

Key Stakeholders

Stakeholder and Job Title	(ID) Role(s)	Concerns
Lynn Dixon	Instructional Designer	Designing a touch-screen kiosk learning experience for the new Cairns Aquarium wetlands exhibit; meetings the clients’ wants/needs, within budget and time limits; learning about designing for touch-screen interfaces; coordinating with appropriate departments at Telopea (technical developers, graphic designers, voice talent); authentic representation of Aboriginal voice(s), stories, relationship with wetland areas.
Janette Parks	ID Partner	Developing and sustaining client relationships/contracts for Telopea; keeping project on time and within budget (“Medium” interactivity); Telopea interdepartmental coordination (development resources).
Laura Barton	Client (Project Sponsor)	Major reviews and sign-offs of project work; ensuring government funds are used appropriately/projects are completed within allotted time and budget; regional information centers are named/described in kiosk software; kiosk themes are addressed (connections, the different types of wetlands, role of wetlands in Aboriginal culture/heritage).
Ben Williams	SME, Client	Working with Lynn to provide expertise and resources for kiosk content; provide reviews/feedback prior to major reviews/sign-offs; staying within budget and on time; kiosk themes are addressed (connections, the different types of wetlands, role of wetlands in Aboriginal culture/heritage); collecting data/metrics related to user engagement to make future improvements to kiosk.
Aquarium Visitors	Audience	Due to wide age-range and background knowledge/perspectives of visitors, concerns vary but could include: kiosk text is at an appropriate readability level; translation options for text/audio;

		an engaging/relevant learning experience.
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Key ID Challenges

While some elements of the Analysis and Design phases have been completed, there are still key ID Challenges in these phases.

Analysis Challenge: There is a wide and varied audience for the kiosk. So, without conducting a thorough learner analysis, or being given access to useful data about the Aquarium visitors, it will be difficult to develop a kiosk learning experience that is accessible, engaging, and relevant for every visitor.

Design Challenge: It is challenging to meet the high expectations of the clients – multiple themes, regional recognition, authentic representation of Aboriginal voices/heritage, animation, audio – with the limited time and budget for the project.

Case-Specific Challenges

- Diverse Target Audience: Kiosk audience includes school children/students, senior citizens, wetlands experts, and international visitors with limited English.
- Project Scope/Changing Client Expectations : Clients’/SME’s requests and expectations (i.e., animation) are outside of “Medium” level.
- Client/SME would like fancy animation and/or a game to support visitors’ understanding of threats to wetlands.
- Need to coordinate with multiple Telopea employees/departments to develop kiosk audio and software that tracks user engagement.

- Instructional Designer's lack of experience/expertise designing for a touch-screen kiosk/interface.
- Instructional Designer (ID) has limited time/is working on multiple projects.

Prioritization of ID and Case-Specific Challenges

The first priority is to address and manage the clients' high expectations related to content and graphics, given the limited time and budget for each element of the project: 20 minutes of content time to address all themes, name/describe regional sites, as well as discuss Aboriginal heritage, culture, and relationship with the wetlands; development of animated graphics and/or a game; and, authentic Aboriginal voice for audio/narration. The next priority would be to locate any additional, relevant data about the audience that would support the team's ability to develop content, graphics, and/or games, as well as accessibility features, that would engage and support the Aquarium's large and varied audience for the kiosk learning experience. The final priorities would be for the ID to become more familiar with best practices for designing a touch-screen kiosk/interface learning experience, coordinate with Telopea employees/departments to develop non-Aboriginal audio and metrics software, and schedule/prioritize to ensure completion of work on all projects within time and budget constraints.

Rationale for Prioritization

In order to move forward with the project and determine feasible solutions that meet the clients' needs, it is essential for Lynn and/or Janette to clarify what is and is not possible given time and budget. Once expectations are appropriately managed, the team can make decisions about the types of graphics and/or games to include in the kiosk, as well as locate someone of Aboriginal descent to develop stories/audio for the kiosk. While a thorough learner analysis is generally part of the instructional design process, in this case it is less of a priority because, depending on the type of learner analysis conducted, it could be

time-consuming and may not yield very useful information, given the extreme variances of the target audience (i.e., skills, knowledge, attitudes, motivation, characteristics, etc.) (Dick, Carey, & Carey, 2015). Better understanding the interface, coordinating with other departments/employees, and creating a schedule to meet deliverables are the final priorities because they can be addressed in tandem with other design tasks, as well as during later phases of the project (e.g., Development, Implementation, and/or Evaluation).

Academic Research to Support Solutions

Höffler and Leutner (2007) indicate that there is little difference between using animations versus static images to support learning outcomes (Mayer 2001, 2005; Mayer & Moreno, 2002, as cited in Höffler & Leutner). Additionally, the article's discussion of empirical evidence that demonstrates multimedia learning – the coordination of verbal and pictorial information – improves learning outcomes (Mayer 2001, 2005) further support the decision to suggest the use of static, rather than animated images, for the purpose of learning the types of simple facts (e.g., the different types of wetlands in Australia, regional site names/descriptions) that will be presented in the Aquarium kiosk software (Höffler & Leutner, 2007).

Sung and Mayer (2012) emphasize the importance of including graphics to increase learner engagement (Sung & Mayer, 2012), which seems like it would be particularly important when trying to meet the learning needs of a large, heterogeneous audience like the one in this case. Also, the distinction that Sung and Mayer (2012) draw between the three types of graphics – instructive, seductive, decorative – support the conclusion that the flying bird animation requested by Ben, the project SME, would likely be considered a seductive graphic that could "...prevent the learners' construction of appropriate knowledge..." due to the fact that the learner may direct too much cognitive attention to the animation

(“irrelevant content”) rather than the information and ideas (themes) the clients are hoping to relay through the kiosk learning experience (p. 1619).

Solutions and Challenges Addressed

Solution 1: Request access to visitor data in order to analyze learners’ entry skills, background knowledge, attitudes about content, motivation for learning, abilities, learning preferences, and characteristics (Dick, Carey, & Carey, 2015). Instead of including a fancy animation in the kiosk that is outside of the budget, create static instructive graphics (i.e., photos) (Ertmer, 2019, p. 234) and text, as well as utilize public domain and/or existing aquarium video/audio to help convey key information in each section of the kiosk design. Design a simple game(s) (e.g., I Spy and/or Scavenger Hunt) that helps learners identify threats to wetlands and draw connections between wetland areas and Aboriginal culture.

Design challenges addressed	Case-specific challenges addressed
<ul style="list-style-type: none"> • Meets clients’ needs, while also conveying key information related to themes, regional sites, and Aboriginal culture. • Provides engagement, interactivity, and visual cues for a heterogeneous audience. • Would help the ID and clients better understand the needs of learners. • Could help lower clients’ expectations for graphic elements and content, based on data collected. 	<ul style="list-style-type: none"> • Falls within project budget and time constraints. • Includes a gaming element. • Can be developed with help and coordination between Telopea departments and resources. • Will help ID focus on learning most essential elements of touch-screen interface. • Allows for the use of existing Aquarium graphics/photos and/or video. • Simple game(s) and the use of existing graphics will not take much time to add to kiosk design. • Better able to address the varied needs of a heterogeneous audience. • Could help narrow scope of content with a focus on what audience most wants to know/stay within allotted 20 minutes of content time.

	<ul style="list-style-type: none"> • Could help team make decisions about the types of interactivity (games) and graphics to include in the kiosk.
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Solution 2: Request access to the aquarium’s visitor/member email list and develop a learner survey to send to visitors, in order to collect and analyze relevant learner information related to kiosk elements (i.e., preferred learning styles, content type/delivery preferences, attitudes toward content, background knowledge, etc.). Create a simpler animation than the bird’s eye view requested by the SME that could be included in the design of one section of the kiosk and use public domain/free static instructive (Ertmer, 2019, p. 234) images, in combination with limited text, to convey key information and ideas in other sections of the kiosk.

Design challenges addressed	Case-specific challenges addressed
<ul style="list-style-type: none"> • Addresses client’s request for animation. • Provides multiple entry points/types of content for a heterogeneous audience. • Supports the ID’s and clients’ understanding of learner needs/preferences. 	<ul style="list-style-type: none"> • Falls within project budget and time constraints. • Can be developed through coordination with Telopea departments and resources. • Will help ID focus on learning most essential elements of touch-screen interface. • Could increase engagement for a heterogeneous audience. • Could help narrow scope of content with a focus on what audience most wants to know/stay within allotted 20 minutes of content time.

Pros and Cons of Each Solution

Solution 1

Pros	Cons
<ul style="list-style-type: none"> • Static instructive graphics support learning outcomes (Sung & Mayer, 2012). • Can easily be integrated into the existing design and stay within 20-minute content time (existing design on p. 234 shows 7 minutes of time remains for content). • I Spy/Scavenger Hunt type games are relatively basic games that are simple/easy to design and develop. • The use of existing Aquarium instructive graphics along with audio/video will help stay within budget. • Instructive graphics and games support engagement and learning for a variety of learners. • Allows team to better understand needs/wants of learners. • Could help team focus on most important elements/content within the kiosk design. 	<ul style="list-style-type: none"> • Game(s) could distract from content if not carefully designed to enhance, rather than take the place of content. • Static instructive images are not the fancy type of graphic requested by client/SME. • May be difficult to appropriately integrate Aboriginal perspective/ representation in game(s). • May not yield very useful information, due to extreme heterogeneity of the learning audience.

Solution 2

Pros	Cons
<ul style="list-style-type: none"> • Client/SME’s request for animation is addressed. • The use of public domain/free instructive graphics along with audio/video will help stay within budget. • Instructive graphics in combination with text support engagement and learning for a variety of learners. • Allows team to better understand learner needs. • Could help team focus on most important elements/content for the kiosk design. 	<ul style="list-style-type: none"> • Animation could distract from content/learning if it is built as a seductive graphic that requires an inappropriate amount of cognitive attention to the animation (“irrelevant content”) rather than the information the clients are hoping to relay (Sung & Mayer, 2012). • Using a relatively large portion of the budget to develop an animation for one section of the kiosk design may limit the images and content that can be developed for other sections. • Visitors/members may not return surveys or return surveys in the time allotted and therefore

not allow for the collection and analysis of relevant learner data.

Final Recommendation

I recommend accessing and analyzing existing visitor data, the use of static instructive graphics (instead of animation), along with simple games (e.g., I Spy, Scavenger Hunt) for the kiosk. I believe this would be the best choice not only because it will provide essential learner information, but also because the use of relevant graphics and games are likely to engage/appeal to the majority of Aquarium visitors and meet the vast majority of the clients' wants and needs. Additionally, these types of instructive materials should be relatively easy to design/develop with the help of Telopea employees and incorporate into the allotted 20-minute content time. This approach would likely allow the team to complete the design phase of the project relatively quickly and move onto at least a basic level of development, which could allow them to share the content, graphics, and game(s) with a pilot group of users – the Aquarium's senior citizen group – and request their feedback to make improvements to the kiosk software prior to the exhibit's opening.

As far as the possible cons, the ID can work closely with the SME to ensure that the game(s) enhance, rather than distract from the content. This could also be an element that pilot users are specifically asked about, so their feedback can be used to refine the games. While static instructive images are not the fancy type of animation the SME would like, sharing the research of Höffler and Leutner (2007), as well as Sung and Mayer (2012) could help the SME understand that the animation is at best not necessary to meet the learning outcomes, and at worst could distract from and/or negatively impact the learning experience. It will also be important for the SME to 1) closely work the individual of Aboriginal descent to ensure the information, images, perspective, and/or stories the person shares align to the kiosk

content, and 2) work with the ID to make sure Aboriginal content is appropriately integrated into the kiosk design.

If the Aquarium and/or Telopea do not have all the instructive graphics for the kiosk, contingency plans could include locating and using instructive graphics from free image sites (e.g., Wikimedia Commons) or paid sites (e.g., Shutterstock) if pricing falls within budget. While an I Spy game that is connected to the instructive static graphics should be fairly easy to integrate into the kiosk software design, the scavenger hunt may require more advanced technical manipulation that would fall outside of budget and time constraints. In either case, a contingency plan could be to create these as paper-based games that are available near or on the kiosk and that lead visitors to other parts of the exhibit and Aquarium.

References

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- Ertmer, P.A., Quinn, J.A., & Glazewski, K.D. (2019). *The ID casebook: Case studies in instructional design*. Routledge.
- Höffler, T.N., & Leutner, D. (2007). Instructional animation versus static pictures: A meta-analysis. *Learning and Instruction (17)*, 722-738.
- Sung, E., & Mayer, R.E. (2012). When graphics improve liking but not learning from online lessons. *Computers in Human Behavior (28)*, 1618-1625.