CS 411W Lab 2

Access to Quality Education: Minnow

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29 October 2025

1   Introduction

This section provides a helpful introduction to Minnow, including the purpose and scope of the website. A glossary and list of sources is also provided.

1.1   Purpose

The purpose of this SRS is to create a formal and consistent set of requirements that is referenced during the creation and implementation of the Minnow educational tool. This SRS defines the scope of the project, provides a glossary of terms referenced throughout this document and Team Crystal's Lab 1, and defines system goals, user characteristics, and restraints.

1.2   Scope

Minnow is an educational website and learning tool created to personalize learning experiences through adaptive lesson plans, multimodal tools like text-to-speech and close captioning. It features built-in accessibility features, gamified learning and multilingual support. With Minnow, education is made inclusive and engaging at a scale that could make a difference for many students across the country.

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1.3   Definitions, Acronyms, and Abbreviations

Accessibility Tools – Features such as text-to-speech, closed captioning, and visual aids that support diverse learners.

Gamification – The use of interactive lessons, quizzes, and rewards to enhance student engagement.

Multimodal Learning – An approach that integrates various forms of content delivery, including visual, auditory, and interactive methods.

Personalized Learning – Adaptive lesson plans that adjust based on a student's strengths and weaknesses.

Role-Based Access – A security feature that ensures users (students, teachers, parents) have appropriate permissions based on their role.

Secure Authentication – Measures to protect user privacy and maintain data security.

Virtual Tutoring – Online support resources designed to assist students outside of traditional classroom settings.

1.4   References

"Challenges of Traditional Schooling: World Schools." *World Schools - Find the Best*

International Schools Worldwide, 17 Apr. 2024, https://world-schools.com/challenges-

oftraditional-schooling/https://world-schools.com/ challenges-of-traditional-schooling/.

Haleem, A. (2022, June 6). Understanding the role of digital technologies in education: A review.

Sciencedirect.com.

https://www.sciencedirect.com/science/article/pii/S2666412722000137#sec0003.

National Center for Education Statistics. *The Condition of Education 2024*. U.S. Department of

Education, Institute of Education Sciences, 2024, https://nces.ed.gov/pubs2024/2024144.pdf.

Oudat, Qutaibah, and Mohammad Othman. *Embracing Digital Learning: Benefits and*

Challenges of Using Canvas in Education. 06 2024, https://doi.org/10.5430/jnep.v14n10p39.

"What Is the Problem with Traditional Education Methods? - High School of America." *High*

School of America - High School Diploma Online | Online High School and Homeschool

Curriculum, 3 Aug. 2022, www.highschoolofamerica.com/why-traditional-educationmethods-

are-becoming-outdat

ed/.

Manjaly, Stalin J. "Duolingo Accepted Universities in USA for 2024 Intake." LeapScholar, 13

Nov. 2024, https://leapscholar.com/blog/duolingo-accepted-universities-in-usa/.

"Learn a Language for Free." Duolingo, 11 Feb. 2025, https://www.duolingo.com/.

The unrealized promise of high-quality instructional materials. NASBE. (n.d.).

https://www.nasbe.org/the-unrealized-promise-of-high-quality-instructional-materials/.

Do teachers think their curriculum materials are appropriately challenging for their students?

findings from the 2023 American Instructional Resources Survey | rand. (n.d.).

https://www.rand.org/pubs/research_reports/RRA134-21.html.

From the desk of the CEO: Changing the systems that perpetuate poverty and low literacy.

ProLiteracy. (n.d.).

https://www.proliteracy.org/news/from-the-desk-of-the-ceo-changing-the-systems-that-pe
rpetuate-poverty-and-low-literacy/#:~:text=In%20the%20most%20recent%20National,of

%20improvements%20among%20disadvantaged%20students.

Coe - education expenditures by country. (n.d.).

http://nces.ed.gov/programs/coe/indicator/cmd/education-expenditures-by-country.

Team Crystal(October 06, 2025) Lab 1 – Minnow Retrieved October 28, 2025 from

https://mray008.github.io/CS411W_CrystalProject/labs.html

1.5   **Overview**

Section 2 of this SRS is structured to solidify the goals and requirements in place during the creation and maintenance of Minnow. It contains a brief description of the Minnow website, the functions of various features contained in Minnow, and definitions and explanations of the various user roles necessary for the utility of the website.

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## 2	Overall Description

This section provides a summarized overview of Minnow, including the intention behind its concept, an overview of Minnow's functions, and an overview of the types of users Minnow caters to.

### 2.1	Product Perspective

Minnow is a website providing supplemental educational materials designed for integration with existing curriculums and lesson plans. It uses adaptive, gamified learning tools that emulate common entertaining activities to encourage student engagement and interaction. In this way, it is meant to mitigate the rising educational disparity found within the United States.

### 2.2	Product Functions

Minnow contains gamified learning modules for a variety of K-12 subjects with room for instructors to add custom modules to fit their teaching goals. The modules are designed to be simple to learn and engaging for students using responsive visuals and sound effects to encourage students to continue learning. Instructors can assign learning modules to students registered in their learning group or class, after which students are able to access those learning modules in their view, interacting with games and quizzes. Minnow is compatible with all major web browsers, including Google Chrome, Mozilla Firefox, and Apple Safari.

### 2.3	User Characteristics

Minnow operates off two main user classes: Students and Instructors. Instructors can manage preset learning modules or create their own, after which can release them for interaction by

students registered in their classroom. Students can access released modules and improve

engagement, memory, and enthusiasm towards lesson content by taking quizzes and interacting

with learning modules that can scale their content and track student performance. These metrics

can then be viewed by the class instructor.

2.4   **Constraints**

N/A

2.5   **Assumptions and Dependencies**

N/A