ETAD 874

Assignment 1: Needs Assessment Report

nisotak Usability Study

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ETAD 874 Advanced Instructional Design

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Part A: Needs Assessment

Defining the Need

Background

The nisotak Project began in 2020 with the goal of developing a mobile application intended to provide language instruction and exercises for learning nehiyawewin (Cree) morphology and syntax. Additionally, the Project seeks to develop "a database of morphemes and syntactic structures, a backend, auxiliary tool to serve content created and updated by the teachers, and a front-end, client application for learning and practicing Cree syntax through engaging and culturally relevant activities." (Koole & Morrison, 2019, P.1). The principal investigator for the Project is Dr. Marguerite Koole, Associate Professor at the University of Saskatchewan. She worked alongside language experts to assist in the development of the application.

Need

The Project can be broken into two parts: the teacher interface and a learner app. The app is available on both iOS and Android.

As outlined in the MOU provided by Dr. Koole and Dr. Morrison (2019), a few areas of need are required to make this app a fully functional tool. These needs are:

- Resources or guides for teachers to create their own lessons for the app. This would include creating text-based lessons, creating multiple choice questions, creating and editing audio, and how to create and edit images.

- Resources or guides for the learners using the app. This would include instructions on downloading, installing, and using the app.

- Develop a game or interactive components to keep learners engaged and motivated to try new lessons.

- Provide adjustments and improvements to the interface and usability of the app.

Usability Design

To ensure learners achieve the desired outcomes and goals of the nisotak app, a team of Instructional Designers from the University of Saskatchewan will be conducting a usability test of materials. The Usability Project Team (UPT) will be recruiting participants such as teachers and students from within the K-12 school system. The UPT will observe the participants' interaction with the app, collect feedback on their experience and report those findings to the project team and app developer.

Solving the Need

The Usability Project Team will be researching, developing, and implementing testing tools to seek feedback on the interface and usability of the app. The team will seek feedback from potential end-users of the app, both teachers and students. The feedback from the usability study can be implemented by other teams in the project to make alterations to the graphical interface, the flow of content, and improve the pedagogical strategies incorporated in the app.

Goal Statement:

To ensure learners achieve the desired outcomes and goals of the nisotak app, a team of Instructional Designers from the University of Saskatchewan will be conducting a usability test of materials to ensure the technical effectiveness, responsiveness, ease of use, safety, playability, security, interactivity, efficiency, and user satisfaction of the nisotak1 mobile application. The UPT will be recruiting participants such as teachers and students from within the K-12 school system. The team will observe the participants' interaction with the app, collect feedback, and recommendations on their experience and report those findings to the project team and app developer.

Design and Development Plan / Implementation and Maintenance

Usability testing will be designed to evaluate the interface functionality, pedagogical strategies, and usability of the application and teacher portal. There will be a number of considerations:

- technical effectiveness
- responsiveness
- ease of use
- safety
- playability
- security
- interactivity
- efficiency
- user satisfaction

The usability study team is seeking input from the interface development teams to determine whether any initial usability feedback could be provided by the usability study team members. This may be useful for early revision.

Usability testing will be prepared for test users. We will incorporate two usability test options:

- a questionnaire with Likert scale responses

- a laboratory style test with pre-determined tasks

The questionnaire will include evaluation of interaction and esthetic using Likert scales for quick completion. This will be created in Google Forms and provided to users. A brief pre-test document or description will be created to provide users with direction for specific areas of evaluation.

The laboratory-style testing will allow test users to provide individualized feedback. The test will involve a series of tasks for the user to complete. The facilitator will have an outline with questions to prompt the user to share their interaction experience, feelings while using the application, and any recommendations. The facilitator will make notes during the testing experience. The results will be summarized by the UPT and provided to the other project teams.

Implementation of the testing will occur once the testing tools are prepared, and the Instructional Design Advisory Group gives approval. Quality assurance and evaluation of the testing process will occur throughout the testing, review and summary process. The UPT will review the responses to the questionnaire and interviews and consider adjustments to the testing tools as necessary.

Project Staffing

The Usability Project Team (UPT) consists of three members. Shelby Hack, Stephen Hadden and Rob Lovelace. These three members will be solely responsible for the usability testing of the nisotak app. Additionally, the UPT will consult with the Instructional Design Advisory Group and other members from the overall instructional design team for the nisotak Project to help guide some of our decisions, plans and processes.

Work Breakdown Structure

The preliminary work breakdown structure for the UPT is as follows:

- Weekly team meetings every Sunday morning for approximately one hour. During these meetings, we assign tasks for the week and discuss the learning theories and processes that can be used for our project.

- Weekly reports are generated from the weekly team meeting and submitted to the overall nisotak project team by one of our members weekly.

- Each member of the UPT will be scheduled to attend the bi-weekly nisotak project meetings to report on the progress of our work plan.

For the usability testing project plan, we will be utilizing the template listed in Figure 1 as a roadmap for the project. After consultation with other members of the nisotak design team, we will be able to assign specific tasks in the usability testing roadmap to each of our team members.

Usability testing roadmap

Usability testing Project Plan		Project owners: Overall due date: User Test date: Dates to Note: (Holidays, meetings, etc.)					
Project Stage	**Steps related to task**	**Resource name**	**Responsibility**	**Start date**	**End date**	**Notes**	**Status**
Initiation	Determine Web content area to be tested						
	Determine objectives of the test						
Planning	Select method to be used for testing						
	Decide whether testing will be performed in person or remote						
	Decide the type of participants needed for this test (volunteers, members, student members, non-members and their age group, gender, etc.)						
	Decide whether we will be taking notes or recording during the tests – depending on observers we have.						
	Decide incentives for the participants (if needed)						
	Discuss the tasks for the test						
	Initiate recruitment details						
Designing Prototypes/Tasks	Create tasks and script for user test						
	Share test script with IT						
	Determine content needed for test tasks/task walkthrough						
	Draft content needed for testing						
Recruitment	Create recruitment specs for Marc to pull sample						
	Pull sample list for recruitment						
	Reconfirm dates with IT right before recruiting begins						
	Create recruiting email						
	Create test schedule with time slots, dates for sharing with users during recruitment						
	Send recruitment e-mails from an employee e-mail, to increase chances of getting participants						
	Schedule participants						
Testing site to be tested	Populate test environment with content needed for test tasks/task walkthrough						
	Test design with stakeholders – get approval etc.						
	Pilot test						
	***Monitor critical issues identified in pilot; alert IT of issues if not already in QA log.						
	Repeat pilot test						

Figure 1: Usability Testing Guidelines. (2012, July, 16)

Project Stage	Steps related to task	Resource name	Responsibility	Start date	End date	Notes	Status
Implementation – User Test	Observe the users as they carry out the sample user tasks. Focus on their actions and what they are saying, as this can be valuable feedback.						
Analysis with CWT	Discuss the results with Whitney and CWT once the test is completed						
Analysis with stakeholders	Share findings with stakeholders						
Reporting	Report deliverable						
Analysis with core team	Once the results are obtained from the testing team or vendor, the following steps can be performed: -Evaluating the results. -Prioritizing the changes to be made based on severity of issues found. - Determining time and resources available to implement changes. - Updates/Implementing changes to Web site either: - immediately; - in phases; - in time for launch.						
Updates and evaluation	Work with stakeholders to implement changes						
	Plan next round of testing (if appropriate) or monitor changes as needed.						

Figure 1 (cont.): Usability Testing Guidelines. (2012, July, 16)

Project Time Frame

February 3	Needs assessment delivered to client
February 15	Progress report delivered to the client
February 21	Usability Testing with key stakeholders
April 6	Final project and report delivered to the client

Project Management, Communication, and Documentation

Project Management

There are two ID Advisory Group members. Their role is to be a resource and catalyst, be available to answer

any questions or concerns, and to help guide teams as they work through this ID task. Communication with the

Advisory group is essential to ensure the project is running accordingly.

Communication

As mentioned above, communication with the Advisory group is paramount. Likewise, having frequent

conversations with other groups working on this ID project will ensure we are on the same page. As a group,

we have weekly team meetings scheduled. We use this time to check in on progress, to discuss any questions

or concerns and to ensure we are in agreement.

Documentation

During each group meeting we take notes and compile that into meeting minutes to keep focussed and

organized.

Needs Analysis

Wants vs. Needs

	Wants	Needs
Client	● Create an app for learning nehiyawewin (Cree) morphology and syntax. This process has already started.	● A thorough usability study with recommendations for improvements.
Teachers	● Increase language use.	● A learning platform that is user friendly, authentic and culturally sensitive. ● A usability study that is clear and concise.
End-User: Students	● Increase language use.	● A learning platform that is easy to navigate. ● A usability study that is clear and concise.

Assumptions and Reasonings

	Assumption	Reasoning
#1	*Stakeholders*	Teachers- Teachers are a primary stakeholder. Students- Students are a primary stakeholder because they are the receivers of the nisotak app. Elders and language keepers - To provide input on language and to ensure culture is reflected through the tools.
#2	*Clients Hiring us*	Two group members bring years of experience working with students of all ages in classrooms. We have seen/lived through the evolution of mobile applications for learning and recognize the insurmountable influence of technology on our students. Another group member is not part of the educational field and is able to bring a different perspective to the table.
#3	*Success or Failure*	The usability study we will be conducting will decide on the effectiveness of the strategy determined through ease of use, satisfaction with delivery method, and how teachers and students respond. Students will also determine the effectiveness of the strategy based on the level at which students access the platform, through their retention of content (assessment of learning), and engagement level with the learning.

#4	*Conflicts*	Conflicts between the client and the end user will be resolved in a 'town hall' forum that will allow both parties to work through concerns through respectful conversations. Support from the ID advisory group can also be used to mediate conflicts and provide extensive knowledge on the pros of the platform.
#5	*Pedagogy*	Teachers will begin to deliver curricula in a way that is much more clear, concise, and to the point compared to previous delivery methods. This change in pedagogy will allow students to see daunting tasks as much more manageable/achievable. The language learning through the app is instructivist. Each lesson focuses on a similar morphological or syntactic structure through examples. Learners attempt to match the learned phrases with English phrases. Repetition is a primary learning tool and should be encouraged through spaced practice to ensure practice becomes a regular habit.
#6	*Continuous Improvement*	The opinions, ideas, and suggestions of a small sample group of stakeholders will be used to generate conversation between the larger group of stakeholders and ID professionals involved.

Part B: Learner Analysis

Learner Characteristics	Design Implications
Learner:	**Classroom educators and language teachers from Pre-K to Grade 12** The app is available for all teachers to use with ease at all grade levels. The usability study will include teachers from a range of grade levels. **Students** The app is available for all learners at all grade levels. The usability study will include a range of grade levels.
Cognitive: Prior knowledge and experience using technology	 **Prior knowledge and experience using technology** Learners will need to have a basic understanding of how to use technology.
Language	**Language** Current languages included in the application: ● nehiyah - Cree Y dialect ○ syllabic lessons and non-syllabic lessons ● Dine - Bizaad (Navajo) ● Dene - "T"

	Learners will likely be interacting with the indigenous languages as beginners. The polysynthetic nature of the languages will be challenging for many learners. The learners may have previous experience with other language learning processes. Incorporating learning methods and structures similar to other applications may be beneficial. The usability process will need to evaluate whether each lesson focuses on morphology and syntax of the language, and provides enough context and practice for language understanding.
Approach to learning	**Approach to learning** The instructional design will incorporate instructivist elements. Language learning requires repetition and spaced practice. To solidify language acquisition and to persuade the user to keep using the application, the users will need to see value in the learning process and success in language acquisition (Oyibo & Vassileva, 2021). Persuasive design can aid this process - in-app-currency collection or collaborative world building could encourage learners to return to the app. Persistent and timely practice reminders and pop-ups with practice words may be other approaches that can be utilized.
Physiological: Sensory Capabilities	**The app:** How does the app, in its current iteration meet the needs of the different sensory abilities -sight, sound? These abilities are key for how children take in information and retain that information. **The Usability Study:** The study will determine if students with sensory deficiencies are able to navigate the application.
Emotional	**Emotional:** Ensure easy navigation through the app to reduce cognitive load, and ease anxiety. The usability study will seek understanding of emotional cues, and mentally taxing content, to maintain focus on language and cultural learning. Regularly communicating with the other teams working on this project regarding prototypes to ensure our work and ideologies align. Also having constant communication to ensure harmony with the client.
Attitude towards self	**Attitude towards self** There will be a wide range of abilities in regard to technology, and indifferent attitudes towards online learning platforms. It is essential that both the app and

	usability study are easy to navigate.
Motivation and Affective:	
Desire to engage with students in meaningful ways.	Stakeholders need/want to create educational content that is engaging to students, provides concise information in a microlearning format, is accessible by learners at home or school, can be revisited, and builds relationships with students.
Personal interest in learning the platform.	Stakeholders have a personal interest in learning the platform because they want to learn a new language. Additionally, educators are looking for innovative ways to assist learners with learning a new language.
Social:	
Bridging the gap in cultural differences	**The App:** The app will need to accommodate for varying levels of experience with indigenous language and culture. **Usability study:** The usability study will determine if the app is culturally sensitive and authentic towards indigenous ways of knowing and learning.

Learner Characteristics Additional Questions

Questions	Technique/ Procedure
1. What is the learner's background knowledge regarding mobile applications?	Conduct a quick survey ● Google forms ● Personal checklist (individual)
2. What is the learners background information regarding the Cree, Dene, Dine language?	Conduct a quick survey ● Google forms ● Personal checklist (individual)
3. How is the usability for students who have learning disabilities?	Based on feedback from the usability study dependent on specific needs.
4. Would having external rewards and gamification provide additional motivation to work through the modules?	Question and answer on a Google Forms survey.

Part C: Context Analysis

Factors that Influence our Project

	Observations/ Assumptions	Implications for design
Physical context/environment *- hardware, existing curricula, facilities, etc.*	The app may be used for remote learning purposes, or in a physical classroom setting. Students will need access to a mobile device. The nisotak app is available for Android and IOS.	• nisotak app downloaded onto mobile devices. • Is there, or will there be tablet development?
Use context (who will use the materials and how will they make use of them) *- which classes, people, end users, teachers, parents, students, etc.*	**The App:** The app is designed for the end users to learn an indigenous language. The app allows for beginners and more advanced learners. **The Usability Study:** The study will be designed for participants from a school setting - teachers and students.	• Are teachers able to troubleshoot technical and lesson issues in real time? • Can lessons be pre-planned and adjusted based on the needs of the student? The study will include scenarios as well as interview-type questions. The study will determine if the Nisotak app is user friendly, not only for teachers and students, but for experienced language speakers as well. This is imperative to ensure quality assurance and the authenticity of the content.
Socio-political dynamics of the learning environment *- community, school, organization, government, philosophies, taboos, etc.*	Assumption that mobile devices may be used in the classroom setting. Avoid competition between users. Users will be from a variety of communities with different cultural / societal practices.	• ensure content and methods are appropriate and culturally sensitive. • ensure content and images are developed and screened by knowledge keepers and members of indigenous communities.

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Other Factors

Interference factors:
What could place constraints on design? ● Insufficient teacher buy-in could result in minimal design interaction. ● Varied abilities and comfort levels with technology. ● Not a user-friendly platform.
What might interfere with delivery? ● Difficulty accessing the application. ● Difficulty navigating the platform. ● Troubleshooting issues that cannot be addressed within the school.
What might interfere with instructional strategies? ● Development environment limitations (application design). ● Cultural differences.
Factors contributing to success:
How might personnel aid the project? ● Needing additional content created by knowledge keepers, elders, etc. ● Knowledge keepers, elders brought in as special guests.
How might existing resources aid the project? ● Personal devices ● PDF materials-teacher copies ● Smartboard compatibility ● Project mobile device
How might current strategies/procedures aid the project? ● Based on individual teachers in their classroom environments to support their procedures
I still want to know:
1. Will the app be available for tablets or the web?
2. Can the lesson still be taught without the app, so that learners do not lose progress in their learning?

Sources

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