Authentic Learning with Location-based Mobile Learning Games

Location-based mobile learning games (LBMLGs) bring together mobile learning, digital storytelling, gamification and location-based learning to enable learners' movements through time and space, whether physical or digital, to dynamically shape the learning experience. LBMLGs use storytelling, rich digital media, location-awareness, maps, augmented reality and gamification strategies, to turn learning into a personal, engaging experience. Authentic settings are linked to educational content to enhance and extend the way students learn from the environment and with each other.

This **Guide** showcases two broad approaches for the design of games used in teaching and learning at UniSA; one where the game is designed by staff and played by students and another where students are both designers and players.

The examples provided have been taken from courses offered by the University. These and other games can be downloaded and played for free, and the designs fairly easily replicated in other UniSA courses using readily accessible platforms.

The LBMLGs showcased below have been developed using a subscription to a commercial online development platform called *MyTours*. Students play the games on a smartphone or tablet using a companion app called **Pedagogy GO**, available for free download from either the Apple App Store or Google Play Store.

An overview of LBMLGs

Did you know that location-based games take inspiration from the popularisation of orienteering – games using maps and compasses – in Sweden during the late 1800s? (Geocaching, 2020)

LBMLGs combine and exploit mobility across three levels; the learning devices, the learners, and the learning experiences are all mobile (see Pegrum's 3 Mobilities Framework, 2019). For Pegrum, the contextual approach of LBMLGs support authentic, personalised and collaborative learning, with mobile devices acting as lenses to 'focus students' attention on the learning opportunities in their offline and online contexts, and provide them with the information channels to inform their experiences and the communication channels to record, share and revisit these' (Pegrum 2019).

Action research conducted at UniSA between 2014 -2017 concluded that LBMLGs designed by staff and played by students can produce active, engaging and authentic educational

experiences for students, enhancing opportunities for them to interact with physical locations, rich media, and with each other (Edmonds & Smith, 2017).

Watch the short video below for an overview of LBMLGs and the research findings.
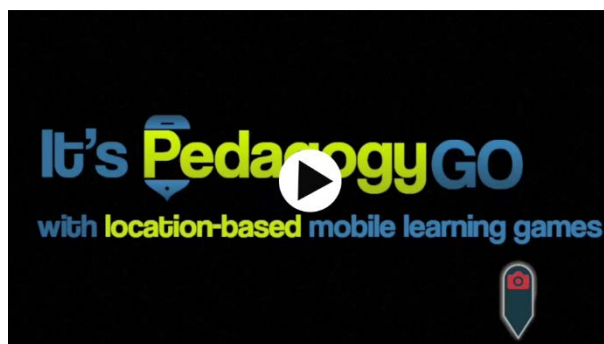
Video 1 – Roger Edmonds (n.d.) It's Pedagogy Go*, UniSA Panopto <https://unisa.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=8a4f666c-eb0d-4256-b026-ac6e01739a18>* (Duration: 1:55 mins)

LBMLG design approach 1: Games designed by staff and played by students

Since 2014, UniSA academic staff have worked collaboratively with online educational designers (OEDs) in the Teaching Innovation Unit to design and develop over 50 LBMLGs for use in their courses. Games have been developed across six UniSA academic units (Business, STEM, Education Futures, Clinical & Health Sciences, Allied Health & Human Performance and Creative). Several are still in use and can be accessed by downloading and installing the free UniSA 'Pedagogy GO' app on your phone or tablet. (Some examples are provided below.)

In a typical process of LBMLG design, the course academic first identifies the learning concept or topic around which the game is to be developed, ensuring alignment with the course objectives and the UniSA graduate qualities that the course or tasks support. A design-based methodology (known as ADDIE - analysis, design, development, implementation and evaluation) is then applied to first create a conceptual model of the game - capturing what the game would do, how it should behave, its 'look and feel', interaction tasks, gamification style, and identifying the appropriate supporting rich media (quality assured and correctly attributed) that is to be included.

ADDIE is discussed in more detail in the following Guide:

- Online T&L Guide - *Introducing something new into your course*, TIU (pdf, 2.5 MB)

The conceptual model informs the development of a prototype game, which should then be played by multiple players to test and further refine the content, locations, tasks or challenges before making it available for students to play.

Example 1 – The Torrens Walkabout

The *Torrens Walkabout* LBMLG has been integrated into UniSA's *English for Academic Use in Australia* course since 2018. Designers: Dr Jeanne-Marie Viljoen (UniSA Creative) and Roger Edmonds (Teaching Innovation Unit).

International students arrive in Adelaide with varying levels of English language proficiency. *Torrens Walkabout* integrates multimedia artefacts and tasks to focus on language usage in an authentic real-world setting. At the same time, it helps students get to know Adelaide and each other better. It asks students to traverse city locations and record their impressions of and reactions to the local environment and culture.

The video below takes you on a journey with one class of students as they prepare for and play the LBMLG in and around Adelaide and the Torrens River.

Video 2 – (n.d.) City West – English for Academic Use in Australia, video, UniSA Panopto <https://unisa.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=949ea424-069e-4d41-8597-ac67016eb23d> (Duration: 2m 55s)

Students in this class followed instructions in the mobile game to navigate a trail of 1.5 km, taking them across the City-West campus, around the River Torrens weir, and to central areas of Adelaide.

At key locations along the way students completed tasks triggered by the GPS on their mobile phones. For example, students were asked to take photos at some sites and to upload them to the game along with text-based descriptions. At other locations, they were asked to either listen to descriptions or view historical depictions of the site and to comment on these using figures of speech and less commonly used verbs and adverbs. The mobile activity invited them to discuss how they felt about controversial topics such as graffiti art and to upload short audio texts describing their feelings.

In addition to learning how to use English in an authentic real-world setting, students had the opportunity to get to know some of their classmates better as they cooperated to complete the tasks in the informal, out-of-class context.

Image 1 – Opening screen of the Torrens Walkabout mobile game

After playing the LBMLG, students worked individually to write a descriptive paragraph about an aspect of what they had experienced. They uploaded it to a forum where they received feedback from their peers and the teacher. Their final task was to submit an individual, descriptive text for assessment, building on their previously submitted paragraph and their experience playing the LBMLG.

Additional examples of UniSA staff-designed LBMLGs

The following LBMLGs are available to view and play on the UniSA Pedagogy GO app.

Course	Description	
Earth Systems	*Beyond the Ice* is an interactive walking trail at Hallett Cove to complement a traditional field excursion. "It began 600 million years ago but it didn't end there!"	
Engineering and Environmental Geology	*Building Stones of North Terrace* takes students on a self-guided field excursion to discover the rocks used in the construction of Adelaide's major cultural buildings.	
Colonial Experiment: Australian History 1788 - 1918	*The Mystery of the Colonel's Ghost* is an interactive walking trail around Adelaide to find a *'secret message'* hidden in its design by the city's founder, Colonel William Light.	
Colonial Experiment: Australian History 1788 – 1918 Archives & The Digital World	In *Todd's Adelaide* students re-discover an Adelaide that our colonial ancestors inhabited and how Sir Charles Todd set the foundations of our use of astronomy, e-communication, astronomy, surveying, meteorology, engineering, the postal system and time standardisation.	
Business & Society	*The Colour of Custard* is an urban game with the story of businesses in Adelaide's West-End at its base. Students walk along a trail interacting with real world locations exploring different enterprises in the West-End.	
Construction Management: Fire Engineering	In the *Eyes of a Fire Fighter* students survey four city buildings looking at building characteristics and fire safety systems to identify items that can help them or make their job more difficult.	

Table 1 – LBMLGs designed and developed by the TIU and academic staff

LBMLG approach 2: Students as both game designers and players

As academics we strive to help our students achieve higher order thinking skills. One approach is to stop viewing students as consumers of knowledge, but as creators of their learning. Erica

McWilliam suggests that creativity is about making a third 'thing' from two existing entities or ideas, rather than making something from scratch (McWilliam & Taylor, 2016, p 31). In other words, creativity is the ability to hold different and even disproportionate ideas together long enough to generate a new or third space or idea. The process of designing LBMLGs enables students to find, evaluate, interpret and synthesise information — and to use these skills to create new content to share with their peers (Edmonds & Smith, 2017).

Academics from a range of UniSA courses have created opportunities for students to design and create their own LBMLGs.

From a sample of LBMLG student designers (n=37), Edmonds & Smith (2017) identified that the majority of students found the design and development process easy and engaging; they enjoyed the opportunity to implement their own ideas and develop mobile games for an authentic audience. It offered them a new way to acquire contemporary digital and online research skills (e.g. managing, operating and applying ICT) as they conceptualized, developed and implemented their design.

Example 2 – Archives in the Digital World

In the UniSA Online course, *UO Archives in the Digital World*, students use the *MyTours* online development platform (where no prior programming experience is required) to create and publish an activity in the form of a location-based mobile activity, for themselves and for others to use on a mobile device. In doing this, students learn about the principles of location-based archival content and how it is currently being used in the creative industries by institutions such as galleries, libraries, archives and museums (known as the GLAM sector). They combine theoretical knowledge about archives with a practical online digital application.

Students' progress through the following steps to produce their LBML activity:

1. **Brainstorm** a curatorial theme based on a community of their choice (e.g. an archival history of a local club, religious organisation, or a venue such as a cricket ground, or social/cultural club; an archival history of feminism in South Australia etc).

2. **Research** online for relevant archival collections (documents, visual and audio files, material objects etc) to include in their mobile experience.

3. **Play** the '*Todd's Adelaide'* LBMLG on the Pedagogy GO app and reflect on their experience.

4. **Create** their LBML activity in the online *MyTours* development platform according to their own curatorial vision. They feed the archival sources they have located into the *MyTours* platform. The activity is then published to the UniSA Pedagogy GO app by the Online Course Facilitator.

5. Once published, both students and online tutors **give and receive feedback** to each other on their drafts, particularly refinements related to the archival sources, audience and curatorial theme in the mobile activity to increase its impact.

6. **Make changes** (if necessary) to the mobile activity before it is then re-published.

In this course, the student's mobile activity is then summatively assessed and contributes 40% to their total mark in the course.

Examples of UniSA student-designed LBML experiences

Examples of student-created mobile learning experiences from the course *UO Archives in the Digital World* are below. These and others can be downloaded and played on the UniSA Pedagogy GO app.
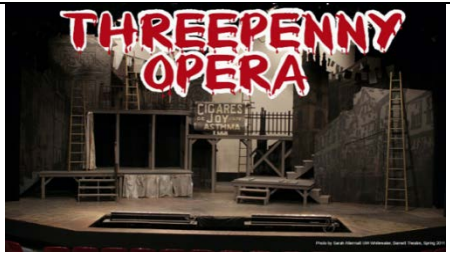
	Description
	Join the mobile activity to discover the history of the *Threepenny Opera*, its writer and composer, the music and characters, the sets and costumes in it and its importance in the development of modern theatre.
	Walking your dog should be a fun and engaging activity but sometimes the motivation to get up and go can be hard to muster. The *Walking and Wagging* activity will guide you through an easy-to-walk route for your family and pets.
	The Thebarton Theatre is arguably the most iconic building in the West Torrens community. The *Thebarton Theatre in all its Glory* activity will not only delight you with the structure's interior classical design but also takes you on a journey through its archival history.
	This walking activity through the streets of Port Adelaide will take you to *Port Adelaide's Heritage Pubs*. Enjoy a beverage while learning about the history of these drinking establishments and test your knowledge with the different quizzes.
	Ride the wave through a history of Australian women surfers! *You Go Girl* gives an insight into their accomplishments and hardships dating back to 1915 when the first female Aussie rode a surfboard to our present-day elite women who have dominated the world titles.
	Haunted Historical Brisbane takes you to 8 historical locations through the heart of Brisbane. Stories of the horrific hauntings and crimes and the one-on-one ghost interviews are sure to chill your bones to their very core!

Table 2 – LBML activities and experiences designed & developed by students in the Archives in a Digital World course (permission to publish these LBMLGs in this guide has been granted by the students)

If you would like to ask online teaching and learning questions related to your course, you can look through our FAQs, write to TIU@unisa.edu.au, have an online consultation with a member of the TIU or complete the online modules as part of *Introduction to Engaging Learners Online*.

For more information on how **you** can access and use the UniSA online development platform to develop location-based mobile learning activities/games please contact the TIU.

References

Edmonds, R. & Smith, S., 2016. Location-based mobile learning games: Motivation for and engagement with the learning process. In *Proceedings of the 15th International Conference on Mobile and Contextual Learning 2016*, Sydney (pp. 72-76).

Edmonds, R. & Smith, S., 2017. From playing to designing: Enhancing educational experiences with location-based mobile learning games. *Australasian Journal of Educational Technology, 33*(6), 41-53 https://doi.org/10.14742/ajet.3583.

Geocaching, 2020, *Geocaching through the ages: a short history of location-based games*, viewed 4 November 2020, https://www.geocaching.com/blog/2020/11/geocaching-through-the-ages-a-short-history-of-location-based-games/.

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Pegrum, M., 2019. *Mobile Lenses on Learning: Languages and literacies on the move,* Springer Singapore.