Vertical Modular Framework eLearning Manual

Smart Sparrow

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This manual was formed as part of a Technology Enhanced Learning Grant at The University of Queensland.

This manual would not be possible without the contributions of Helen Owen, Steven Kopp, John Wright, Katrina Garrett, Ann Thompson, Ricardo Soares Magalhaes, Tim Olchowy, and the students and staff at The School of Veterinary Science.

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Every effort has been made to represent information accurately throughout the report. The Authors apologise for any unintentional errors or omissions.

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The table below details the stakeholders and distribution list for this document. The RACI method (Responsible, Accountable, Consulted and Informed) is used here to show the stakeholders participation with this work.

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1 Introduction

1.1 Document purpose

The purpose of this document is to describe the processes involved in the creation of online Adaptive e-Learning Lessons (AeLLs) for The University of Queensland, School of Veterinary Science. This document will be used to evaluate and identify improvements for existing processes and can be used as an educational tool in the construction of future online lessons, by schools both internal and external to The University of Queensland.

1.2 Intended audience

The audience for this document consists of persons from educational institutions, who wish to integrate AeLLs into current or proposed programs or courses. The audience includes:

- University administration and support staff
- Academics, including course coordinators, lecturers and tutors

1.3 Definitions, acronyms and terms of reference

Table of terms and associated descriptions used within this document are contained in the following table.

Term / acronym	Description
AeLP	Adaptive eLearning Platform – the third party platform that online lessons are built into. For the purposes of this project report this refers to the Smart Sparrow platform.
AeLL	Adaptive eLearning Lesson – lessons or tutorials that are designed then built into the AeLP.
BEST Network	Biomedical Education Skills and Training Network – a digital community that houses courseware, slice images and disciplinary loops for teaching and learning within the biomedical field. https://www.best.edu.au/
CSS	Cascading Style Sheets (CSS) are used to define the visual appearance (e.g.: font, colour, size and spacing) of HTML webpages. Webpage developers write the code for the CSS based on user requirements; the CSS can then be applied to webpages (in this case AeLLs in the Smart Sparrow platform) as required.
Checkbox	An online survey software used in this project to collect survey data, thereby ensuring anonymity of responses. https://www.checkbox.com/
LMS	Learning Management System – for the purposes of this project this refers to the Blackboard system.
SLA	Service Level Agreement – a contract between an external third party AeLP provider and the end user (in this case The University of Queensland). This document defines the relationship between the two organisations and outlines the services that will be delivered to the end user.
Slice	A cloud-based library, housing high-resolution images for the biomedical field. Slice enables annotation of slides, and is housed within the BEST Network. https://www.best.edu.au/slice/
Smart Sparrow	The third party platform that AeLLs for this project were built into. https://www.smartsparrow.com/
SVS	School of Veterinary Science within The University of Queensland.
UQ	The University of Queensland. www.uq.edu.au
Vimeo	Vimeo is a video sharing website – it allows users to upload videos and control permissions of who can view those videos. https://vimeo.com/

2 Project overview

2.1 Background

The aim of the AeLP project was to encourage the development of clinical reasoning and critical thinking skills, while ensuring horizontal integration across courses and vertical integration of the program, and increasing the flexibility of study. The School of Veterinary Science (SVS) created a series of modules, whereby ‘simple’ tutorials, delivered early in the veterinary program, were built upon and adapted to quite complex clinical scenarios in the later years. The tutorials were designed to use multimedia (images, texts, videos, animation) in interactive lessons, which adapt to student choices. This adaptability allows students to take a variety of paths through each lesson, and enables for the provision of targeted feedback or resources, thereby personalising the students learning experience. Initially storyboards for the online lessons were created as word documents, and provided all of the details relevant to each lesson, highlighting the focus of the tutorial, the form of material to be included, the questions to be posed and the feedback to be provided in response to correct and incorrect answers from students. Following storyboard development, the lessons were created on the AeLP. Lesson analytics from the online tutorials are available to help academics identify difficult concepts, enabling the provision of additional support to students, or the adjustment of current teaching material.

The aim of this project was to evaluate the usability of the storyboards and the lessons on the AeLP, to ensure early identification and rectification of any problems associated with the interface or lesson. Additionally the aim was to ensure that the tutorials could be optimised to gain maximum impact on learning. Standards and requirements for the creation of lessons within the AeLP platform were created. During the process of creating these standards the need was identified for an evaluation and modelling of the supporting processes. These processes have been mapped and described within this document, and are supported by a number of documents (templates, forms, surveys, etc.) that were also created during this project. This document contains examples of these supporting documents and their use.

The grant associated with this project was for a program-wide suite of lessons, as such, the processes outlined in this document are detailed and complex, designed to encompass a large project team. However, the processes within this document have been created with the intention of being able to be scaled down to suit smaller projects. **For further details on scaling down the processes** within this document, see Section 7.1 of this document.

2.2 University and student needs and outcomes

The following needs and outcomes, of both the University and its students, will be addressed in the modelled business process:

- All parties involved in the creation of online lessons are aware of, and are held to, their roles, responsibilities and accountabilities
- Consistency in the finished product of the online lessons i.e. branding, location of images and textboxes, feedback wording, and general look-and-feel
- Lessons are created within a timely fashion and are released to the students fully functional and containing accurate, targeted content
- Formalised process for the creation of any future AeLLs

2.3 Scope

The scope of the project is the process from when it has been identified that an AeLL may benefit the student learning experience, through to when that lesson is released to students. For detailed descriptions of these processes refer to the relevant Section number in this document. The scope encompasses the following processes:

- Proposal and planning (Section 5.1)
- Storyboard design and approval (Section 1.1)
- Online build, testing and approval (Section 1.1)
- Student release and efficacy analysis (Section 1.1)
- Project closure and consecutive releases (Section 5.5)

This document outlines the best-practice processes for the development of a program-wide suite of AeLLs. It should be noted that this scope is still applicable to small projects, such as those for a single course, year level, or those involving a single academic. Suggested strategies for adjusting the processes within this document to fit with smaller scale projects are included in Section 7.1.

2.4 Excluded

This document excludes in depth background information on the AeLP project, market analysis resulting in the selection of Smart Sparrow as the AeLP, and mapping of certain school-specific processes, and processes owned by Smart Sparrow. In addition, the process for project closure and consecutive releases has been highlighted but not mapped in detail.

'Sub-processes' (see Section 4 and Section 1 for more information), have been described, but not mapped out step-by-step within this document. These sub-processes include:

- Specific application processes for relevant grant(s)
- Ethics application and approval
- Staff selection process, human resource (HR) requirements, applications and processes
- How to organise and schedule education regarding the AeLP for the Project Members
- Determining standard lesson template requirements
- Build of the standard lesson template

2.5 Assumptions and dependencies

The following assumptions apply to this document:

- Smart Sparrow is the chosen AeLP for the creation of the AeLLs
- Smart Sparrow training is undertaken by all relevant parties early in the project

3 Executive Summary

The University of Queensland's School of Veterinary Science (SVS) has undertaken a scholarship of teaching and learning research project with the aim of creating an agile vertically and horizontally integrated, program-wide online adaptive eLearning tutorial suite. This project was undertaken in response to SVS strategic goals and student feedback, that students would benefit from an increase in technology enhanced teaching strategies and a more integrated approach to content delivery, both between courses in each year (horizontal) and across the five years of the Bachelor of Veterinary Science (BVSc) program (vertical integration).

Each adaptive eLearning lesson was structured as a full veterinary consultation, from client arrival to patient discharge, to provide an authentic learning experience. The focus of each consultation was determined by the student's progression through the BVSc and the content was drawn from multiple courses. Beyond first year, each tutorial also revised content from previous years. New content was also introduced, supported by web-based or audio-visual resources to extend the high-achieving students. The lessons were developed as modules, with the same animal/herd returning in each year of the BVSc program, within a more complex scenario. Hence creating a client/patient history over time.

A standard lesson structure, based on a best practice consultation, was developed as a framework. Academics assigned to each lesson developed a 'Storyboard' document, detailing the content and context of each step (or screen) of the consultation, indicating question styles and the targeted feedback given for a variety of responses. These Storyboards then underwent student and academic review, modification and were then passed on to the 'Lesson Designers' (BVSc students who were employed for this purpose) to transfer the storyboard into the Smart Sparrow adaptive eLearning platform.

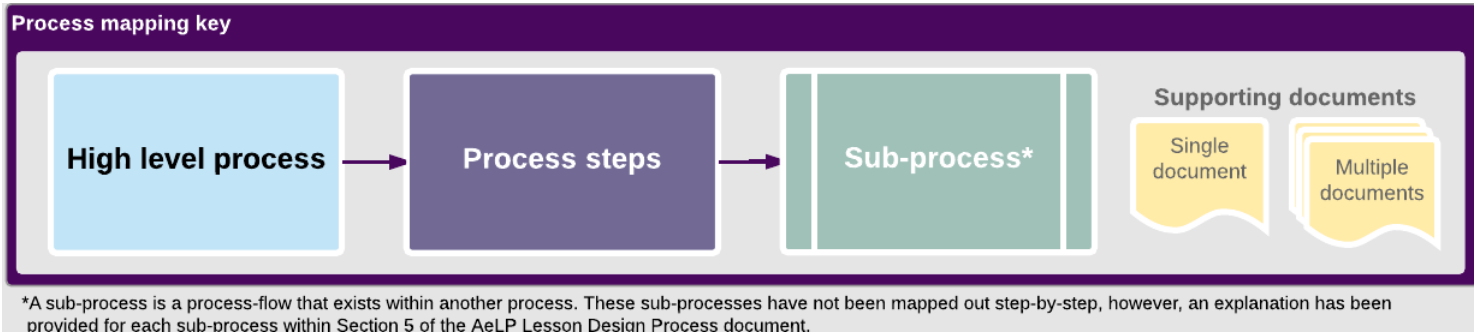
Once designed the interactive lessons were then beta tested for functionality and reviewed again by students and academics. The first of these lessons have now been deployed to multiple student cohorts, as both compulsory and voluntary coursework. Lessons are evaluated at deployment via electronic, anonymous survey, with very positive feedback from both students and academics to date.

Having the involvement of both faculty and students was integral to the success of this project. Student involvement is key in the educational process in that they were part of the creation and review of interactive contents, analysis and continuous improvement of the lessons created. This is in line with The University of Queensland's students as partners' strategy, and is a form of teaching that emphasises active engagement, which helps students both process and retain information.

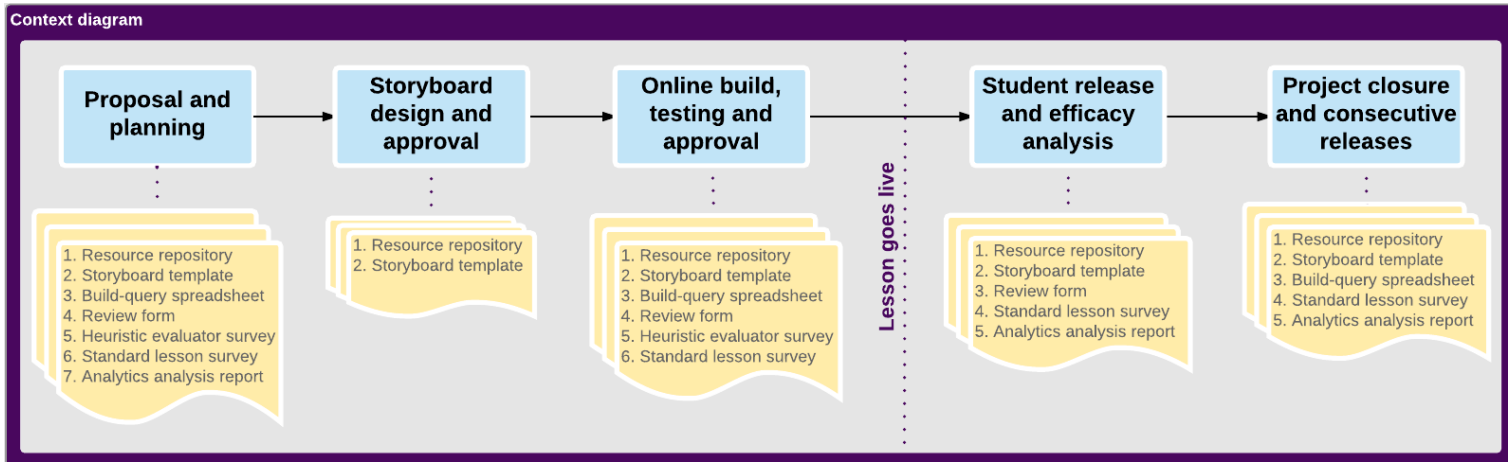
The following document is a detailed manual for the development of a program-wide modular vertically integrated adaptive eLearning lesson framework by a strategically funded project team. However, introduction of a single adaptive, vertically and horizontally integrated online lesson deployed at a course level could also be achieved by a single academic by using a streamlined version of this manual.

4 Process flow supporting information

4.1 Process mapping key



4.2 Context diagram



4.3 Roles

The following roles apply to the processes outlined in this document. Note that roles are not exclusive and a single person can take on many roles within the project. Additionally, these roles were initially designated for a program-wide suite of work, with allocated funding. As such, some roles may not be necessary or feasible for smaller scale projects. For details on the forms, documents and templates referred to in this section, see Section 4.4.

Role	Description
Core Project Instigator(s)	The person(s) who identifies the need or benefit in creating adaptive e-learning lessons. Following initiation of the project, this person becomes a member of the Project Team and takes on additional roles.
Project Team	The Project Team governs the direction of the project and has the responsibility of collectively making decisions regarding the proposed online lessons throughout their development. The Project Team must meet regularly in order to effectively guide the project through to completion. As a minimum, the Project Team consists of person(s) occupying the following roles: Coordinator, Core Project Instigator(s), and Academic Storyboard Owner(s). These roles may be accounted for by a single person or by multiple people, depending on the scope and size of the project. Additional roles outlined in this document may also be a part of the Project Team, depending on the specifics of the project.
Coordinator	The Coordinator acts as a key point of contact between the Project Team and any ancillary Project Members (e.g.: Student Storyboard Evaluators, Lesson Designers, etc.) or third parties (i.e. the AeLP). The Coordinator is primarily responsible for maintaining quality assurance of the final product by managing the processes involved in the creation of online lessons, such as the organisation of resources, the development of lesson design standards, the compilation and review of storyboards and managing the financial aspects of the project.
Academic Storyboard Owner	An Academic Storyboard Owner is allocated to every storyboard. This person is the key knowledge base for a specific lesson; responsible for authoring the bulk of a given storyboard, making decisions regarding the lesson, guiding amendments of a lesson during the review process, and for final approval and release of the lesson.

Role	Description
Academic Storyboard Contributor(s)	Academic Storyboard Contributors are responsible for authoring and/or providing resources or information for a section of a given storyboard. The Project Team, under the direction of the Academic Storyboard Owner, assigns Academic Storyboard Contributors to a storyboard.
Academic Storyboard Reviewer(s)	Academic Storyboard Reviewers are assigned to review a given storyboard. They are responsible for evaluating the storyboard with respect to its content, structure and flow, and its ability to achieve designated learning outcomes. Academic Storyboard Reviewers may or may not have prior knowledge on the topics covered in the storyboard, depending on what the Project Team require for the review feedback.
Student Storyboard Reviewer(s)	Student Storyboard Reviewers are assigned to review a given storyboard. They are responsible for evaluating the storyboard, with respect to its content, structure and flow, as well as its accuracy (with respect to other course content) and helpfulness. In addition, Student Storyboard Reviewers are responsible for identifying possible oversights or omissions in the lesson.
Lesson Designer	Lesson Designers are responsible for the adaption of the storyboard into the online platform. Lesson designers must adhere to required standards for lesson design, specified by the Project Team. Lesson Designers can be academics, support staff or students, who may or may not have other roles within the project. Lesson designers are responsible for notifying the Coordinator of any missing information or potential errors with regard to the lesson, or issues with the content or flow. Lesson Designers beta-test lessons that either they, or other Lesson Designers have created, and resolve any issues found. Additionally, they are responsible for updating lessons as required, following evaluation and release. Additionally, to remove the training burden on the project team, lesson design can be undertaken by some AeLP providers on a fee-for-service basis.
Academic Platform Evaluator(s)	Academic Platform Evaluators are responsible for evaluating the online lesson based on look and feel, ease of use, flow, accuracy and content, prior to its release to the general student population. Academic Platform Evaluators record any issues that they identify and provide this, along with completed heuristic and lesson surveys back to the Coordinator for assessment.

Role	Description
Student Platform Evaluator(s)	Student Platform Evaluators are responsible for evaluating the online lesson based on look and feel, ease of use, flow, accuracy and content, prior to its release to the general student population. Student Platform Evaluators record any issues that they identify and provide this, along with completed heuristic and lesson surveys back to the Coordinator for assessment.
AeLP Provider	Smart Sparrow is the AeLP utilised in this project.
Technical development	Smart Sparrow provided technical support, such as being responsible for the creation of CSS links.
AeLP training	Smart Sparrow is responsible for support and advice, and for the provision of user-guides and educational resources regarding the platform.
Authors	Collective term for the Academic Storyboard Owner(s) and the Academic Storyboard Contributor(s). Used in this document to refer to any person writing content for a given storyboard.
Project Members	Project Members is a broad term used to group all persons involved in the project; this includes the Project Team and any ancillary members of the project, which can include academics, administrative staff, students and independent person(s).
Students	Students are the people that belong to the course(s) or program that will be asked to complete the online lesson once it has been released. They do not have official responsibilities for the processes outlined in this report, however, students are given the option to complete the standard lesson survey regarding the efficacy of the lesson at the end of each online tutorial. The responses from the survey are used to evaluate and improve the online lessons.
Course Coordinator	The Course Coordinator takes over the management of the AeLL once it is in the operational phase, i.e. for subsequent releases of the AeLL following project closure. It is the responsibility of the Course Coordinator to deploy the lesson to students within their course, ensuring the lesson is up to date and accurate. Additionally the Course Coordinator is responsible for assessing the analytics of the lesson following each deployment.

4.4 Supporting documentation and file systems

The following documents and file management systems support and facilitate the processes outlined in this report. These documents can either be used as-is, or adapted to suit different project styles, schools or organisations. This suite of documents was created for the project outlined in Section 2 of this report; the documents were designed to facilitate the development of multiple online lessons, by a large Project Team, across an entire program. As such, for smaller projects some of the documents may be deemed unnecessary or may require alteration to suit the scale of the project.

Document	Description of use
Storyboard template	The document used by Academic Storyboard Owners and Contributors to author online lessons; it contains all of the information required for the tutorial to be built within the Smart Sparrow platform. Note that for smaller projects this document may not be necessary, as lessons can be built directly into the AeLP. See Section 4.4.2 for use-case examples, and Section 8.6 for layout example of the detailed storyboard template, utilising Smart Sparrow as the AeLP.
Build-query spreadsheet	Spreadsheet used by the Lesson Designer to track any queries or issues that arise as the storyboard is being transitioned to the online platform. See Section 8.1 to see the layout and use example of the build-query spreadsheet.
Review form	Used by Academic and Student Platform Evaluators to track issues, comments and queries while evaluating the online lesson. See Section 8.2 to see the layout and use example of the review form.
Standard lesson survey	The standard lesson survey is an optional survey that is included at the end of each online lesson, to enable an efficacy review. This survey is offered for completion to all persons who complete the online lesson. This includes Academic and Student Platform Evaluators and Students. For the purposes of this project, a third party provider (Checkbox) was used so that the surveys would be de-identified, providing anonymity as dictated by ethics requirements. To maintain the use of an efficacy survey, appropriate human ethics approval must be sought in advance. See Section 8.4 to see the survey in full.

Document	Description of use
Heuristic evaluators survey	The heuristic evaluation survey is a detailed 60-question survey, completed by the Student Platform Evaluators after evaluating an online lesson. The survey queries the following main topics: 1) Visibility of system status; feedback, 2) Match between the system and the real world; language and conventions, 3) Consistency and conformity of standards, 4) Minimising memory load; recognition rather than recall, 5) Aesthetics and minimalist design, 6) Help and documentation, 7) Error prevention and tolerance, 8) User control and freedom, 9) Interactivity, 10) Message design, 11) Learning design, 12) Media integration, 13) Instructional assessment, 14) Resources, 15) Feedback, 16) Strengths, weaknesses, engagement, value, 17) Effectiveness of educational delivery methods. See Section 8.5 to see the survey in full.
Resource repository	Allocated location for storage and management of resources associated with storyboards and subsequently the online lessons. The Academic Storyboard Owners and Contributors provide resources for the online lessons during the storyboard design and approval process. The repository is defined and managed from the initiation of the project. The resource repository may house original resources, and/or may consist of spreadsheet(s) detailing resource locations or links. The repository may consist of multiple locations (e.g.: Vimeo, Blackboard, a cloud-based storage service, network drives, etc.), however, it is managed and referred to in this report as a single entity. Resources can include, but are not limited to, PDFs, images, Slice images, videos, audio files, datasheets, websites and library resource links. See Section 4.4.1 for an example of the use and management of the resource repository.
Analytics analysis report	Used by the Coordinator, Academic Storyboard Owner and/or Course Coordinator to record data from the analysis of the analytics of a lesson following a deployment. See Section 8.3 to see the layout and use example of the build-query spreadsheet.
Standard AeLL template	A standard lesson template is a lesson that is built within the Smart Sparrow platform, which is used as a template for the creation of all future lessons by a given school, faculty or organisation. The template contains branding, layout requirements, icons, CSS classes (if used), and standard feedback. The creation of a standard lesson template ensures the production of consistent lessons in the future. For more information on the process of creating a standard lesson template see Section 6.4 and Section 6.5.

4.4.1 Resource repository use-case example

There are many ways to store and manage the resources associated with storyboards and online lessons. Following is an explanation of how the resource repository was managed for the AeLP project that this report is based on. If further clarification is required, review the processes outlined in Section 1.

It must be noted that the processes in Section 1 are adaptable, and so the management of the resource repository can change, depending on the specific processes that are adopted by a given Project Team. Also, after the resource repository has been established the lesson design process can change – in that Authors may not be required to place resources in the repository, as they may already exist. In this case the Author is responsible for providing the link, location and file name of the resource. Authors put the link and/or file name of the resource in the storyboard template as it's being written. For images, a small version of the photo was inserted into storyboard template, to allow Student and Academic Storyboard Reviewers to follow the case.

For the use of images, videos and external sources creative commons initiatives were considered. No copyright material was reproduced or utilised in the AeLLs in a manner that violated the copyright conditions. Prior to organising the resource repository the Project Team should work on developing effective techniques for finding, evaluating and using digital resources (digital literacy). The library team can assist with defining resources and academic sources.

Resource	Management / use

Videos	• Originals saved in network drive
	• Copies are uploaded to a private Vimeo account (found to be faster and of higher quality than a LMS based repositor)
	  • Privacy settings were altered for each video, to ensure the videos were only accessible by the desired avenues
	  • The returned link/embed code is saved in the resource index spreadsheet, in the network drive

PDFs	• Originals saved in network drive
	• Copies emailed to cloud-service on a case-by-case basis
	  • Emailed to cloud-housing service once case is complete, when the resource must be linked to the AeLP
	  • The returned link is saved in the links spreadsheet, in the network drive

Resource	Management / use

Images (PNG, JPG)	• Originals saved in network drive
	• Duplicates of images are created by the Lesson Designer, on a case-by case basis
	  • The copies are altered (size / resolution) to suit the lesson
	  • The copies are deleted once the lesson build is complete

Images (scanned slides)	• Scanned microscope slides are sent to the BEST Network to be accessible via Slice • The returned link is saved in the links spreadsheet, in the network drive

Links	• All links are saved within a spreadsheet, which is housed on the network drive.
	  • HTTP**S** (secure) links were required for direct input into Smart Sparrow (the AeLP used for this project)
	• The types of resources that links are saved for includes, but is not limited to:
	  • Slice image links
	  • Library resource links
	  • Links to websites
	  • PDF links from third party cloud service

Network drive	• Organised with the following high-level folders:
	  • Species (e.g.: Canine, Feline, etc.) | [file name]
	  • Subject (e.g.: Biosecurity, Bacteriology, Pharmacology, etc.) | [file name]
	  • Case specific folders (Named as per the name of the lesson / storyboard) | [file name]
	• Under each high-level folder sub-folders were created where applicable
	• File names were kept consistent to ensure ease of finding the resource

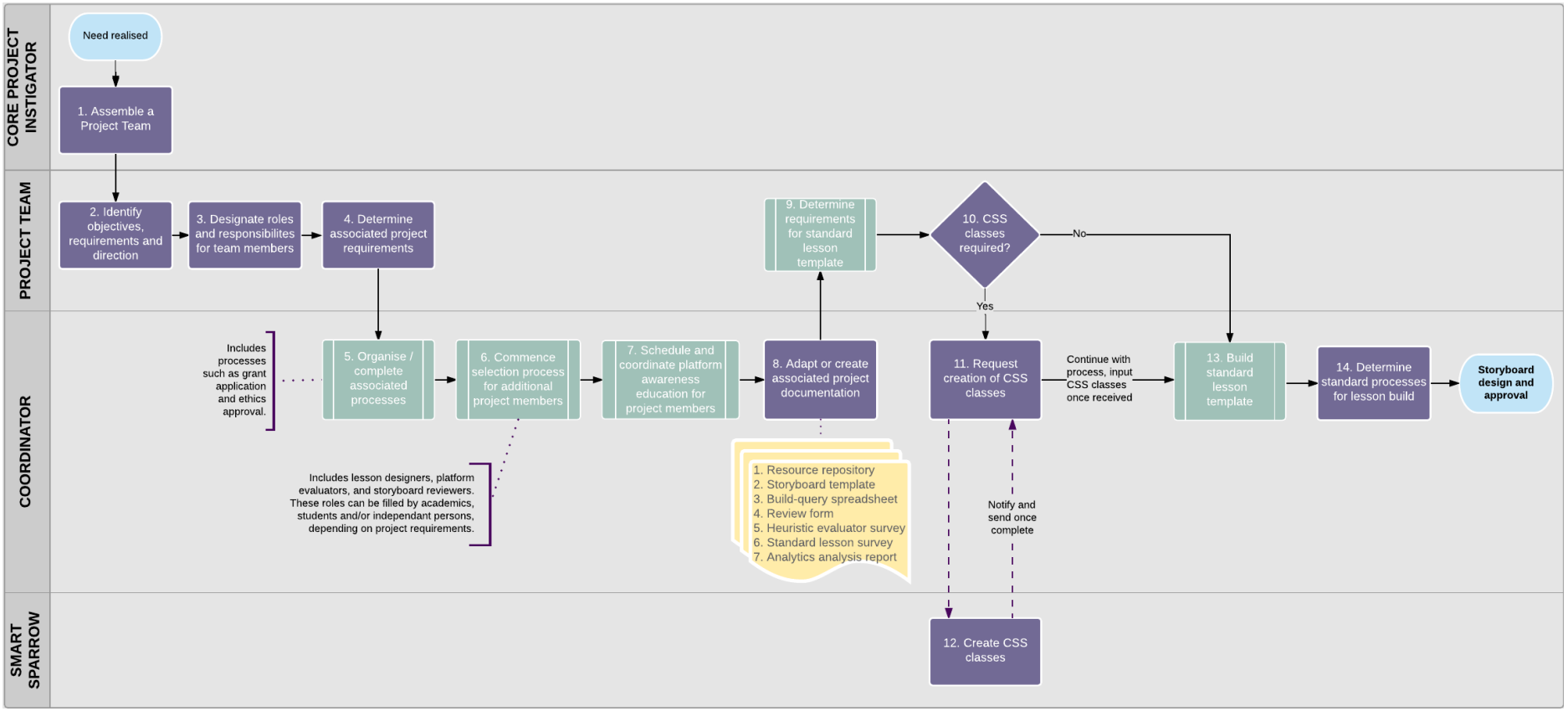
4.4.2 Storyboard templates used in this project

Two different types of storyboard templates were used during this project, each with their own benefits and drawbacks:

1. **Structured, detailed template** (with instructions for completion). This template (see Section 8.6) was specifically designed to align with the Smart Sparrow platform, to ensure all required information was captured. This resulted in more complete storyboards, with less outstanding queries in the design phase; however, for Authors not familiar with the AeLP the template could be confusing.
2. **Free-style document**. This was either a PowerPoint or Word document, and did not provide any prompts for capturing required information. Some Authors found this much easier to complete as they simply added what they wanted to be included on each screen; however, this resulted in more missing information, and therefore a higher number of queries during the design phase.

5 AeLP lesson design process

5.1 Proposal and planning



Process:	Proposal and planning	**Sub-processes**	A) Organise/complete associated processes B) Selection of additional project members C) Coordinate platform awareness education D) Determine requirements for standard lesson template E) Build of standard lesson template
Description:	This process covers the project initiation and planning phase, where the scope and objectives of the project are identified and preparation is undertaken to ensure the rest of the project runs smoothly. Following the assembly of a core Project Team, additional Project Members are recruited, with roles and responsibilities identified for all those involved. The requirements for the project and associated processes are designated, and supporting documentation is created.		
Roles:	• Core Project Instigator • Project Team • Coordinator • AeLP (optional)		
Triggers:	A need or benefit is realised for the creation of adaptive e-learning lesson(s) or tutorial(s).		
Pre-conditions:	• Permission has been given by the relevant authority for the initiation of an AeLP Lesson Design project		
Process step descriptions:	1. Academics are contacted and asked to be involved in the project; they are made aware of the time commitments required for the project, and the types of roles and responsibilities involved in the process. Those that agree to be involved form the Project Team. 2. The objectives and direction of the project are identified and agreed upon. This includes, but is not limited to, subjects, courses or programs covered, faculties involved, topics covered, the desired learning outcomes and delivery dates. The requirements for meeting the objectives and direction are outlined. 3. Persons in the Project Team are allocated roles and responsibilities for the duration of the project. For a description of the various roles and associated responsibilities within these processes see Section 4.3 4. The associated project requirements are determined. This includes but is not limited to; grant applications, ethics approvals, involvement of students and external persons, HR processes, potential conflicts of interest, platform education and awareness training, required data collection throughout the project for research or assessment of outcomes, and associated permissions. 5. The processes related to the determined associated project requirements (from Step 4) are executed. See Section 6.1 for details on this sub-process.		

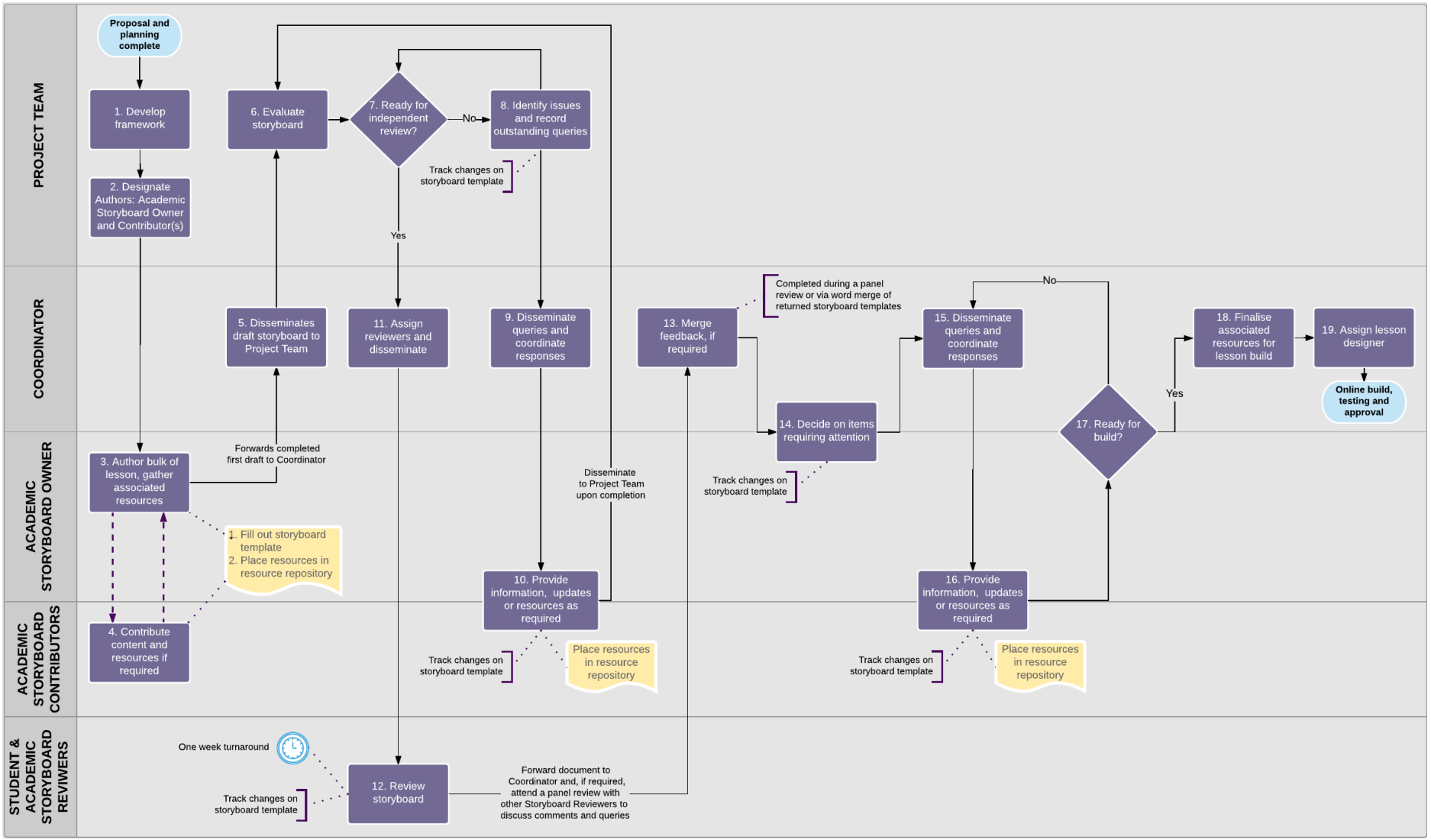
Process:	Proposal and planning	**Sub-processes**	A) Organise/complete associated processes B) Selection of additional project members C) Coordinate platform awareness education D) Determine requirements for standard lesson template E) Build of standard lesson template

6. The recruitment of additional Project Members is commenced, if required. Additional Project Members are persons required for the completion of the project, who are not part of the initial Project Team. See section 6.2 for details on this sub-process.
7. Education and training in the use of the AeLP is scheduled and coordinated for all required project members. See Section 6.3 for details on this sub-process.
8. The supporting documents and file systems (Section 4.4) required for the project are either created, or adapted from those provided in this package of work. These documents can be tailored for the size of the project and the number of persons involved. Those presented in this document were created for a program-wide implementation of a suite of online lessons, and as such may be scaled down or simplified for smaller projects.
9. The requirements for a standard lesson template are decided upon and documented; this primarily involves decisions regarding the 'look and feel' of the proposed lessons. A standard lesson template is a lesson that is built within the AeLP platform, which is used as a template for the creation of all future lessons by a given school, faculty or organisation. The template contains branding, layout requirements, icons, CSS classes (if used), and standard feedback, to ensure the production of consistent lessons in the future. See Section 6.4 for details on this sub-process.
10. A decision must be made as to whether the creation of a CSS and associated classes is required. CSS are essentially 'skins' that alter the appearance of screens and certain components within the AeLP. They are used to apply branding to the online lessons, thus enabling the organisation that created them to be easily identifiable.
    If YES: proceed to Step 11
    If NO: proceed to Step 13
11. A request is lodged with the AeLP for the creation of the required CSS class(es).
12. The AeLP create the CSS class(es), notifying the Coordinator and providing the links once complete.
13. A standard lesson template is built within the AeLP (see Section 6.5 for details on this sub-process). This template is used for the creation of future AeLLs.

Process:	Proposal and planning	**Sub-processes**	A) Organise/complete associated processes B) Selection of additional project members C) Coordinate platform awareness education	D) Determine requirements for standard lesson template E) Build of standard lesson template
	14. The standard processes for the adaption of a storyboard into an online lesson are documented. These can be created, or adapted from the proceeding processes contained within this report. The processes should include process flows, responsibilities and turnaround timeframes for all key actions.			
Post-conditions:	• All Project Members are aware of their roles and responsibilities • All required Project Members have undertaken platform awareness education for the AeLP • Project and associated processes are documented and understood by all Project Members • Supporting project documentation has been created, including the development of a standard lesson template			
Supporting applications / tools	• The AeLP • Microsoft Office Suite (Excel, Word, PowerPoint, Paint, etc.) • Microsoft Visio (or similar process mapping tool)			

Process:	Proposal and planning	**Sub-processes**	A) Organise/complete associated processes B) Selection of additional project members C) Coordinate platform awareness education	D) Determine requirements for standard lesson template E) Build of standard lesson template
Forms / templates / supporting documents / data entities:	• Resource repository (See Section 4.4.1) • Storyboard template (See Section 4.4.2 for use-case examples, and Section 8.6 for layout example) • Build-query spreadsheet (See Section 8.1 to see the layout and use example) • Review form (See Section 8.2 to see the layout and use example of the review form) • Heuristic evaluator survey (See Section 8.5 to see the survey in full) • Standard lesson survey (See Section 8.4 to see the survey in full) • Relevant HR paperwork, ethics paperwork, Grant application(s)			
Business rules	• When planning the creation of AeLLs consider information and digital literacy; select a hosting platform based on a careful market analysis, ensuring the platform is accessible from a wide range of devices and supports diverse media. • To improve evaluation of the lessons following release, it is best practice to determine learning outcome statements (including reflection, peer experiences etc.), at this stage in the process. This requires a greater levels of planning and design (peer learning, problem based learning, and analysis case studies)			

5.2 Storyboard design and approval



Process:	Storyboard design and approval	**Sub-processes**	N/A
Description:	An overall plan detailing the high-level structure for the proposed online lesson(s) is created. From this framework, each individual storyboard undergoes an authoring, resource collection, and review and amendment process before being finalised and deemed ready for adaption into the AeLP.		
Roles:	• Project Team • Coordinator • Academic Storyboard Owner • Academic Storyboard Contributor(s) • Academic Storyboard Reviewer(s) • Student Storyboard Reviewer(s)		
Triggers:	The Project Team has finalised the proposal and planning process		
Pre-conditions:	• The standard processes for the adaption of a storyboard into an AeLL are documented and finalised • All Project Members have been selected, have received platform awareness education where appropriate, and are aware of their roles, responsibilities, and the project processes • All Project Members are aware of the use and relevance of the supporting project documents that were created • All necessary associated processes have been approved and finalised (e.g.: ethics approval, grant applications, etc.)		
Process step descriptions:	1. A high-level overview, detailing the proposed content and structure, is written for each online lesson. This forms the framework of each lesson, and is used in future steps as a starting point for the authoring of the storyboard. This framework is created to align with the objectives, direction and requirements outlined in Step 2 of the preceding proposal and planning process. 2. Using the framework developed in Step 1 as a selection guide, an Academic Storyboard Owner and Academic Storyboard Contributor(s) are assigned to each storyboard. Suitability for the roles is based on the content outlined within the framework – typically the Academic Storyboard Owner is the person who has the most knowledge on the majority of the content covered in a given storyboard, while Academic Storyboard Contributors have specific knowledge on smaller sections of the content.		

Process:	Storyboard design and approval	**Sub-processes**	N/A

3. The Academic Storyboard Owner writes the majority of the storyboard content into the storyboard template, using the framework developed in Step 1 as a starting point. Throughout the authoring process the Academic Storyboard Owner sources appropriate resources related to the content written, and places them in the resource repository.
   If input is required from an Academic Storyboard Contributor(s):
   The draft storyboard is forwarded to Academic Storyboard Contributor(s): Proceed to Step 4.
   If no further other input is required:
   The completed first draft of the storyboard is forwarded to the Coordinator: Proceed to Step 5.
4. The Academic Storyboard Contributor(s) write their designated sections into the storyboard template, concurrently placing any associated resources into the resource repository.
   Return to Step 3.
5. The Coordinator disseminates the draft storyboard to the Project Team, setting timeframes for its evaluation.
6. Persons within the Project Team independently evaluate the storyboard, and then collectively discuss their evaluations at a regular project meeting. Evaluations of the storyboard are based on accuracy, structure and flow of the content, and alignment of the content with the initially specified objectives, direction and requirements. Additionally, the storyboard is evaluated for its effectiveness in delivering content to meet desired learning outcomes, the amount and level of difficulty of the content and the appropriateness of the associated resources.
7. Based on the evaluations, a decision is made as to whether the storyboard is ready for independent review.
   If NO: proceed to Step 8.
   If YES: proceed to Step 11.
8. The Project Team collectively identifies the issues and outstanding queries relating to the storyboard, and alters the storyboard template via track-changes to highlight the sections requiring attention.
9. The Coordinator distributes the altered storyboard template to the relevant person(s) for response to queries and/or issues. Timeframes for return are provided at distribution. The relevant person(s) could be the Academic Storyboard Owner and/or the original Academic Storyboard Contributor(s), depending on who was responsible for the sections requiring attention. However, certain queries may require involvement of new Academic Storyboard Contributor(s) for provision of additional information.

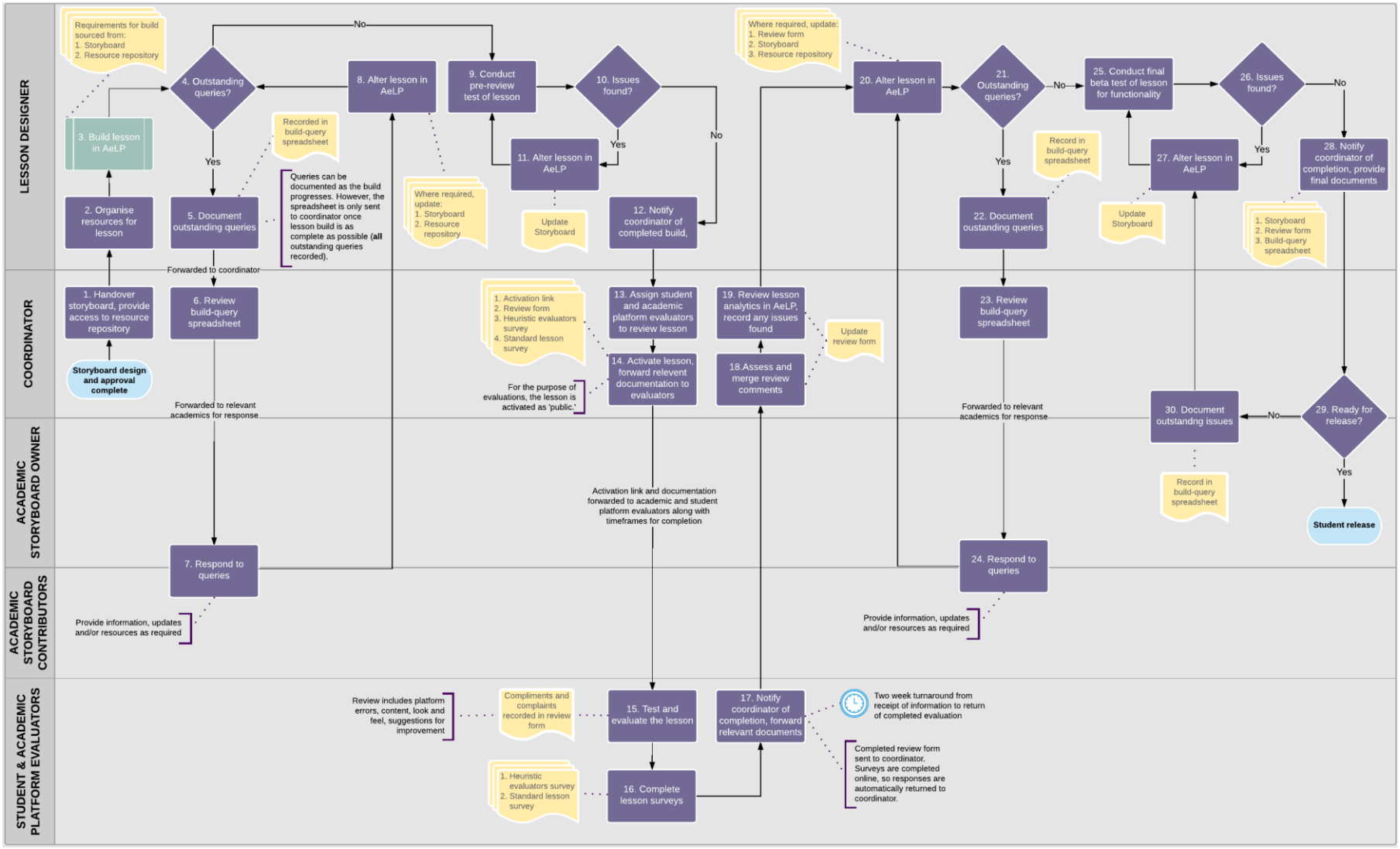
Process:	Storyboard design and approval	**Sub-processes**	N/A

10. The Academic Storyboard Owner and/or the Academic Storyboard Contributor(s) respond to the queries or issues by amending the storyboard template, providing additional information or resources as required. Upon completion, the updated storyboard template is disseminated to the Project Team.
    Return to Step 6.
11. The Coordinator assigns Student and Academic Storyboard Reviewers to the storyboard, and forwards it to them for review.
12. The Student and Academic Storyboard Reviewers independently evaluate the storyboard, annotating the storyboard template via track-changes to highlight any queries or issues found. Evaluations of the storyboard are based on accuracy, structure, flow and clarity of the content. Additionally, the level of difficulty of the content and the appropriateness of the associated resources is assessed. The annotated storyboard template is then returned to the Coordinator within the allocated one-week timeframe.
13. The Coordinator merges the feedback from the independent reviews. This may take place at a panel review with Storyboard Reviewers, or may be done independently. Once complete the Academic Storyboard Owner is notified.
14. Together, the Academic Storyboard Owner and the Coordinator assess each item (i.e. comment, query, suggestion, etc.) raised during the review process. One of the following categories is assigned to each item: 1) dismiss, 2) accept, or 3) requires additional input. For items that are dismissed the track change is simply deleted. For items that are accepted the storyboard template is altered to align with the change or suggestion. Items that require additional attention are left as is, with the track change remaining outstanding on the storyboard template.
15. The Coordinator distributes the altered storyboard template to the relevant person(s) for response to queries and/or issues. Timeframes for return are provided at distribution.
16. The Academic Storyboard Owner and/or the Academic Storyboard Contributor(s) respond to the queries or issues by amending the storyboard template, providing additional information or resources as required. Upon completion, the updated storyboard template is sent back to the Coordinator.
17. Together, the Academic Storyboard Owner and the Coordinator assess the responses to the review queries and determine if the storyboard template is ready to be finalised
    If NO: the storyboard template is updated to highlight the outstanding items; then return to Step 15.
    If YES: proceed to Step 18.

Process:	Storyboard design and approval	**Sub-processes**	N/A
	18. The Coordinator performs a final check of the storyboard, ensuring all required resources are finalised, referenced where appropriate and correctly located within the resource repository. 19. The Coordinator assigns a Lesson Designer to the storyboard, and notifies them of the upcoming package of work.		
Post-conditions:	• A storyboard and its associated resources are finalised and ready to be built into the online platform • The Lesson Designer is aware of the upcoming build and has scheduled time for its completion		
Supporting applications / tools	• The AeLP • Microsoft office suite (Excel, Word) • Resource specific: PDF writer, video editing software, image editing software, microscope slide scanner, video camera, etc.		
Templates / data entities:	• Resource repository • Storyboard template		
Business rules:	The following business rules were developed due to the large scale of the project that this report was generated from. While for smaller projects it may not be possible to adhere to all of these business rules, they are considered to be best practice and should be abided by wherever possible. • The Project Team meet regularly, every fortnight • An Academic Storyboard Owner must have the storyboard reviewed by at least one other person • For a given storyboard, the Student and Academic Storyboard Reviewers must be different people to the Student and Academic Platform Evaluators; this ensures as many different people as possible are exposed to a storyboard prior to its release as an online lesson • For a given storyboard, the assigned Lesson Designer should ideally be a person who has had no prior involvement with that storyboard		

Process:	Storyboard design and approval	**Sub-processes**	N/A
	• The Smart Sparrow lesson can be integrated with the Blackboard ‘achievement tool’ if desired. Instructors can create opportunities for students to earn recognition (badges, points and certificates) for accomplishing lessons, and explore peer review performances		

5.3 Online build, testing and approval



Process:	Online build, testing and approval	**Sub-processes**	A) Build lesson in AeLP
Description:	A finalised storyboard and its associated resources are used to create an adaptive online lesson within the AeLP (Smart Sparrow). During the build process, any queries or issues that arise are highlighted and resolved. The original storyboard document is continually updated throughout this process, to align with all changes made. Once built, the lesson undergoes a test, evaluation and amendment process before being finalised and approved for deployment or release to the general student population.		
Roles:	• Lesson Designer • Coordinator • Academic Storyboard Owner • Academic Storyboard Contributor(s) • Academic Platform Evaluator(s) • Student Platform Evaluator(s)		
Triggers:	The storyboard design and approval process has been completed for a given storyboard.		
Pre-conditions:	• A storyboard and its associated resources has been finalised and approved, and a Lesson Designer has been assigned to the task		
Process step descriptions:	1. The Coordinator provides the assigned Lesson Designer with a copy of the finalised storyboard and access to its resources. 2. The Lesson Designer organises the resources for the lesson. This step requires different actions depending on the type of associated resources, the structure of the resource repository and its management process. For example, images may require resizing in order to minimise the file size, videos may need to be uploaded to an external online system (if they haven't already been uploaded by the Coordinator in an earlier process). For information on resource repository management and a use-case example see Section 4.4.1 3. The Lesson Designer builds the lesson in the AeLP using the storyboard template and associated resources. Edit access for the AeLL is assigned to the Coordinator and Academic Storyboard Owner. See Section 6.6 for more information on this sub-process. 4. The Lesson Designer determines if there are any outstanding queries requiring attention in order to complete the lesson build. Queries could include missing information or resources required for the build, issues with the structure or flow of a lesson within the platform, or potential errors or inconsistencies with the content or terminology used in the storyboard.		

Process:	Online build, testing and approval	**Sub-processes**	A) Build lesson in AeLP

If YES: proceed to Step 5.
If NO: proceed to Step 9.

5. Any outstanding queries identified in the preceding step are recorded in the build-query spreadsheet. For each query, the following data is required to be recorded in the spreadsheet; the screen name, type of query, details or explanation of the query. Additionally, the Lesson Designer may choose to provide suggestions for potential solutions or workarounds for a given query. Once all outstanding queries are documented, the spreadsheet is sent to the Coordinator.
6. The Coordinator reviews the build-query spreadsheet, determines who is required to respond to each query (i.e. the Academic Storyboard Owner and/or Academic Storyboard Contributor(s)) and forwards it to the relevant person(s) for response.
7. The Academic Storyboard Owner and/or Academic Storyboard Contributor(s) respond to queries related to their own sections, providing information, updates, and/or resources as required in the build-query spreadsheet. Once complete, the build-query spreadsheet and any required resources or documentation are forwarded back to the Lesson Designer.
8. The Lesson Designer alters the lesson in the AeLP in accordance with the feedback received, updating the storyboard and/or resource repository as required.
   Once complete, return to Step 4.
9. The Lesson Designer conducts a pre-review test of the lesson. This involves initially going through each screen in the author mode, whereby the Lesson Designer reads over each trap state, ensuring they are complete and correct, and reads over all content, ensuring it matches the storyboard, and identifying any spelling/formatting errors. Following this, the Lesson Designer goes through the entire lesson in the preview mode, attempting to set off as many trap states as possible, and reviewing alignment and layout of the lesson. For information on trap states, preview and author mode for the Smart Sparrow AeLP, see their website.
10. From the preceding pre-review test, were any errors found?
    If YES (errors are identified): proceed to Step 11.
    If NO (no errors identified): proceed to Step 12.
11. The Lesson Designer resolves any errors found, altering the lesson in the AeLP and updating the storyboard if required.
    Return to Step 9 once complete.
12. The Lesson designer notifies the Coordinator of the completed lesson build.

Process:	Online build, testing and approval	**Sub-processes**	A) Build lesson in AeLP

13. The Coordinator assigns Student and Academic Platform Evaluators to review the lesson, ensuring they have availability to meet review timeframes.
14. The Coordinator first activates the lesson in the AeLP, setting the visibility to public, and copying the returned access link. This access link is then forwarded to the assigned Student and Academic Platform Evaluators, along with the review form, a link to the heuristic survey, and advice to complete the standard lesson survey located on the final screen of the online lesson. Timeframes for completion are also designated.
15. Student and Academic Platform Evaluators test and evaluate the lesson within the AeLP. As they proceed through the lesson they record any compliments, complaints or errors regarding the content, functionality or appearance of the lesson within the review form. For each line item recorded in the review form, the screen name and details of the item are listed.
16. Upon completion of the test of the lesson the Student and Academic Platform Evaluators complete both the heuristic evaluator survey and the standard lesson survey. These are completed online, with responses automatically sent back to the Coordinator for review.
17. Once the test and evaluation is complete, the Student and Academic Platform Evaluators notify the Coordinator and send back the completed review form.
18. The Coordinator assesses the feedback received from the evaluations, merging all of the data into a single review form.
19. The Coordinator then assesses the analytics of the lesson within the AeLP, and records any issues seen within the review form. Issues could include default trap states being activated, which indicates an error with the trap states, or time spent on certain screens exceeding a reasonable amount, which could indicate the content is too difficult or confusing. Once all issues are recorded, the merged and updated review form is sent to the Lesson Designer.
20. The Lesson Designer reviews each line item requiring attention.
    If the Lesson Designer can resolve a line item without further input, the lesson is altered in the AeLP, and the line item is amended, marking it as complete. The associated documentation is then updated in accordance with the change (e.g.: storyboard, resource repository).
    If the Lesson Designer cannot resolve a line item without further input, the item is marked as outstanding.

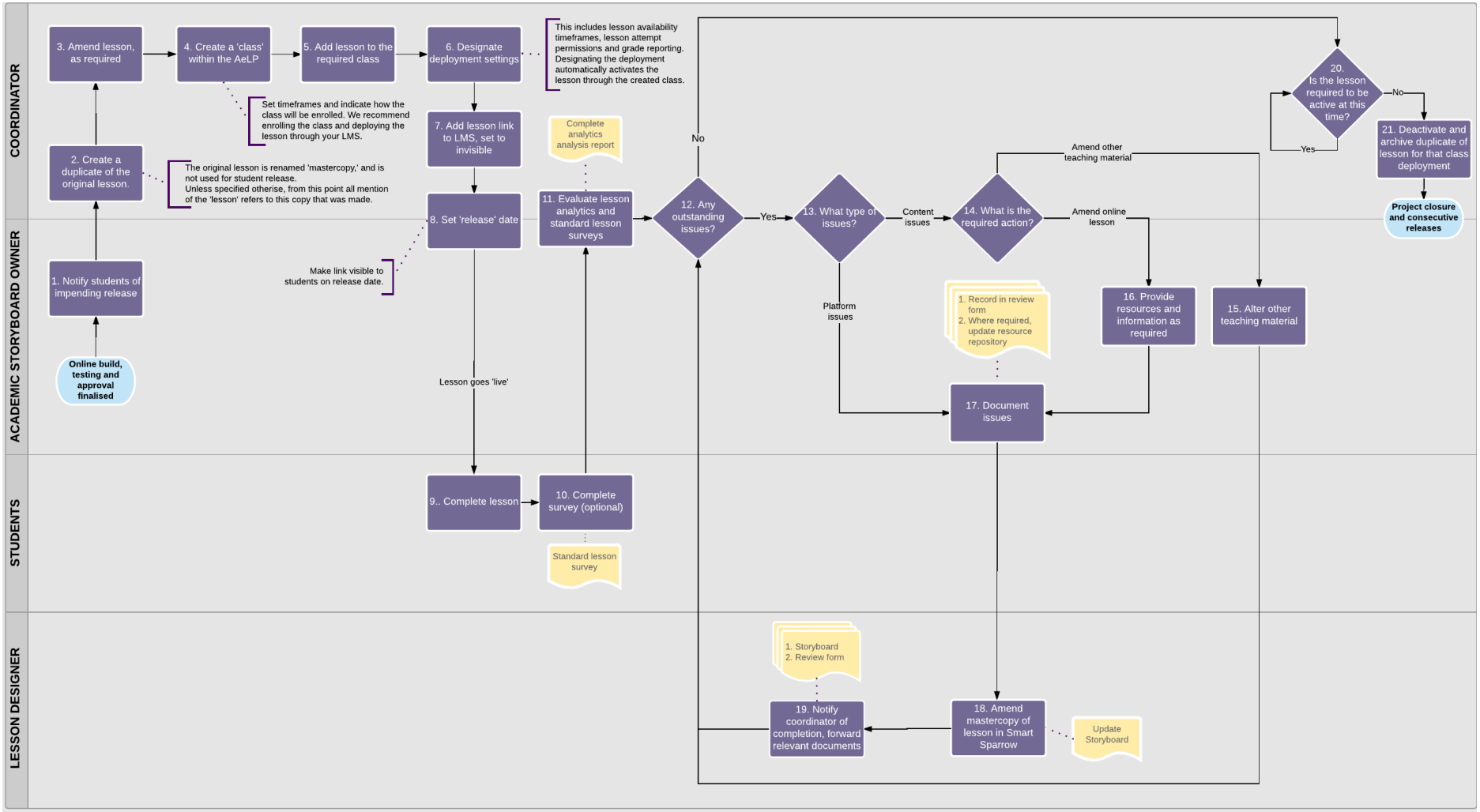
Process:	Online build, testing and approval	**Sub-processes**	A) Build lesson in AeLP

21. The Lesson Designer reviews all line items, and determines if there are any outstanding queries
    If YES: proceed to Step 22.
    If NO: proceed to Step 25.
22. The Lesson Designer records all outstanding queries in the build-query spreadsheet, providing comments as to required action or response. The build-query spreadsheet is then forwarded to the Coordinator.
23. The Coordinator reviews the build-query spreadsheet, determines who is required to respond to each query (i.e. the Academic Storyboard Owner and/or Academic Storyboard Contributor(s)) and forwards it to the relevant person(s) for response.
24. The Academic Storyboard Owner and/or Academic Storyboard Contributor(s) respond to queries related to their own sections, providing information, updates, and/or resources as required. Once complete, the build-query spreadsheet and any required resources or documentation are forwarded back to the Lesson Designer.
    Return to Step 20.
25. A Lesson Designer conducts a final beta test of the online lesson. Ideally this would be a different Lesson Designer to the one who initially built the lesson, though this is not essential. The final beta test is primarily a functionality test of the lesson. The Lesson Designer opens the lesson in preview mode and goes through the entire lesson, attempting to set off as many trap states as possible, reviewing alignment and layout of the lesson and identifying any spelling errors.
26. Following completion of the beta-test, the Lesson Designer assesses if any issues were found:
    If YES: proceed to Step 27.
    If NO: proceed to Step 28.
27. The Lesson Designer alters the lesson in the AeLP, resolving the identified issues and updating the storyboard as required.
    Return to Step 25.
28. The Lesson Designer notifies the Coordinator of completion of the build, and sends the finalised documents (including the storyboard, review form, and build-query spreadsheet) for filing.
29. The Academic Storyboard Owner and Coordinator assess the lesson and determine if it is ready for release to the general student population

Process:	Online build, testing and approval	**Sub-processes**	A) Build lesson in AeLP
	If YES: process complete (proceed to the next process). If NO: proceed to Step 30. 30. The identified issues or required changes are recorded in the build-query spreadsheet, which is then forwarded to the Lesson Designer for attention. Return to Step 27.		
Post-conditions:	• An online lesson has been approved for release to the general student population, and the Academic Storyboard Owner is aware of its finalisation • The storyboard and online lesson are consistent with each other and encompass all approved amendments that arose during the testing and evaluation processes		
Supporting applications / tools	• The AeLP • Microsoft Office Suite (Excel, Word) • Resource specific: PDF writer, video editing software, image editing software, microscope slide scanner, video camera, etc.		
Templates / data entities:	• Resource repository • Storyboard template • Build-query spreadsheet • Review form • Heuristic evaluator survey • Standard lesson survey		
Business rules:	The following business rules were developed due to the large scale of the project that this report was generated from. While for smaller projects it may not be possible to adhere to these rules, they are considered to be best practice and should be abided by wherever possible.		

Process:	Online build, testing and approval	**Sub-processes**	A) Build lesson in AeLP
	• For a given storyboard, the Student and Academic Storyboard Reviewers must be different people to the Student and Academic Platform Evaluators, this ensures as many different people as possible are exposed to a storyboard prior to its release as an online lesson • For a given storyboard, if the assigned Lesson Designer is a student, then ideally they are a person who has had no prior involvement with that storyboard, to provide another opportunity for review • The Lesson Designer in Step 24 who conducts the final beta-test of the lesson should ideally be a different person to the Lesson Designer who initially built the lesson into the AeLP.		

5.4 Student release and efficacy analysis



Process:	Student release	**Sub-processes**	N/A
Description:	A working copy is made of a finalised online lesson, its release conditions are determined and it is released to the general student population. Following its release, the efficacy, value and functionality of the lesson are evaluated, with amendments made to the original master-copy and storyboard as required.		
Roles:	• Coordinator • Academic Storyboard Owner • General student population • Lesson Designer		
Triggers:	An online lesson, that has been evaluated and approved for release, has a release date scheduled in the near future.		
Pre-conditions:	• An Academic Storyboard Owner has a finalised lesson built within the AeLP • The course or program that the lesson is associated with has scheduled the lesson for release		
Process step descriptions:	1. The Academic Storyboard Owner notifies the general student population and the Coordinator of the intended release date for the online tutorial. 2. The Coordinator creates a duplicate of the original lesson within the AeLP. The name of the original lesson is then changed to 'MASTERCOPY of [Lesson Title],' and is not used for release purposes but rather as a backup. 3. The Coordinator then amends the lesson duplicate created in the preceding step, as required. This may include updating the 'lesson instructions' screen to suit the course requirements, removing 'hidden' screens designating the linked resources, checking that all links within the lesson are functional and updating them if required. 4. The Coordinator creates a class within the AeLP. The class is named using the following convention: [Course Name] | Semester X YYYY] | [Lesson Name], where X = 1 or 2, and YYYY = the year. The commencement date of teaching must be nominated, and the Coordinator must indicate how the students will be enrolled in the class. We recommend enrolling students through your LMS. Once the class is created, 'assistants' should be added to the class – this should include the Course Coordinator, and Academic Storyboard Owner as a minimum.		

Process:	Student release	**Sub-processes**	N/A

5. From the class within the AeLP, the Coordinator selects ‘add lesson’ and chooses the lesson that is to be added to the created class.
6. The Coordinator then designates the deployment settings. This includes the lesson availability timeframes, how many times students can attempt the lesson and whether lesson pushes grades directly to the grade centre. Once the lesson deployment settings are designated the AeLP returns a link for the lesson. This link is copied and will be added to the LMS.
7. The lesson link is added to the LMS. In Blackboard this is done by selecting Build Content | Web Link. The following information is then recorded: Name = Lesson name, URL = copied link, select ‘this link is a tool provider,’ and ‘no’ for ‘enable activation.’ This is then set to ‘hidden,’ until such time as the students are required to see it.
8. The release date is set within the LMS, whereby the activation link will appear on the designated date.
9. Students complete the AeLL.
10. Students are provided with a link to the standard lesson survey at the end of the lesson. Students then complete the online survey, the results of which are automatically sent back to the Coordinator. This survey is optional; students can to skip this step if desired.
11. Following release and completion of the lesson by the majority of students involved, the Coordinator and Academic Storyboard Owner evaluate the lesson analytics within the AeLP (observing student flow through lesson and activation of different trap states), and the responses to the standard lesson surveys.
12. The Coordinator and Academic Storyboard Owner must determine if there are any outstanding issues that have been identified, but not yet rectified.
    If YES: proceed to Step 13.
    If NO: proceed to Step 20.
13. The Coordinator and Academic Storyboard Owner assess each issue that was identified, and categorise the issue as either content or platform issues. Platform issues encompass errors related to the platform functionality, whereas content errors are errors related to the content presented on the platform.
    If CONTENT ISSUES: proceed to Step 14.
    If PLATFORM ISSUES proceed to Step 17.

Process:	Student release	**Sub-processes**	N/A

14. For content issues, the Coordinator and Academic Storyboard Owner must decide whether the action required is amending the online lesson, or amending other teaching material within the course or program. This is a judgement call, made on a case-by-case basis, by the academic with knowledge of the course content and associated teaching schedule.
    If amend OTHER TEACHING MATERIAL proceed to Step 15.
    If amend ONLINE LESSON: proceed to Step 16.
15. The Academic Storyboard Owner amends other teaching material.
    Return to Step 12.
16. The Academic Storyboard Owner must gather the information and/or resources required to resolve the outstanding issue(s) that require the lesson to be amended.
17. In the review form, the Academic Storyboard Owner documents each issue and then records the amendments required for their resolution. The issues are classified as platform or content issues. Following documentation of all issues, the review form is forwarded to the Lesson Designer, along with any additional information and/or resources required. Any new resources are added to the resource repository.
18. The Lesson Designer reviews the line items in the review form, and amends the master-copy of the lesson in the AeLP accordingly. In addition, the storyboard is updated if required. If there is a major issue, and not all students have completed the lesson, then the duplicate of the lesson can also be altered.
19. Once amendments are complete, the Lesson Designer notifies Coordinator of completion, and forwards all relevant documents (including the updated storyboard and review form).
    Return to Step 12.
20. Is the lesson required to be active at this time? Once the majority of the students in the activated class have completed the lesson, or the timeframes set for the lesson's completion have passed, then the lesson is not required to be active.
    If YES: continue to allow activation until the answer is NO
    If NO: proceed to Step 21.
21. Deactivate and archive the duplicate lesson, retaining the master-copy as the original lesson for future releases. Process is now complete, proceed to project closure and consecutive releases process.

Process:	Student release	**Sub-processes**	N/A
Post-conditions:	• The master-copy and storyboard of the online lesson have been updated with information from student surveys and data from the AeLP analytics		
Supporting applications / tools	• AeLP • Microsoft Office Suite (Excel, Word) • Online survey application (e.g.: Checkbox) • LMS (e.g.: Blackboard)		
Templates / data entities:	• Resource repository • Storyboard template • Review form • Standard lesson survey		
Business rules:	The following business rules are considered to be best practice and should be abided by wherever possible. • If an AeLL is to be a part of summative assessment, no student from that cohort can be involved in the processes prior to its release • Open meetings should be held to discuss corrections to the lesson and new improvements; this part of the process should involve the eLearning designer for input and recommendations on improving the AeLLs for future releases		

5.6 Project closure and consecutive releases

Process:	Project closure and consecutive releases
Description:	This process covers the closure of the initial project, and the following management of the AeLLs in the operational phase. While this is a high-level process, it is beyond the scope of this document to create a process map for this process, with a detailed description. Instead, a short overview explanation has been provided. Note that the process for consecutive releases closely follows the student release process, outlined in the preceding section.
Roles:	• Academic Storyboard Owner and/or Course Coordinator • Project Team
Process description:	1. Together, the Project Team closes the project, reviewing the success of the project via analytics and student reviews, and documenting lessons learnt. 2. Following closure of the project the AeLL is in the operational phase, and can be managed as desired by the Academic Storyboard Owner, or by the Course Coordinator. 3. For each consecutive release, the same steps should be taken as were in the student release process. The main variation is that it is more likely for a single individual (i.e. the Course Coordinator) to take on all roles within that process.
Supporting applications / tools	• AeLP • Microsoft office suite (Excel, Word) • Online survey application (e.g.: Checkbox) • LMS (e.g.: Blackboard)
Supporting documents	• Resource repository • Storyboard template • Review form • Standard lesson survey
Key considerations:	Check all externally linked resources prior to each release, ensuring the links are valid and functional.

6 Sub-processes within the AeLP lesson design process

A sub-process is a process-flow that exists within another process. These sub-processes have not been mapped out step-by-step, however, a high-level explanation has been provided for each sub-process.

6.1 Organise / complete associated processes

Sub-process:	Organise / complete associated processes	**Business processes:**	Proposal and planning
Description:	This process is varied, depending on the requirements of the specific project. It entails the organisation, scheduling and completion of any required processes associated to a given project. This can include, but is not limited to ethics approval(s) and grant application(s), involvement of students and external persons, potential conflicts of interest, required data collection throughout the project for research or assessment of outcomes, and associated permissions.		
Roles:	• Coordinator • Project Members		
Process description:	1. The Coordinator, in conjunction with the Project Team identifies the associated processes requiring completion. 2. The Coordinator contacts the relevant organisation(s) or person(s) to determine the requirements for the completion of the associated processes. This can include timeframes, required documentation, supporting information and necessary approvals.		
Supporting documents	• Project specific		
AeLP project	For the project outlined in this report human and animal ethics approvals and both core and supplementary funding via grant applications were sought. Copyright and consent regulations were clarified and appropriate forms developed for resource construction.		
Key considerations:	Certain associated processes may have to be complete prior to progressing with the project. Where appropriate, the Coordinator ensures the associated processes are complete prior to the next stage of the project i.e.: ethics application must be approved prior to involvement of person(s) and/or animal(s) covered under that ethics application.		

6.2 Selection process for additional project staff

Sub-process:	Selection process for additional project staff	**Business processes:**	Proposal and planning
Description:	This process is varied, depending on the requirements, scale and budget of the specific project. It involves the selection and recruitment of additional Project Members to that of the initial Project Team. These additional Project Members may be required to fulfil ancillary roles for the project e.g.: Lesson Designers, Student Storyboard Reviewers, Student Platform Evaluators etc. This process ensures that all person(s) required to be involved in the project are recruited, selected and made aware of their roles and responsibilities well ahead of time, to ensure the project can be delivered on time and within budget.		
Roles:	• Project Team; it is the Project Team who guides this process, recruiting additional Project Members • Project Members; the members recruited for in this project can fill any role		
Process description:	1. The Coordinator, along with the Project Team determines which roles require filling by additional Project Members. Once the roles, number of required persons and starting dates are identified then the selection process can begin. 2. The roles are advertised and the candidates are selected • Persons may or may not be compensated for their involvement in the project, depending on project requirements • All selected candidates are made aware of their roles, responsibilities and expected timeframes		
Supporting documents	Where required: • HR paperwork • Consent forms		
AeLP project	Students were hired to be Lesson Designers, Reviewers and Platform Evaluators, and were monetarily reimbursed for their time, based on an hourly rate. Academics were also recruited to be Academic Contributors to the lesson development, Reviewers and Platform Evaluators. During this process additional independent Reviewers were also engaged.		
Key considerations:	It is important that this process takes place prior to the scheduling of the platform awareness education, as persons recruited to the project during this sub-process may require platform awareness education. This process may not be required for small-scale projects, where individuals take on multiple roles.		

6.3 Platform awareness education

Sub-process:	Platform awareness education	**Business processes:**	Proposal and planning
Description:	This process is integral to the success of the project. The outcome of this process is that all those who require a working understanding of the AeLP have sufficient knowledge to carry out their role(s) and associated responsibilities for the project proficiently.		
Roles:	• Coordinator • Project members		
Process description:	1. The Coordinator, along with the Project Team determines the education plan. • This involves decisions about the structure and type of the training. Platform awareness education can include structured training administered via the AeLP provider, or can be solely self-directed, or guided self-directed learning. 2. The Coordinator ensures the education is carried out on time, prior to the finalisation of the proposal and planning process.		
Supporting documents	• AeLP owned and managed instructions / user guides		
AeLP project	Structured training administered via the AeLP provider was organised and carried out for the core Project Team, along with the recruited Student Lesson Designers. As the project dictated the recruitment of additional Project Members at a later stage, those who had initially received structured training assisted new Project Members in guided self-directed learning.		
Key considerations:	This process can be adapted depending on the project requirements. For large projects that utilise a storyboard template for Authors, and where the Lesson Designer is not part of the authoring process, it is not integral that the Authors have an in-depth knowledge of how to build lessons within the AeLP. Rather they should receive training in understanding the storyboard template, and how to complete it. For smaller projects where the Author and Lesson Designer are one and the same person, and where a storyboard template is not used at all, it is integral that the academic who designs the storyboard and builds it directly into the system has an exceptional working knowledge of the AeLP.		

6.4 Determine requirements for standard lesson template

Sub-process:	Determine requirements for standard lesson template	**Business processes:**	Proposal and planning
Description:	The requirements for a standard lesson template are decided upon; this primarily involves decisions regarding the 'look and feel' of the proposed lessons. These requirements will later be used to build a standard lesson template within the AeLP. The template is then used for the creation of all future lessons by a given school, faculty or organisation, thus ensuring consistency in the final products.		
Roles:	• Project Team		
Process description:	1. A meeting is held, where the project team negotiates the requirements for the standard lesson template. 2. Decisions are made with regard to the visual appearance of the online lessons. Note that guidance and advice around approved standards may be required from the institution that the AeLL(s) are being created for. Decisions are required for the following items: • Branding • Standard layouts / alignment of text boxes and images • Image sizes • Icons • Standard trap state feedback wording and layout • CSS classes (if used) • Any additional layout / look / feel / wording that would ensure consistent lessons are developed		
Supporting documents	Any of the following may be used to record the standard lesson template requirements: word document, voice recording, minutes of meeting, verbal understanding.		
AeLP project	Branding for the AeLLs was created with CSS classes under guidance from The University of Queensland's Office of Marketing.		
Key considerations:	Setting the requirements prior to commencing the building of lessons within the AeLP reduces double handling and rework. For lessons, consider including interactive modules, pop-up buttons, questions and feedback. Considered the psychology of colour to direct student attention and improve readability, i.e. contrasting chromatic colours in texts. Colours enhance learning and improve comprehension.		

6.5 Build standard lesson template

Sub-process:	Build standard lesson template	**Business processes:**	Proposal and planning
Description:	The standard lesson template is built into the AeLP as a lesson. This provides a template for the construction of all future AeLLs.		
Roles:	Any Project Member can complete this process, however it is best to select the person who has the greatest understanding of the AeLP, or who is most proficient at building lessons within the AeLP. Typically this person will be either: • Coordinator • Lesson Designer (if already recruited) Additionally, members of the Project Team may be involved to review and approve the template.		
Process description:	1. Using the requirements developed by the Project Team, the standard lesson template is created within the AeLP. 2. Permission to edit / view the lesson is given to those who require it (members of the Project Team who are involved in this process). 3. The template is reviewed by members of the Project Team, with suggestions for improvements and faults noted 4. The template is amended to comply with suggestions from the Project Team. 5. The Project Team gives approval once the template is to the desired standard.		
Supporting documents	Any of the following may be used to create the standard lesson template: • Requirements document for the standard lesson template (if written) • Minutes from the meeting where the requirements were decided upon • Verbal instructions from a representative of the Project Team		
AeLP project	The Student Lesson Designer created this template from verbal instructions given by the Project Team. The lesson was then assessed and approved for use.		
Key considerations:	As this build is used as a template for all future lessons, it is integral that it is developed to the highest standard. Additionally, it must be updated whenever any changes are decided upon so that all future lessons will have the desired changes, with previous lessons being retrospectively updated.		

6.6 Build lesson in AeLP

Sub-process:	Build lesson in AeLP (Smart Sparrow)	**Business processes:**	Online build, testing and approval
Description:	This process covers the adaption of a storyboard into an AeLL within the AeLP. This is the initial draft of the lesson, which will be updated as outstanding storyboard queries are answered. Once finalised, this lesson will go on to form the master-copy, from which sequential releases are copied.		
Roles:	• Lesson Designer		
Process description:	1. Lesson Designer creates a copy of the standard lesson template. 2. The copy is renamed to the title of the storyboard to be built. 3. The information from the storyboard is inputted into the AeLP: • Resources are managed according to the project specific standards • See Section 4.4.1 for the use case example of resource repository management used by the AeLP project that this report is based on 4. Trap states are entered for each screen in the AeLL. 5. Permissions to view / edit the AeLL are given to those who require it, as a minimum this should include: • Edit access: Coordinator and Academic Storyboard Owner • View access: Academic Storyboard Contributor(s)		
Supporting documents	• Storyboard template • Resource repository		
AeLP project	Students were employed to be Lesson Designers.		
Key considerations:	If multiple persons take on the role of Lesson Designer, it is essential to ensure they are building lessons in a similar fashion, to ensure easy alteration by another person and consistent look and feel of the finished product.		

7 Project closure

7.1 Key considerations prior to commencing another AeLP project

Process	Consideration
Proposal and planning	The information contained within this document can be scaled down to suit AeLP projects of any size. Potential options for scaling down the processes within this document include: • Individuals can take on multiple roles (roles are outlined in Section 4.3), this can be scaled down to a point where a single person takes on all roles within the project • Education regarding the platform can be self-directed, using the AeLP instructions and guides • Lessons can be built directly into platform, negating the use of the storyboard template altogether • If multiple roles are taken on by a single person, the build-query and review forms may not be required
Proposal and planning	Consider the scope carefully during this phase of the project; consider limiting online lessons to a set number of slides and/or questions. This will ensure the project can be delivered on time and within budget.
Entire process	There is an inherent risk in using a third party provider as a platform for online lessons. These risks must be understood prior to commencing an AeLP project. To mitigate some of this risk, a Service Level Agreement (SLA) must be negotiated, approved and in place between the third party provider and the organisation who has ownership over the lessons.
Entire process	This project used Smart Sparrow as the third party AeLP provider. This choice was made after careful market analysis and evaluation. For any future projects, a similar market analysis should be undertaken. If a third party provider other than Smart Sparrow is chosen, certain steps within this document would require altering to suit the new system.
Project closure and consecutive releases	When releasing a lesson in a consecutive release, it is integral to check that the external links within the lesson are working prior to activating the lesson for students, and that all content is checked for accuracy and updated if required.

7.2 Lessons learnt

Process	Description of lesson learnt
Entire process	Regular meetings with the full Project Team are essential to the smooth operation of the project.
Entire process	This project employed students in the roles of Lesson Designer, Student Storyboard Reviewers, and Student Platform Evaluators. In addition, students are involved in the improvements of the lessons in consecutive releases, by way of the standard lesson surveys. Students are key to the educational process, in that: a) The adaptive learning tool provides student reflection and deeper learning b) They are part of the creation/review of interactive contents, analysis and continuous improvement c) It facilitates the adoption of the UQ Strategy 'students as partners,' involving students in future active learning processes and lessons d) Teaching that emphasises active engagement (not just giving feedback), helps students process and retain information
Entire process	Involving the faculty eLearning Designer in the process of developing AeLLs can greatly assist the project. The eLearning Design role is to be an advisor and provide recommendations on the quality of teaching and learning. The faculty eLearning Designer can: a) Play an active role in the analysis, feedback and provision of eLearning suggestions, to adopt better teaching practices versus student engagement b) Evaluate and determine learning outcomes c) Provided advice and assistance on the integration of blended learning activities
Proposal and planning	The development of a resource repository and adherence to its management throughout the project is of key importance to preventing double handling of information and unnecessary work.

Process	Description of lesson learnt
Proposal and planning	Completing platform awareness education (whether structured, guided, or self-directed) prior to the commencement of storyboard authoring is essential, and attendance should be stressed as compulsory. This ensures that essential information is captured on the first iteration of the authoring process and allows for more flexibility in the creation of lessons, as the Authors understand the platform's capabilities, strengths and weaknesses.
Proposal and planning	To set up and conduct a project such as this, on such a large scale is challenging initially. As this was implemented from a program level, stakeholder involvement was required from students and academics from each year of the degree. There must be a solid commitment to the initial time investment. As such, the academic team should be selected widely, ensuring that those who are involved are aware of the depth of project, time and resources commitments.
Proposal and planning	Storyboard construction is very time consuming! More work was involved in writing a storyboard than people expect (takes longer than to just write a case), but it lasts longer, i.e. spending the time on the storyboard, saves time in the design and creates a more enduring resource, so the project team need to be aware of the time commitments and its importance made clear.
Proposal and planning	To minimise scope creep for online lessons, a maximum number of screens or questions should be designated at the commencement of the project.

8 Appendix

8.1 Build-query spreadsheet

Screen	Lesson designer's comments/queries	Academic Storyboard Owner/Contributor Response
Eg. 22 - Differential diagnosis	e.g.: content errors or omissions, additional resources required, decisions required regarding trap states or flow of tutorial, comments left-over from review that cannot be fixed without academic input or approval, etc.	e.g.: additional content, trap state flow, new screens/questions

8.2 Review form

Screen	Evaluators comments	Academic Storyboard Owner/Contributor Response
Eg. 22 - Differential diagnosis	e.g.: any issues (i.e. documents not loading), spelling mistakes , content errors, additional resources you would like included, etc.	e.g.: update link, correct spelling, additional content

8.3 Analytics analysis report

The analytics from each lesson deployment (or 'activation') can be accessed via the Smart Sparrow system. To access the analytics navigate to the desired lesson, click the 'analytics' tab and then select the appropriate 'activation' using the activation dropdown menu. Three different categories of analytic information are accessible from this screen: overview, question explorer, and student results, see Section 8.3.2 for a breakdown of the information that is used from each section. The analytics are to be reviewed by the Academic Storyboard Owner and/or the Course Coordinator for a given AeLL.

8.3.1 Standardised business rules for the analysis of the analytics

1. The Academic Storyboard Owners and/or Course Coordinator must review the median time that students spent on the lesson and determine if it is appropriate for the given course. The length of the AeLL may need to be adjusted if it is not appropriate.
2. If >15% of students who were required to complete the AeLL have not completed it in the given timeframe then an investigation should take place into reasons for student non-compliance.
3. If >10% of students do not complete the lesson, it must be investigated to determine at which point the students stopped the lesson. If a number of students all stopped at a similar question or section within the lesson this should be investigated to determine if the AeLL requires altering to ensure student compliance
4. The proportion of questions that had an average number of attempts of >2 should be assessed; they should not comprise >50% of the total number of questions in the AeLL. These questions should be investigated in terms of the level of difficulty, and a decision must be made as to whether or not the AeLL of other course content requires altering to aid students in addressing these questions.
5. Questions where >50% of all students were incorrect on all attempts, i.e. all of these students were given the answer and moved on, should be investigated for the level of difficulty, with a decision being made as to whether or not the AeLL of other course content requires altering to aid students in addressing these questions.
6. For AeLLs that contain remedial pathways, the number of students who followed this path must be analysed. If >25% of students follow the remedial path then the AeLL should be reviewed.

8.3.2 Contents of analytics analysis report:

Overview

- Median time spent on lesson
- % Students not attempted, complete, incomplete

Question explorer:

- Question / screen at which most students who did not complete dropped out of the AeLL
- Questions that had average number of attempts >2

Question explorer:

- Questions that were incorrect on all attempts by >50% of students
- Median time spent on a given Q > than it should be
- For any remedial pathways - # of students who attempted

Class	Lesson	Date	Median time spent on lesson	% students that completed lesson	% students who left lesson as incomplete	% students who didn't attempt lesson	Q(s) where most 'incomplete' students left	Total # of questions in AeLL	Qs with an average # of attempts > 2	Qs incorrect on all attempts by >50% students	Remedial pathways used by >25% of students

8.4 Standard lesson survey

For the purposes of this project, the Checkbox system was used to capture survey information. This allowed the responses to be de-identified, which was an ethics requirement, however, for future projects it would be possible to incorporate this survey on a screen within the AeLL. An example of the standard lesson survey is provided in the table in this section.

8.4.1 Response type explanations:

- *1 – 5 scale*; response given by selecting a number between 1 and 5, with 1 being 'strongly agree', 3 being 'neutral' and 5 being 'strongly disagree'
- *Open text field*; response given by entering text into a free-text field
- *Selection*: response given by selecting an option from a list provided

8.4.2 Standardised business rules for the analysis of and response to completed returned surveys:

1. The survey results should be reviewed at the end of each deployment of the AeLL.
2. For questions with the 1 – 5 scale: All questions where >15% of the students answered unfavourably (4 or 5) should be investigated. The Course Coordinator and/or Academic Storyboard Owner then decide on a course of action.
3. For questions with the 1 – 5 scale: All questions where >50% of the students answered neutral or unfavourably (3 - 5) should be investigated. The Course Coordinator and/or Academic Storyboard Owner then decide on a course of action.
4. For questions with the 1 – 5 scale: All questions where >75% of the students answered highly favourably (1) should be investigated and recorded. This information can be used to compare with other AeLLs, to improve student experience across the board and to provide direction for the creation of future AeLLs. The Course Coordinator and/or Academic Storyboard Owner should liaise with other Academic Storyboard Owners (if any) within their faculty to share the findings.
5. For selection questions based on confidence ratings: All responses are to be reviewed by the Coordinator and/or Academic Storyboard Owner, and an appropriate course of action (if any) must be decided upon and actioned. Particular attention must be paid if >25% of respondents report being 'still not confident.' Any required action is to occur prior to any future releases of the lesson, and may include alterations to other course content not included within the scope of the AeLL.
6. For open text field questions: It is recommended responses are to be reviewed by the Coordinator and/or Academic Storyboard Owner, and an appropriate course of action (if any) must be decided upon and actioned. This is to occur prior to any future releases of the lesson, and may include alterations to other course content not included within the scope of the AeLL.

8.4.3 Contents of standard lesson survey

Question text	Response type
What course was this lesson for?	Open text field
What was the lesson title? (Animal name and scenario will do e.g. Molly 2 or Molly Vac/HD)	Open text field
Which of the following best describes you? • SVS Clinician • SVS Lecturer • External reviewer • Student (BVSc I) • Student (BVSc II) • Student (BVSc III) • Student (BVSc IV) • Student (BVSc V) • External reviewer • Student BVetTech I • Student BVetTech II • Student BVetTech III • Non-SVS student • BSc student	Selection
I had a clear understanding of the aims and goals of the lesson	1 – 5 scale
The lesson was well structured	1 – 5 scale
The feedback provided in this lesson helped me to understand the topic	1 – 5 scale
The instant feedback/hints provided in the lesson helped me when I got questions wrong.	1 – 5 scale
Having more of these lessons would help me in my learning	1 – 5 scale
I found the lesson was interesting and engaging	1 – 5 scale
Being able to access this lesson outside the classroom makes it more useful to me	1 – 5 scale
The lesson was tailored to varying levels of student skills	1 – 5 scale
I felt that the lesson encouraged me in my independent learning	1 – 5 scale
It was easy to find the lesson and navigate my way through.	1 – 5 scale

Question text	Response type
The resource helped to improve my understanding of the topics/content.	1 – 5 scale
The resources and questions were able to integrate different course's content	1 – 5 scale
Having completed the resource; how do you rate your confidence in using incremental data (such as history, clinical exam findings, diagnostic test results) to refine your list of possible pathological processes/ differential diagnoses? • I am still not confident • I feel confident that I have some basic knowledge • I feel confident that I have enough knowledge to apply this in a similar scenario • I feel very confident and could apply this is a new scenario • Other (please be specific)	Selection / open text field if 'other' chosen
Having completed the resource; how do you rate your confidence in applying pathophysiology in the diagnostic work-up of a case (e.g. link disease process with clinical signs, diagnostic test results)? • I am still not confident • I feel confident that I have some basic knowledge • I feel confident that I have enough knowledge to apply this in a similar scenario • I feel very confident and could apply this is a new scenario • Other (please be specific)	Selection / open text field if 'other' chosen
What did you like best about this lesson?	Open text field
What did you like least about this lesson?	Open text field

8.5 Heuristic evaluators survey

Academic and Student Lesson Evaluators complete this survey during the online build, testing and approval process. As it is completed as part of the lesson evaluation any issues that are raised as a result of the survey are to be actioned and the lesson amended prior to the AeLL being released to the student body.

8.5.1 Response type explanations:

- *1 – 5 scale*; response given by selecting a number between 1 and 5, with 1 being 'strongly agree', 3 being 'neutral' and 5 being 'strongly disagree'
- *Open text field*; response given by entering text into a free-text field
- *Statement*: no response required – this is simply the text provided in the survey
- *Selection*: response given by selecting an option from a list provided
- *Order list*; response given by placing a number in the text box next to each option given

8.5.2 Analysis of returned survey

1. For questions with the 1 – 5 scale: All questions where >15% of respondents answered unfavourably (4 or 5) should be investigated. The Course Coordinator and/or Academic Storyboard Owner then decide on a course of action.
2. For questions with the 1 – 5 scale: All questions where >50% of the respondents answered neutral or unfavourably (3 - 5) should be investigated. The Course Coordinator and/or Academic Storyboard Owner then decide on a course of action.
3. For questions with the 1 – 5 scale: All questions where >75% of the respondents answered highly favourably (1) should be investigated and recorded. This information can be used to compare with other AeLLs, to improve student experience across the board and to provide direction for the creation of future AeLLs. The Coordinator and/or Academic Storyboard Owner should liaise with other Academic Storyboard Owners (if any) within their faculty to share the findings.
4. For open text field questions: All responses are to be reviewed by the Coordinator and/or Academic Storyboard Owner, and an appropriate course of action (if any) must be decided upon and actioned.
5. The final question, is a SVS specific question for Academic and Student Evaluators to indicate how they would like to use or see the lesson utilised.

8.5.3 Contents of the heuristic evaluators survey

Category	Question text	Response type
Initial questions	Lesson title (e.g. Molly 1):	Open text field
	What type of reviewer are you? (Select which one applies): • SVS Clinician • SVS Lecturer • External reviewer • Student (BVSc I) • Student (BVSc II) • Student (BVSc III) • Student (BVSc IV) • Student (BVSc V)	Selection
	How long did it take you to complete the lesson? (Not including completing the surveys)	Open text field
	Please estimate how long it might have taken you had you been undertaking the lesson as a student would, i.e. not intentionally getting everything wrong nor making notes.	Open text field
1. Visibility of system status; feedback	The eLearning platform keeps the learner informed through timely appropriate feedback?	1 – 5 scale
	I always knew where I was, which actions I could take, and how they can be performed?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
2. Match between the system and the real world: language and conventions	The eLearning platform employs words, phrases, and concepts familiar to the learner or appropriate to content, as opposed to system-orientated terms?	1 – 5 scale
	Wherever possible the eLearning program follows real-world conventions, making information appear in a natural and logical order?	1 – 5 scale
	The interface is user friendly, given content of program and target audience?	1 – 5 scale
	The content is clinically accurate; presented in sufficient detail, and matched to experience?	1 – 5 scale
	The scenarios are realistic?	1 – 5 scale
	Any further comments regarding these questions?	Open text field

Category	Question text	Response type
3. Consistency and conformity to standards	Words, situations, and actions mean the same thing; application uses commonly accepted platform conventions and conforms to user expectations?	1 – 5 scale
	The product adheres to recognised standards for software interaction?	1 – 5 scale
	Novel interactions are appropriate; and applied consistently?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
4. Minimises memory load: recognition rather than recall	Objects, actions and options are accessed easily. The user does not have to remember information from one part of the application to the other?	1 – 5 scale
	The program speaks for itself rather than needs an extensive manual or other documentation interfering with learning?	1 – 5 scale
	The program provides user-friendly hints and/or clear direction offering the learner assistance where appropriate?	1 – 5 scale
	There is a program map or table of contents so learner can see what has been seen and what has not?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
5. Aesthetic and minimalist design	No irrelevant information competing with relevant information and diminishing their relative visibility?	1 – 5 scale
	Animation and transitions are used sparingly?	1 – 5 scale
	Font choices, colour and sizes consistent with good screen design?	1 – 5 scale
	The screen layout of resources is clear and easy to use?	1 – 5 scale
	The program utilises white space and other screen design appropriately?	1 – 5 scale
	Information is presented in such a way that it is easy to understand?	1 – 5 scale
	Any further comments regarding these questions?	Open text field

Category	Question text	Response type
6. Help and documentation	*It is better if the system can be used without documentation. If required it should be concise, easy to search and task-centred.*	Statement
	Help/resources provided are screen or content specific?	1 – 5 scale
	Additional resources/help are available when needed?	1 – 5 scale
	Additional help/resources are written clearly?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
7. Error prevention and tolerance.	*Careful design to prevent errors occurring. Despite user errors, the intended result may still be achieved by error correction or good error management.*	Statement
	The program is designed so the learner recognises when they have made a mistake related to input rather than content?	1 – 5 scale
	The learner is provided a second chance when unexpected input is received e.g. 'your answer is too short' or 'check your spelling'?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
8. User control and freedom	*The user can control the direction and pace of the application. There should be clearly marked exits available if they take wrong options by mistake. Support undo and redo.*	Statement
	The program distinguishes between input error and cognitive errors, allowing recovery from the former always, and the latter when pedagogically appropriate?	1 – 5 scale
	The learner can exit the tutorial when desired, and easily return to the closest logical point in the lesson?	1 – 5 scale
	Instructions for navigation are clear?	1 – 5 scale
	Any further comments regarding these questions?	Open text field

Category	Question text	Response type
9. Interactivity	*The eLearning program provides content-related instructions and tasks that support meaningful learning. (e.g. the program provides meaningful interaction for the user, rather than simply presenting long sections of text?)*	Statement
	Activities/questions are engaging?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
10. Message design	*The eLearning platform presents information in accord with information processing principles (e.g. is the most important information on the screen placed in areas most likely to attract attention).*	Statement
	The eLearning program follows good information presentation guidelines for organisation and layout?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
11. Learning design	*The interactions in the eLearning program have been designed with sound principles of learning theory.*	Statement
	The lesson follows appropriate learning design to achieve stated objectives?	1 – 5 scale
	The program engages learners in tasks that are closely aligned with learning goals and objectives?	1 – 5 scale
	Learning objectives are clear?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
12. Media integration	The inclusion of media serves clear pedagogical and/or motivational purposes?	1 – 5 scale
	The media is effective i.e. is connected to objectives and design of program?	1 – 5 scale
	Media is appropriate to message?	1 – 5 scale
	Where appropriate to content, media is included for remediation and/or enrichment?	1 – 5 scale
	Video and audio controls work?	1 – 5 scale
	Any further comments regarding these questions?	Open text field

Category	Question text	Response type
13. Instructional assessment	Program provides assessment opportunities aligned with program objectives and content?	1 – 5 scale
	There is self-assessment, feedback and remedial directions?	1 – 5 scale
	There is higher order assessment (analysis, synthesis and evaluation) rather than just lower order (recall, recognition)?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
14. Resources	Program provides access to all resources necessary to support effective learning?	1 – 5 scale
	There are a range of resources, appropriate to learning context?	1 – 5 scale
	All weblinks or intranet resources, links up to date?	1 – 5 scale
	Resources are provided in manner that replicates, as closely as possible, their availability and use in the real world?	1 – 5 scale
	Content up to date?	1 – 5 scale
	Any further comments regarding these questions?	Open text field
15. Feedback	Program provides feedback that is contextual and relevant to the problem or task in which the learner is engaged?	1 – 5 scale
	Feedback is given at specific times, tailored to the content being studied, problem being solved or task being completed?	1 – 5 scale
	Feedback provides learner with information concerning their current level of achievement within the program?	1 – 5 scale
	Program provides learner with opportunities to access extended feedback from instructors, experts, peers or others through email or other?	1 – 5 scale
	Any further comments regarding these questions?	Open text field

Category	Question text	Response type
Overall queries	Do you have any overall comments regarding the strengths of the tutorial?	Open text field
	Do you have any overall comments regarding problems or weaknesses with the tutorial?	Open text field
	I was engaged and enjoyed completing the tutorial?	1 – 5 scale
	I believe this tutorial would be beneficial to student's understanding of the content?	1 – 5 scale
	Please rank the effectiveness following delivery methods (most effective at the top) for this tutorial. (* Indicates students would access the tutorial via the course Blackboard website as a non-contact activity but with an advised time frame for completion.) • Optional self-directed learning* • Compulsory self-directed learning* • Replacing a lecture* • As a facilitated tutorial • Replacing a reading* • Replacing an assignment* • Replacing a tutorial*	Order list
	Which course/s do you believe this tutorial is best aligned with?	Open text field

8.6 Storyboard template

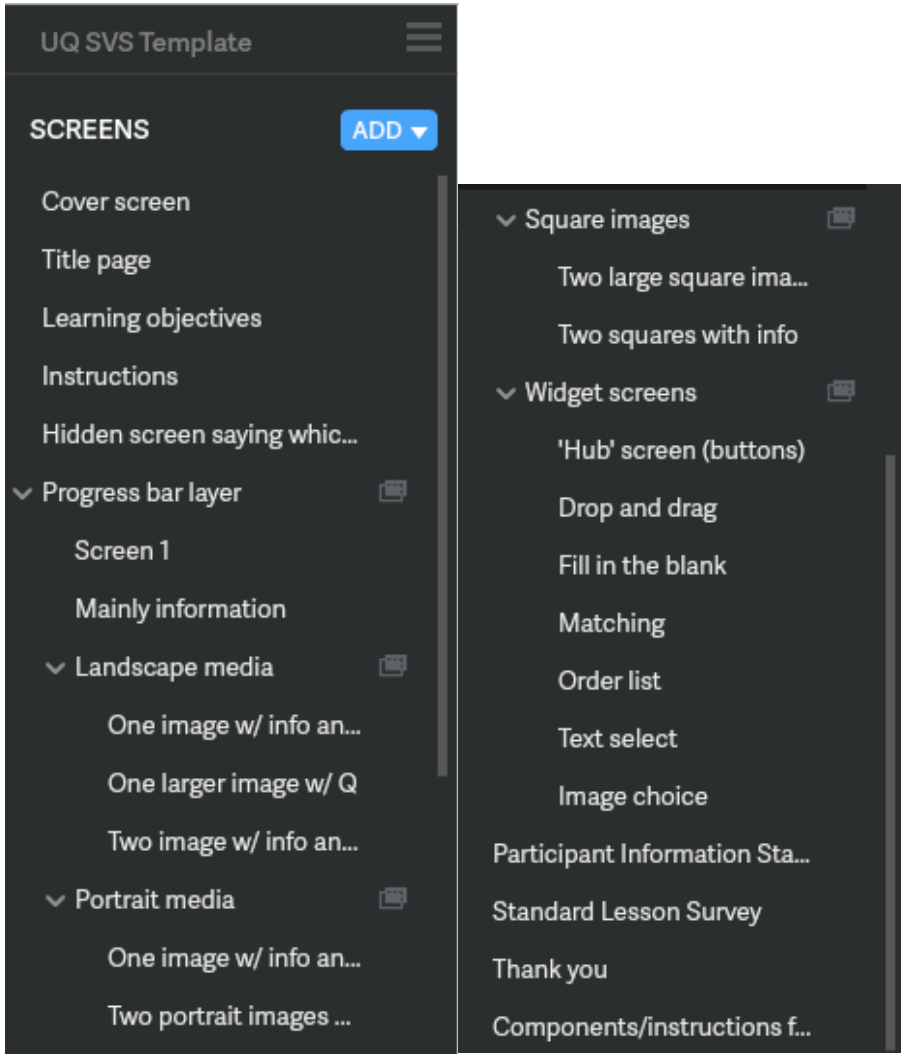
Q1. Screen Heading:	**< This is the heading of your screen - this will be visible to students (and can be the same as previous screens) >**	
Q2. Is this a sub-screen of a previous screen?	☐ **No**	Go to Q3
	☐ **Yes**	<Enter your answer here> List the elements of the main screen that you want to remain on this sub-screen i.e. images, videos, text. If all elements except the question are to remain the same, just state 'all except question' and proceed to Q5
Q3. Is there any core storyboard content that the student designers need to know, but that isn't part of the on-screen content?		
	<Enter information here>	
Q4. What content do you want on the screen?		
☐ **Text:**	<Enter your answer here> Record any text you want displayed on the screen in the text field. Format the text as you wish it to appear (i.e. bold/italics/relative font sizes/bullet points etc.)	
☐ **Video/s**	<Enter your answer here> Please write the file name of the video(s) that you wish to be on this screen	
☐ **PDF, JPG/s:**	<Enter your answer here> Please write the file name of the image(s) that you wish to be on this screen	
☐ **Popups**	**Select your icon:** ☐ **Hint/tip** ☐ **Information** ☐ **Warning**	
	Indicate required content:	<Enter your answer here> Record any text you want displayed on the screen in the text field. Format the text as you wish it to appear (i.e. bold/italics/relative font sizes/bullet points etc.). If you wish for images or videos to be in the popup, please record the file name here. Note: you can have a combination of videos, text and images.

Q1. Screen Heading:	**< This is the heading of your screen - this will be visible to students (and can be the same as previous screens) >**	
☐ **Widget/s**	**Select widget type:**	☐ **Button** ☐ **Progress bar** ☐ **Fill in the blank** ☐ **Matching** ☐ **Drag and drop** ☐ **Order list** ☐ **Text select** ☐ **Image choice**
	Indicate required content	<Enter your answer here> The required information is dependent on your choice of widget. If all you require is a progress bar, you can leave this section blank. Requirements for what information student lesson designers need in order to set-up the various types of widgets are in section X of this document.
Q5. Include question(s) on this screen?		☐ **No** Go to Q6 ☐ **Yes** Indicate details of question(s)
	Type of answer:	☐ **Text entry** ☐ **Dropdown** ☐ **T/F** ☐ **Multi choice selector**
Question name	<Insert question name> This will appear in the analytics, but will not be visible on the lesson itself	
Question text:	<Insert question text > This is the actual question/instructions that the student will see. Note: do not include questions that are to appear on sub-screens.	
Body of question	<Insert body of question, or record file name of supporting document i.e. excel spread sheet> Required information is dependent on the question type. See section of this X document for key considerations of each question type. If you are providing the student with multiple options, ensure you indicate the correct one.	
Q6. Nominate your desired trap states	Delete, leave blank or rename those that aren't applicable	
Correct state	Rule	<Insert the correct answer to your question. If your question was a text input field record the key words that you require to be in the student's answer>
	Feedback	<>

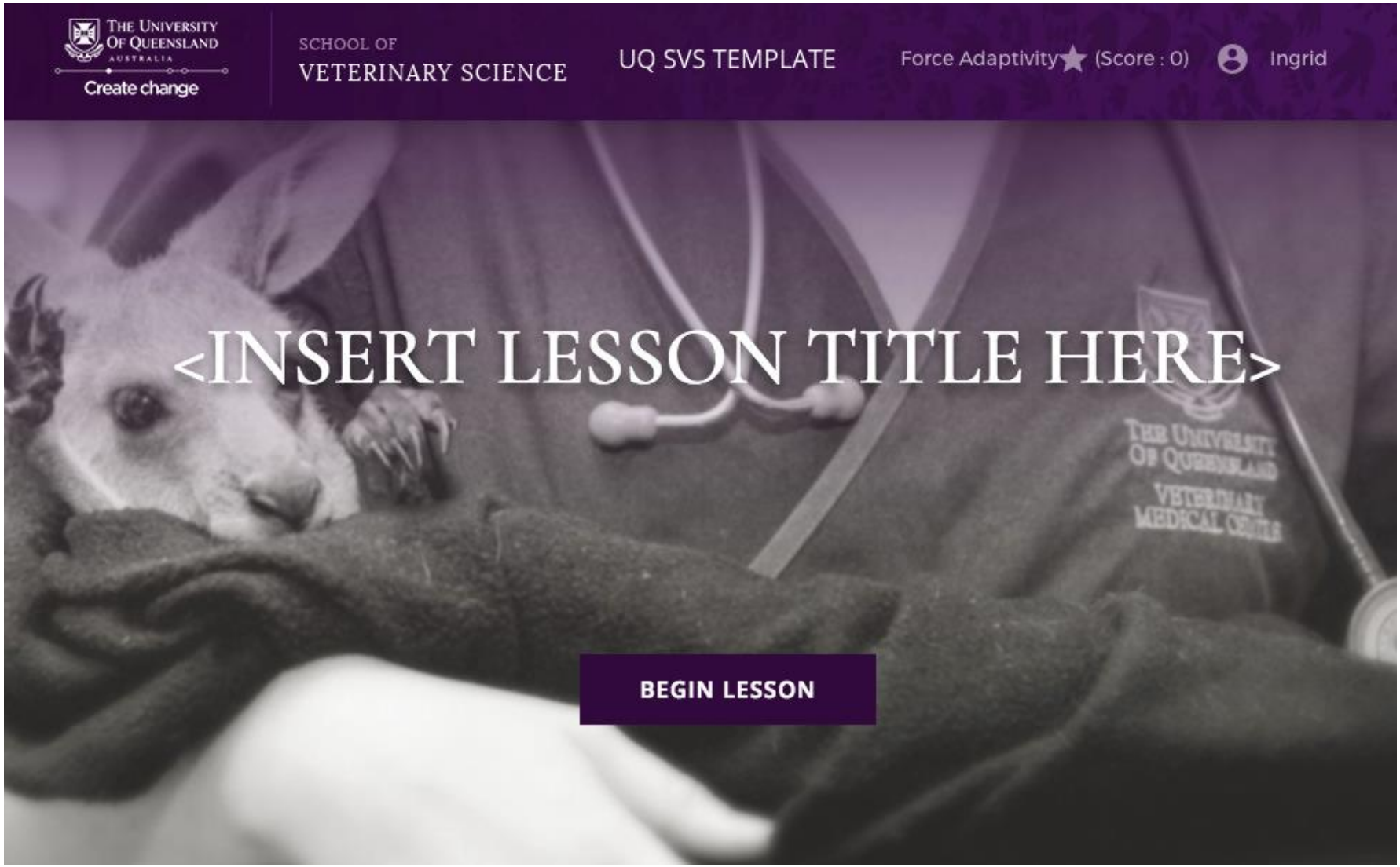
Q1. Screen Heading:	**< This is the heading of your screen - this will be visible to students (and can be the same as previous screens) >**	
	Proceed to screen	<>
No answer	Rule	<>
	Feedback	<>
	Proceed to screen	<>
Incorrect state	Rule	<>
	Feedback	<>
	Proceed to screen	<>
Too many attempts	Rule	<>
	Feedback	<>
	Proceed to screen	<>
Partially correct	Rule	<>
	Feedback	<>
	Proceed to screen	<>
Proceed to X screen	Rule	<>
	Feedback	<>
	Proceed to screen	<>
Q6. Any additional information/notes you wish to provide the student lesson designer?		
	<Enter your answer here. Please indicate which layout you'd prefer if your content does not perfectly match the selected layout, the student lesson designer will take the main concept and alter it slightly>	

8.7 Standard lesson template

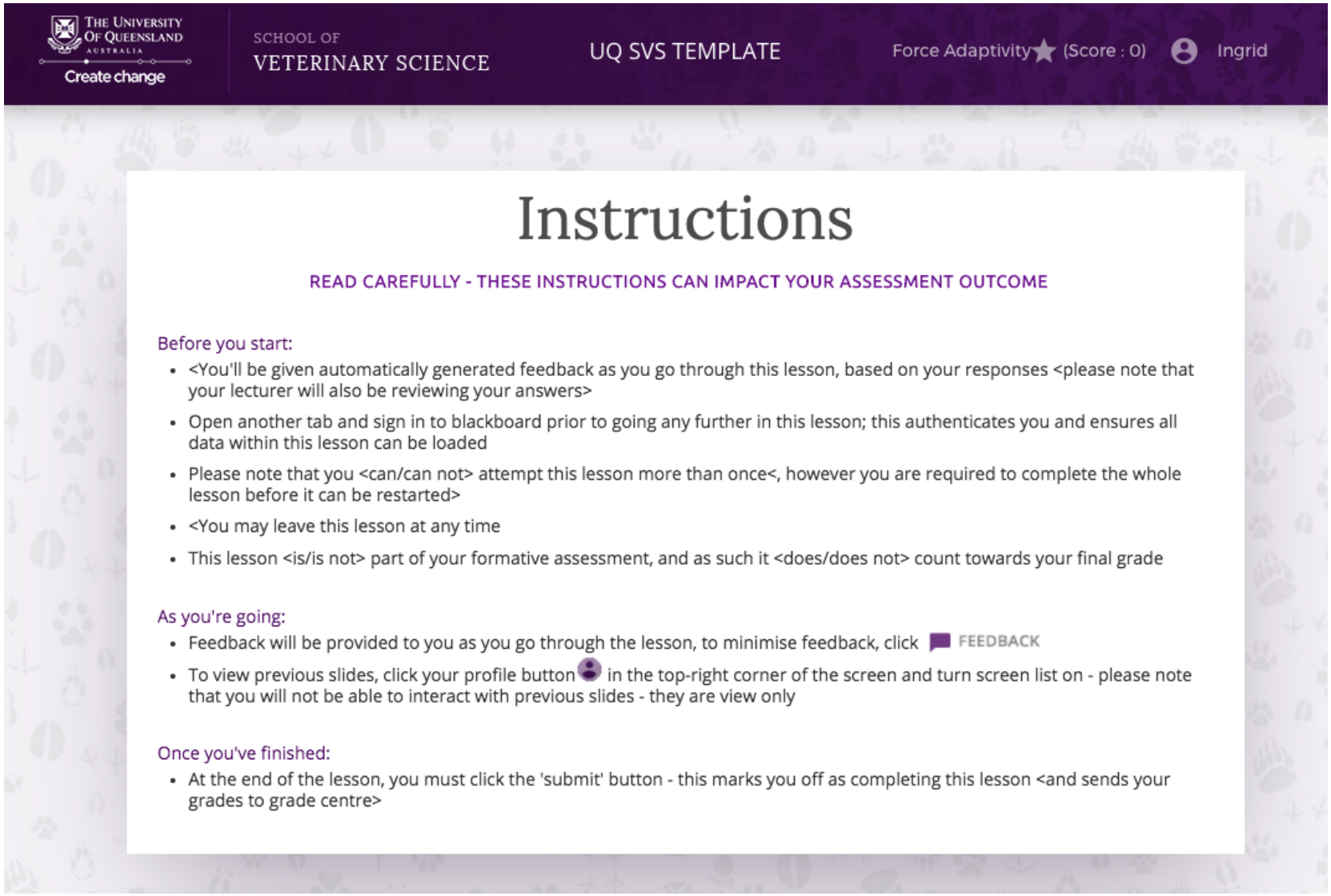
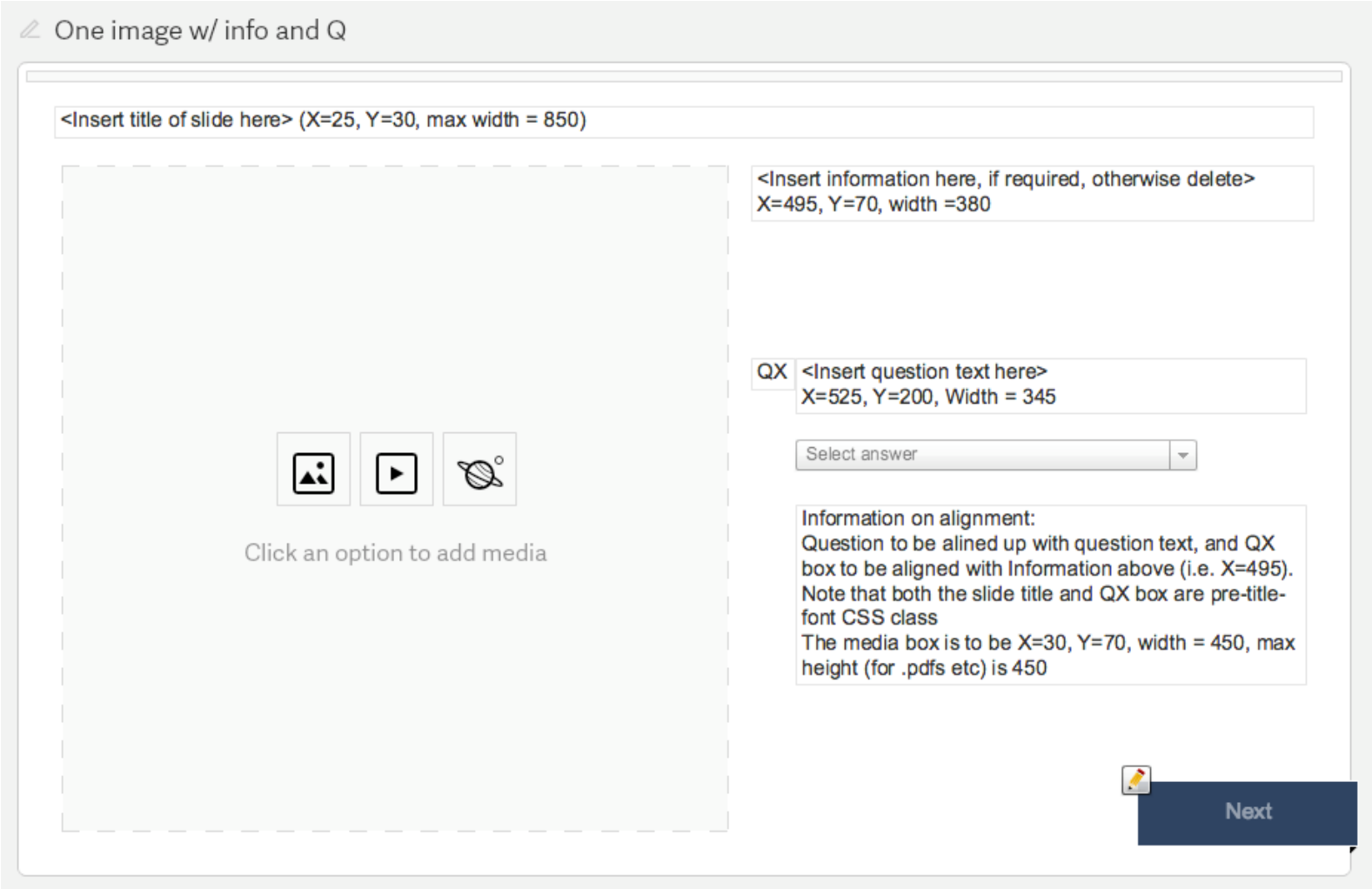
Screen-list included in the UQ SVS standard lesson template:



Example of branding and colour scheme used on the title screen in the UQ SVS standard lesson template:



Example of branding, colour scheme, and the standard instructions screen used in the UQ SVS standard lesson template:



Example of the layout and alignment instructions included within the UQ SVS standard lesson template: