learning style and maturity. TaLe needs to offer services and information which will contribute to the learner organising their own knowledge space(s). So while acknowledging that student learning is increasingly dominated by informal learning⁷, TaLe must also maintain and build the existing services which are supported/sanctioned and given authority by NSW DET.

What then might a set of TaLe related services look like?

Table 1 below sets out a number of key services we see as a priority for implementation, which go some way to creating TaLe supported PLE student services. This priority is based upon the services we **suggest** might fulfil an essential need for students in all online learning contexts. This list is only an initial draft of what might be required, pending a fuller consultation process with representative groups of students and teachers.

The Tools monitor⁸ is intended to cover a number of applications students might be engaging with, but need guidance and situating in a knowledge learning domain. It is important to note that the tools listed can be used in either a formal or informal learning context.

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The TaLe application column is a rationale for how the service would be implemented. The term 'information bundle' is also used to describe how some of these tools might be packaged with information regarding their suggested use by the learner.

⁶ Attwood, G Personal learning environments 2006.

⁷ Jay Cross 2006, and others argue that as much as 85% of learning occurs outside formal settings.

⁸ Tools monitor concept suggested in DEMOS paper

Table 1: Priority TaLe student services [DRAFT]

Service description	Broad Pedagogical purpose (affordances)	TaLe Application (description of the service / information bundle)	Implementation issues (technical and management)
1. Search and discovery			
Student search services	Search environments designed for student audiences (according to phases of learning). Self directed discovery of learning resources and information.	Repurposing TaLe search environment for different age group students Use of both 'systemic' search engines and Mdata and user based application layer for blending taxonomy based approach with folksonomies	Appropriate audience segmentation User testing Relevant resources for phase of learning.
Social tagging & Social bookmarking	To structure information and collaborate in sharing the structure and categorisation of information. Independent & shared knowledge maps.	Using Del.icio.us to share tags and compile knowledge management structures. Individual schools or clusters can share knowledge banks. Develop & share	Browser support Standards Moderation
Suggestive searching/coll active search results.	Search environment provides suggestions for terms to search.	Harness collective behaviour within special interest groups	Validity Monitoring
2. Personal Portfolio			
ePortfolio of the individual as a learner, creator and sharer of knowledge	Students evidence of what they: <ul style="list-style-type: none"> • have done (projects, achievements) • can do (skills, abilities, expertise & knowledge) • are doing (courses, collaborations, thinking, pursuits, hobbies/interests,) • want to do (career/job paths, learning/skill goals, lifestyle, aspirations) 	<ul style="list-style-type: none"> • Portfolio student managed containing artefacts of their own work/interests, bookmarks, expertise, interests. • Also might contain formal elements of their class based assessments, LMS /learning resource data • Journal for reflective activity • Eg Elgg 	Boundary between personal portfolio & institution. Access management Storage Validating Security Moderation
Blogs	Personal observation, analysis and reflection. Critical writing skills involving 'connected writing'. Metacognitive skills (reflection, synthesis, analysis, hypothesis, thesis development).	<ul style="list-style-type: none"> • Personal Blogs to dialogue thoughts, intentions, collaborations, interests, etc 	Administration

Service description	Broad Pedagogical purpose (affordances)	TaLe Application (description of the service / information bundle)	Implementation issues (technical and management)
3. Social Knowledge construction			
Wikis	<p>Knowledge collaboration reflection and sharing.</p> <p>Contribute to knowledge creation.</p> <p>Promote analogical and associative thinking</p>	Guided topic construction. Class/school network Wikis	
Games	Both Single and Multi user offer immersive simulated environments, including role play, PBL, social construction. Motivation, creative and constructivist approaches.	<p>Hosting multi-user games, esp. role based</p> <p>Eg WebQuests</p> <p>3D worlds-Second Life</p>	
Chat	Group and P2P discussion for reflection.	Synchronous debate on topics , either student or teacher led. Peer moderated or teacher moderated.	
Presentation Authoring/software	For demonstrating and sharing information, skills, procedures and concepts. P2P or group	<p>TaLe support for presentation tools, alerts on presentations.</p> <p>PowerPoint, Grava</p>	<p>Validity</p> <p>Administration</p> <p>Standards</p> <p>Bandwidth</p>

Service description	Broad Pedagogical purpose (affordances)	TaLe Application (description of the service / information bundle)	Implementation issues (technical and management)
4. Resource or tool sharing			
Shared resources Including: PodCasts /Vodcasts	Creation & sharing of class, student based or 'expert' resources.	Allowing shared resource pool & discussion area for student co-creation of learning resources.	Validity/quality Relevance Standards Bandwidth
LAMS	Learning activities based on IMS learning design, incorporates both individual, P2P, or group based sequences. Allows both f2f and online scenarios.	Support and Explore the use of student constructed learning sequences. These might be shared with teachers and other schools.	Support Centralised or distributed hosting
Cool tools monitor	Identifying digital tools/mashups which can be useful in class, work or home contexts. Such tools are about creating, data access, skills sharing, analysing, reflecting, organising and collaborating information	Provide monitoring space where students suggest tools and their applications. Discussion and possibly trialling area. Such tools might include messaging, cognitive tools, games, simulations, file sharing, web spaces, etc.	Support Interoperability firewalls
Forums	Collaborative activities including brainstorming, research (independent/group) Knowledge networks, discussion, decision making	One to many and P2P collaborations on topic areas featuring role exchanges between expert and novice. Develop communities of practice Eg mathforum.org	Moderation Access management Collaboration models eg CoP
Debating/polling tools	Democratic participation Collaborative response	LAMS components, Intel VT	Standards, Interoperability
Aggregators	Learners managing their own information and knowledge sources	Information bundles on various aggregators	Support Standards
Blogs	Micro-publishing, Reflection, knowledge sharing. Metacognitive skills (reflection, synthesis, analysis, hypothesis, thesis development).	Students & teachers suggest 'authoritative blogs'. Create their own Blogs for classroom or peer use.	Validity, administration, moderation, security Models of practice.

Conclusion

Like many education institutions, NSW DET is in transition between consolidating its application and deployment of publishing and delivery technologies (Web1.0), while recognising the increasing significance (and challenges) of social networking applications (Web 2.0). This will necessitate a move from classroom based learning environments to student centred environments, from centrally produced and distributed resources to architectures of participation. This requires the recognition and integration of both formal and informal learning practices. TaLe can play a role in bridging the gap between the two; facilitating the development of the more holistic Personal Learning Environment.

Students need an awareness of their (meta) learning, TaLe as part of a PLE can contribute towards learners becoming fully independent and autonomous.

PLEs are a concept made up of systems –TaLe needs to become an ecology of systems – systems enabling personalisation, networking and collaboration.

However the question remains; to what extent can TaLe (and other Departmental online systems), provide a role in shaping this PLE – as a formal part of the educational context – or is it best shaped by the individual? In part this will depend on how we can change education policy discourses to acknowledge the role of socially constructed learning and properly assess the risks and rewards it has for both learners and educational providers.

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