

ReasonED.io: Feasibility

Team Crystal

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Biographies



Emily Louk



Emily is a senior undergraduate at ODU. She has an Associate degree in Information Systems and will pursue software engineering after earning her B.S.C.S.. At ODU, she has interned with the Game Studies program as a developer and participated in a research project. She is interested in developing educational tools, video games, and mobile apps.

Dakota Dawe



Dakota is still finishing his Associates degree at LFCC while working through the remaining courses at ODU for his Bachelors. Dakota is currently working as a games programmer selling plugins on the Unreal Engine marketplace as well as a contract programmer for Small Indie Company developing their upcoming title “We The People”.

Areeb Nabi



Areeb is a senior at Old Dominion University pursuing his undergraduate degree in Computer Science. He recently completed a 10-week summer internship with Automatic Data Processing (ADP), honing his skills as a Full-Stack Developer. Areeb specifically enjoys front-end development, and working with JavaScript libraries such as React, Express, and Node.js.

June Troyer



June is a senior Computer Science undergraduate at ODU in the linked Master’s program. She has an associate degree in Science from Piedmont Virginia Community College. She enjoys helping others explore new topics and improve their skills and reasoning.

Biographies cont.



Alysha Morgan



Alysha is a undergraduate Senior at Old Dominion University, currently working towards her Bachelor's degree in Computer Science with a minor in Cybersecurity. With a deep passion for technology, she is actively honing her skills to become a software engineer.

Nolan Marchione



Nolan is an undergraduate senior at Old Dominion University, aiming for a Bachelor's degree in Computer Science. He enjoys listening to music, and is interested in using his skills to develop video games and open-source software tools.

Devan Hill



Devan is an undergraduate senior at Old Dominion University for a Bachelor's degree in Computer Science. He enjoys learning different kinds of technology. He wants to write programs and develop video games.

Terms



- **Confirmation Bias** - A cognitive bias that involves seeking, interpreting, and remembering information that confirms one's preconceptions (American Psychological Association n.d.).
- **Critical Thinking** - The ability to think clearly and rationally, understanding the logical connection between ideas and the ability to make reasoned judgements (American Psychological Association n.d.).
- **Fact-Checking** - The process of verifying the accuracy of claims made in public discourse and journalism (Cambridge English Dictionary n.d.).
- **False Dilemma** - A fallacy that presents a limited set of options as the only possible choices when there may be other alternatives (Excelsior OWL n.d.).
- **Logical Fallacy** - An error in reasoning or a flawed argument that can make an argument appear valid when it is not (Nikolopoulou, 2023).

Terms cont.



- **Misinformation** - False or inaccurate information shared, often unintentionally, without the intent to deceive (Dictionary.com n.d.).
- **Disinformation** - False information deliberately spread to deceive or mislead others (Dictionary.com n.d.).
- **Slippery Slope** - A fallacy that suggests one small step will inevitably lead to a chain of related events, often with exaggerated consequences (Excelsior OWL n.d.).
- **Straw Man Argument** - A fallacy that involves misrepresenting an opponent's argument to make it easier to attack and refute (Excelsior OWL n.d.).

Background

In the digital age, the ubiquity of the Internet has transformed the way we access, consume, and interact with information.

The online world serves as an expansive repository of knowledge, but it is not immune to **misinformation** and flawed reasoning (Wardle and Derakhshan, 2017).



Background cont.

Logical fallacies, such as straw man arguments, false dilemmas, slippery slopes, and others, persist in online content, undermining the quality of discussions and the credibility of information distribution.

Fallacy

From the latin root *fallac*, which means **to deceive** (Etymology n.d.).



Background - Examples

ABFoundation @ABFalecbaldwin

Flight attendant on American reamed me out 4 playing WORDS W FRIENDS while we sat at the gate, not moving.

#nowonderamericaairisbankrupt

1:01 PM - 6 Dec 2011

2,198 Retweets 288 Likes

904 2.2K 288

1

Darren Rovell @darrenrovell

Seton Hall Sports Poll: 74% of the general population asked said they weren't buying NFL gear this holiday season.

27% said it was because of the player protests during the National Anthem.

9:25 AM - 30 Nov 2017

43 Retweets 131 Likes

34 43 131

2

B.o.B @bobatl

The cities in the background are approx. 16miles apart... where is the curve ? please explain this



3:05 PM - 24 Jan 2016

3,904 Retweets 3,885 Likes

1.3K 3.9K 3.9K

3

In a blog post by M. Hope Echales (2017), the author discusses various Twitter posts related to LSAT preparation. @ABFalecbaldwin, @darrenrovell, and @bobatl, were all topics of the discussion.

Statistics

86% of 4th-grade teachers expressed a substantial emphasis on deductive reasoning (Bouygues, 2022).

86

The above figure dwindled to a mere **39% among 8th-grade teachers** when expressing the same sentiment (Bouygues, 2022).

39

50% of teachers indicated that they face challenges in allocating time to teach critical thinking skills effectively (Critical Thinking Teacher Survey 2019).

50

Just 21% of teachers agreed that they possess all the necessary resources to cultivate these skills (Critical Thinking Teacher Survey 2019).

21



Problem Statement

**High school graduates
are not prepared with
the skills necessary to
identify logical fallacies
in an increasingly online
world.**

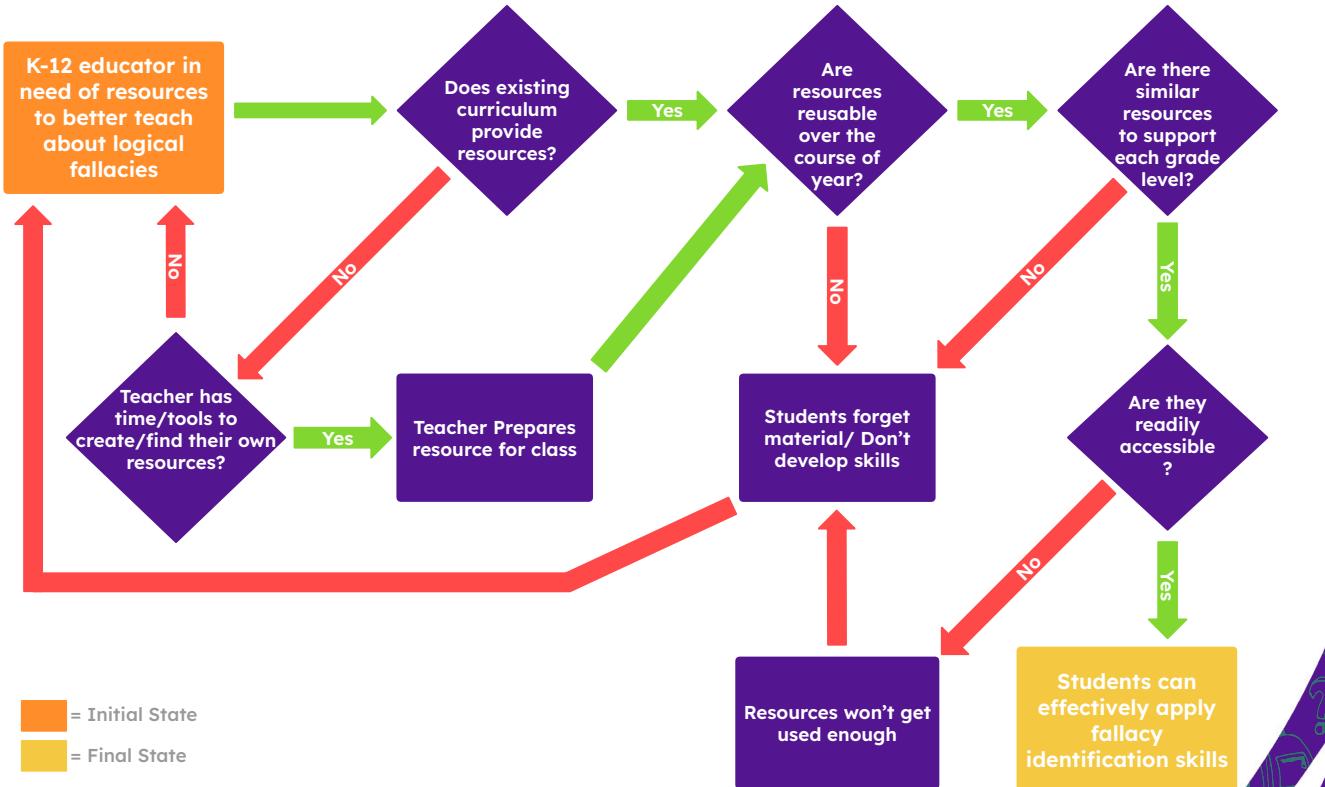


Problem Characteristics



- **Prevalence of Logical Fallacies**
- **Limited Critical Thinking Skills**
- **Misinformation Vulnerabilities**
- **Neglecting Contextual Research**

Current Process Flow





ReasonED is a game-based learning website that improves the ability of users to identify logical fallacies through simple, age-appropriate games. This website will provide educators with a tool to cultivate their student's critical reasoning skills over the long-term and beyond the scope of a single subject.

Features

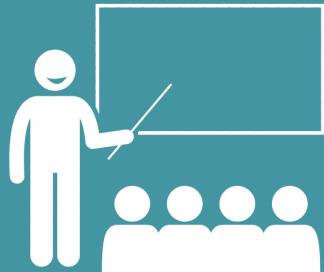
ReasonED WILL contain:

- Simple, school-friendly 2D games to be played directly on the site
- Wide range of game difficulties
- Instructions for each game
- Introductory readings for each age group

ReasonED will NOT contain:

- RAM and CPU-intensive elements
- Lesson plans (unless provided by educators)
- In-game references to specific people or political events

Customers & End Users



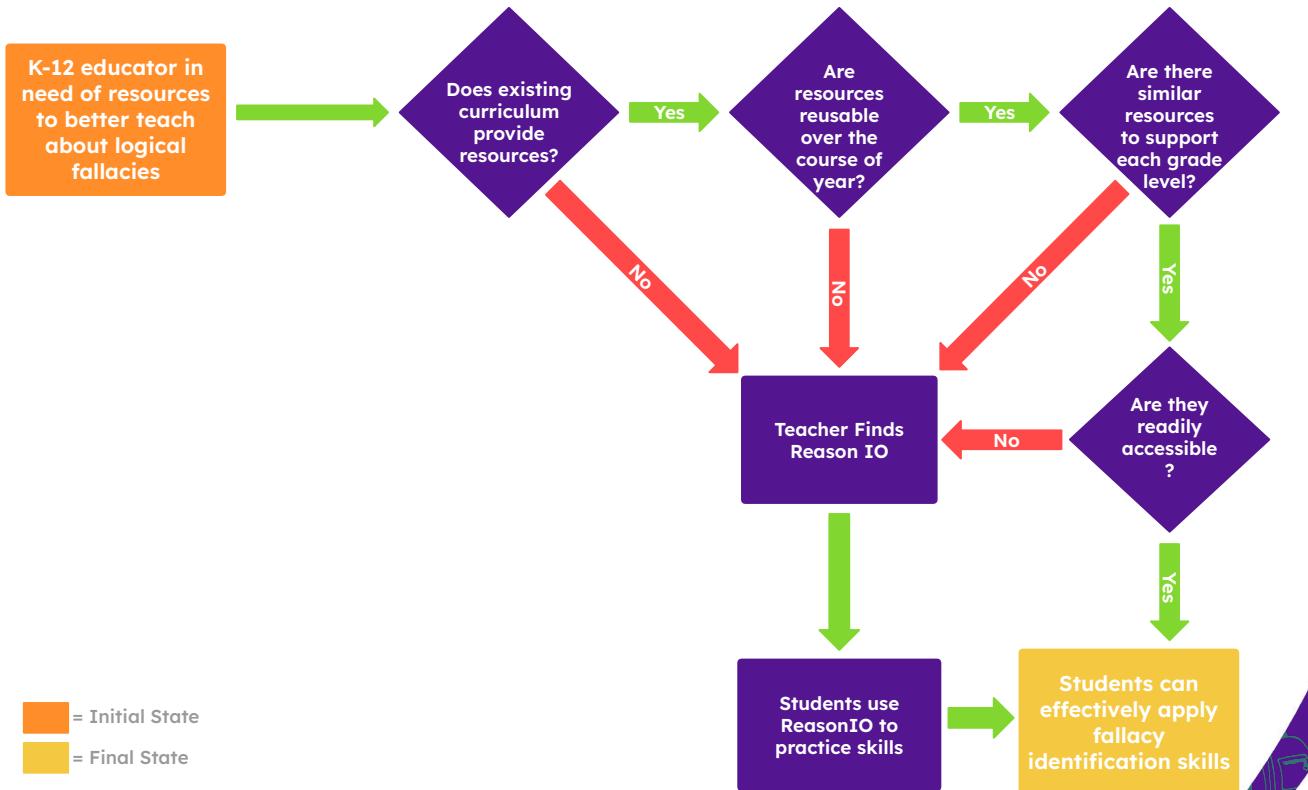
Customers:

- K-12 schools
- Colleges
- Universities
- Educational publishers

End Users:

- K-12 Students (including homeschoolers)
- College Students
- Educators
- General Public

Solution Process Flow



Competition Matrix

Direct Competitors

	ReasonED.io	ABCya!	Funbrain	Arcademics	BrainPOP
Primary Audience	K-12 and Adult	Pre-K - 6	Pre-K - 8	K-8	K-8
Game-Based Learning	✓	✓	✓	✓	✓
Logical Fallacy Focus	✓				
Device Compatibility	PC, Tablet	PC	PC	PC	PC
Characters and Animation for Kids	✓	✓	✓		✓
Accessibility Features	✓				
Educator Tools	✓	Premium Only		Premium Only	✓
Easily Playable outside of School?	✓	✓	✓	✓	✓
Cost	Freemium	Freemium		Freemium	

Competition Matrix

Indirect Competitors

	ReasonED.io	Kahoot!	Quizlet Live	Socrative	Gimkit
Primary Audience	K-12 and College	K-12 and College	K-12 and College	K-12	K-12
Game-Based Learning	✓	✓	✓		✓
Logical Fallacy Focus	✓				
Device Compatibility	PC, Tablet	PC, Phone	PC, Phone	PC, Phone	PC, Phone
Characters and Animation for Kids	✓	Depends on Game			Depends on Game
Accessibility Features	✓	✓	✓	✓	✓
Educator Tools	✓	✓	✓	✓	✓
Easily Playable outside of School?	✓				
Cost	Freemium	Freemium	Freemium	Freemium	Subscription

Technical Risks

Likelihood	Impact				
	Very Low	Low	Medium	High	Very High
Very High					
High					
Medium			T1	M3	T3
Low		M1	M2	T2	
Very Low					

T1: Version Compatibility

- **Risk:** Compatibility issues with varying browsers.
- **M1:** Keep up with browser updates and maintain backward compatibility.

T2: Third-Party Integrations

- **Risk:** Problems with integrating external services or APIs.
- **M2:** Careful selection and testing of third-party tools or APIs.

T3: Data Backup and Recovery

- **Risk:** Risks of data loss or system failure.
- **M3:** Implement regular data backup and recovery procedures.

Customer Risks

Likelihood	Impact				
	Very Low	Low	Medium	High	Very High
	Very High				
	High			C2	
	Medium			C1	
	Low		C3	M2	
	Very Low		M3	M1	

C1: User Proficiency

- **Risk:** Users may not have the prerequisite knowledge or skills to benefit from the application.
- **M1:** Tutorials and introductory lessons help lower the bar for new users.

C2: User Engagement

- **Risk:** Customers may not feel the need to stay engaged with the games.
- **M2:** Progress tracking and regular content updates help to maintain user interest.

C3: User Feedback

- **Risk:** If a game is too difficult or is not explained well, then users might stop using the application.
- **M3:** Provide feedback mechanisms to iterate on the game.

Security Risks

		Impact				
		Very Low	Low	Medium	High	Very High
Likelihood	Very High	Yellow	Yellow	Red	Red	Red
	High	Green	Yellow	Yellow	S2	Red
	Medium	Green	Yellow	S1	Red	S3
	Low	Green	Green	Yellow	Yellow	Red
	Very Low	Green	M1	M2	M3	Yellow

S1: Data Security

- **Risk:** Users may be concerned about what data is collected on them.
- **M1:** Communicate what data is gathered, and comply with data protection regulations to keep collected data safe.

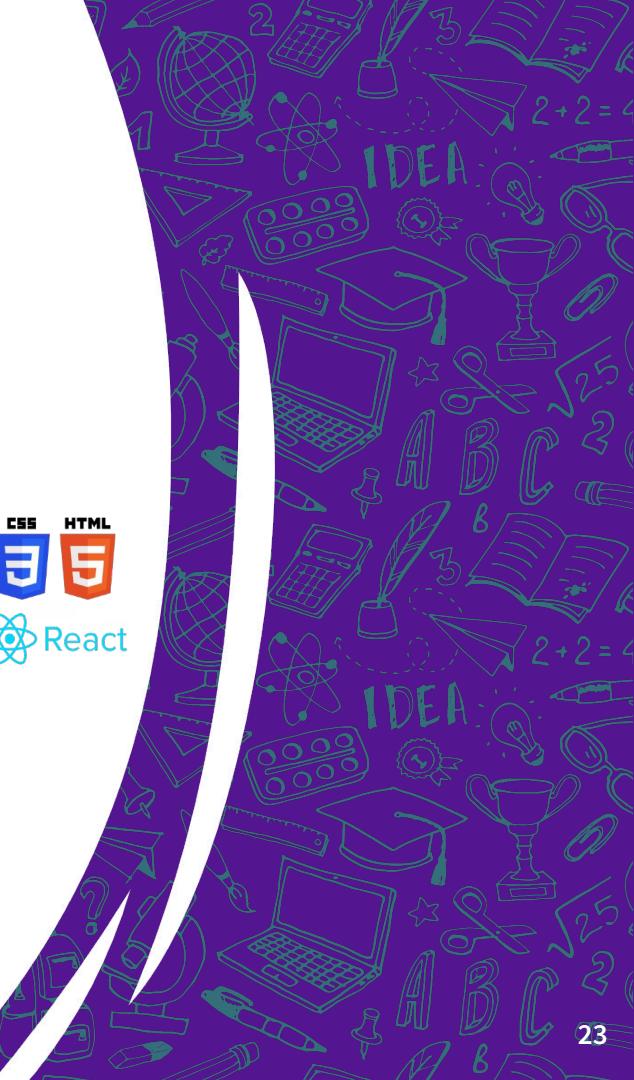
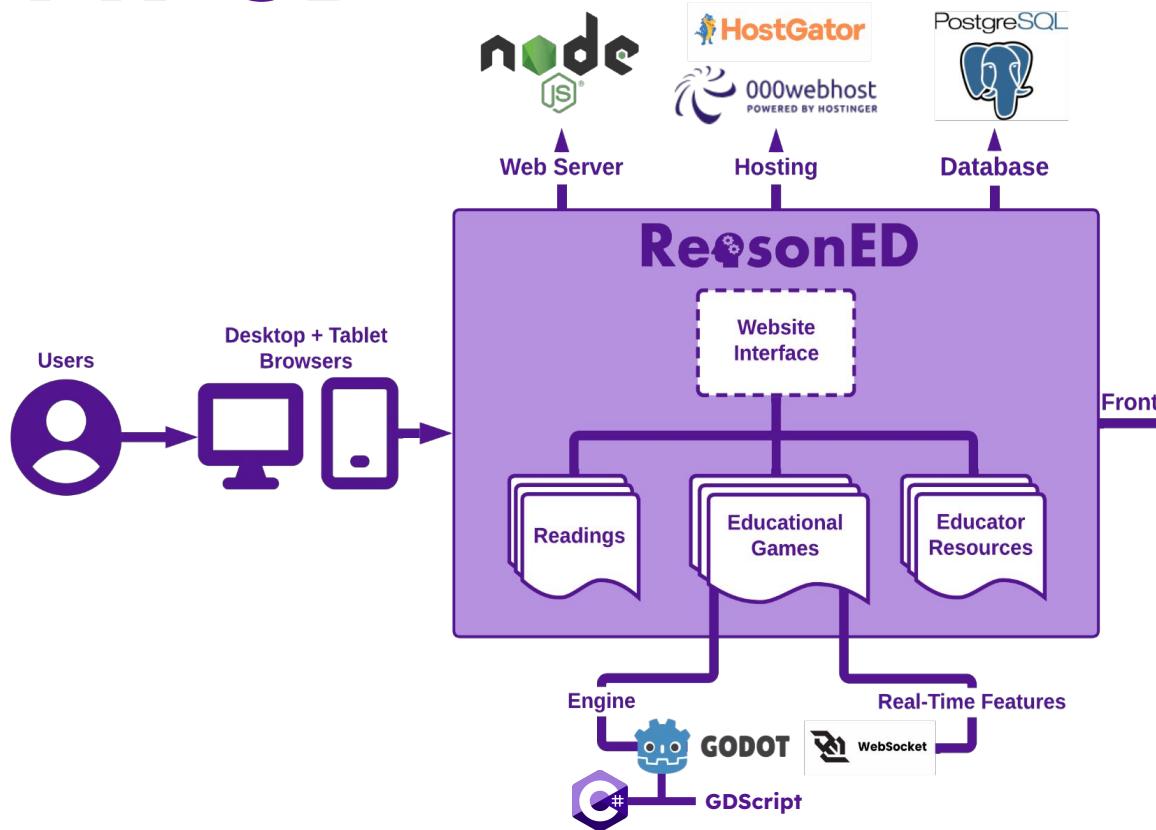
S2: Account Security

- **Risk:** Unauthorized access to a user account.
- **M2:** Strong password policies and two-factor authorization for account login.

S3: Security Updates

- **Risk:** New exploits are discovered which jeopardize our systems.
- **M3:** A regular schedule for checking for exploits and implementing security patches.

MFCD



Conclusion



- **Nationwide lack of logical fallacy identification skills**
- **Our games and resources will strengthen those skills**
- **Prioritize critical reasoning in U.S. schools at all grade levels**

Questions?
Comments?

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