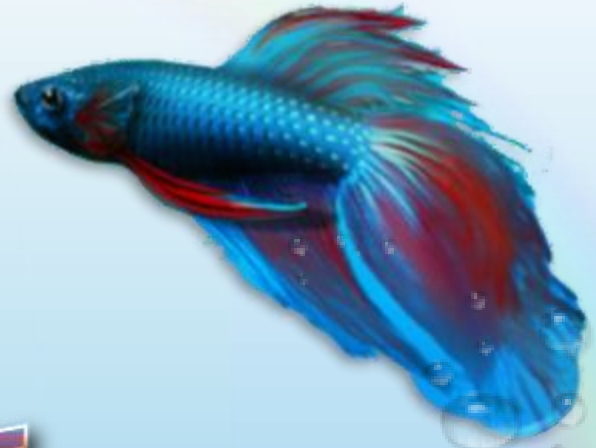


TEAM CRYSTAL

ACCESS TO QUALITY EDUCATION

Table of Contents

Meet the Team (1/2)

		
Lee Klaus An undergraduate at ODU majoring in Computer Science, minoring in Cyber Security He enjoys videos and loves cats.	**Didi Kone-Sow** An undergraduate at ODU majoring in Computer Science. Didi enjoys reading, writing, and playing chess during her free time.	**Cam Montgomery** An undergraduate at ODU majoring in Computer Science. Cam enjoys making music, reading, and anything sci-fi.

Meet the Team (2/2)

		
Maddie Ray An undergraduate at ODU majoring in Computer Science. They enjoy video games, digital art, and reading.	**Stanley Synenko** An undergraduate at ODU majoring in Computer Science. He enjoys a fair few TCGs as well as some online games like EVE Online.	**Jayson Yates** An undergraduate at ODU majoring in Computer Science. He enjoys video games, hanging out with friends, anime and animals.

Elevator Pitch

Access to quality education remains a major challenge, especially for underserved communities and students with diverse learning needs. Traditional teaching methods fail to adapt to individual learning styles, leaving many without the resources to succeed.

Our solution is an educational platform that personalizes learning experiences through adaptive lesson plans, multimodal tools like text-to-speech and close-captioning.

With built-in accessibility features, gamified learning, and multilingual support, we make education inclusive and engaging at scale.

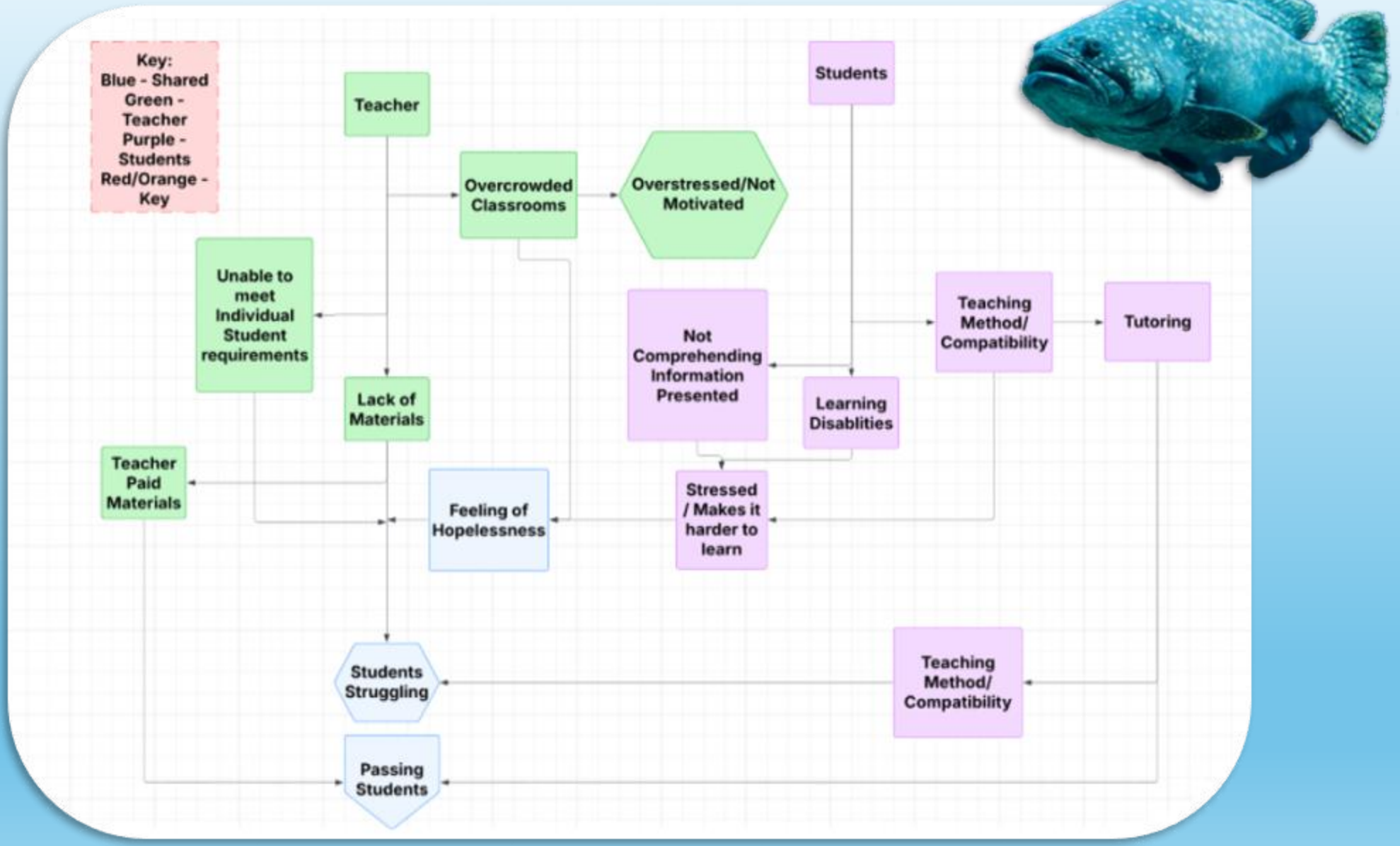
Problem Statement

Access to quality education remains a pervasive issue, particularly in underserved communities and for individuals with diverse learning needs. Traditional teaching methods often fail to address different learning styles, disabilities, or socio-economic challenges, leaving many students without the necessary resources to thrive. Despite advances in technology, the education system struggles to integrate tools that promote equitable and personalized learning opportunities at scale.

Problem Characteristics

- Teachers on average spend 12+ hours a week looking for materials for their students, either online or creating their own.
- Some teachers in poverty zones and less experienced teachers are more likely to report the provided materials are too hard for their students.
- For teachers who reported their materials to be too challenging for their students, math teachers reported that they were less likely to use their materials for their class instruction time.
- In economically challenged cities such as Baltimore, the proficiency rates for students is below the average.
- The NAEP (National Assessment of Educational Progress) showed that 81% of fourth graders that qualified for free/reduced lunches had low literacy levels and were four times less likely to graduate high school.
- The USA spends more money on average for student education than most of the other **OECD** countries. **(Organization for Economic Cooperation and Development)**

Current Process Flow

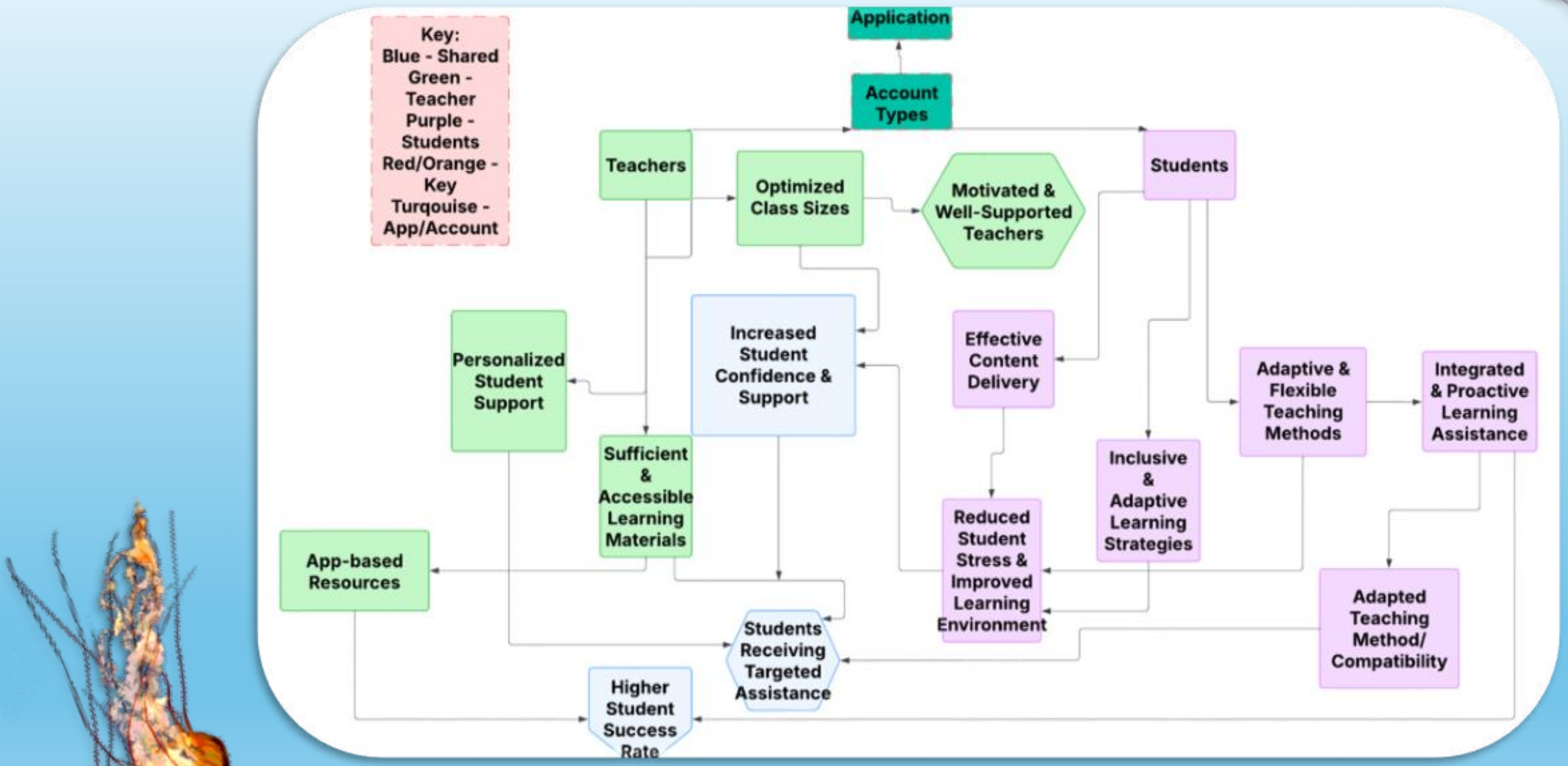


Solution Statement

The solution will have **mobile application** that personalizes learning through adaptive lesson plans, multimodal accessibility tools, and gamified modules (similar to applications like Duolingo). It will foster collaboration with dashboards for students, teachers, and parents while providing a resource library and multilingual support.

Leveraging modular learning, cloud technologies, and real-time communication, this platform enhances engagement and ensures equitable education for all.

Solution Process Flow



What it will do

- The platform will provide **personalized learning** lesson plans that adjust to each student's strengths and weaknesses.
- It will feature **multimodal accessibility tools** such as text-to-speech, closed captioning, and visual aids to support diverse learners.
- **Gamified modules** will enhance engagement through interactive lessons and quizzes.
- A **collaborative dashboard** will connect students, teachers, and parents, offering progress tracking and real-time communication.
- A **comprehensive resource library** will include videos, exercises, and virtual tutoring options.
- **Multilingual compatibility** that allows languages to be modularly implemented in the future.
- **Secure authentication** will maintain user privacy and role-based access.

What it won't do

- It will not replace standard K-12 or secondary education. The software will act as an enhancement for students already enrolled in education programs.
- It will not provide any sort of certification or degree.
- It will not guarantee improvement in a student's education or a reduced workload for educators; it is a tool that can be used.
- It will not provide any personnel for helping educational outcomes for individual students; it is a purely premade curriculum that is accessible at anytime and anyplace (with internet access).

Competition Matrix	**Minnow (The best one)**	**KhanAcademy**	**IXL**	**Duolingo**	**Canvas**
Price	Subscription based, free with ads	Free	Subscription based	Subscription based, free with ads and less features	Free
Platforms	Mobile application	Desktop mostly	Desktop, mobile and web application	Mobile apps, and web based	Desktop and mobile
Scale of topics	Vast, expandable and flexible	Nearly all grade-school topics	Nearly all grade-school topics	Languages, Math and Music	Content must be manually added
Age/Grade range	K-12 and secondary education	K-12 and secondary education	K-12	All grades and ages	K-12 and secondary education
Credibility/ Cohesion	Review based credibility	Review based credibility	Review based credibility	Review based credibility	*Not Applicable*
Multimodal capability	Yes	Yes	Yes	Yes	Yes
Customizability	Modules can be mixed and matched to fit individual preferences	Pre-set modules	Pre-set modules	Pre-set modules	No built-in modules

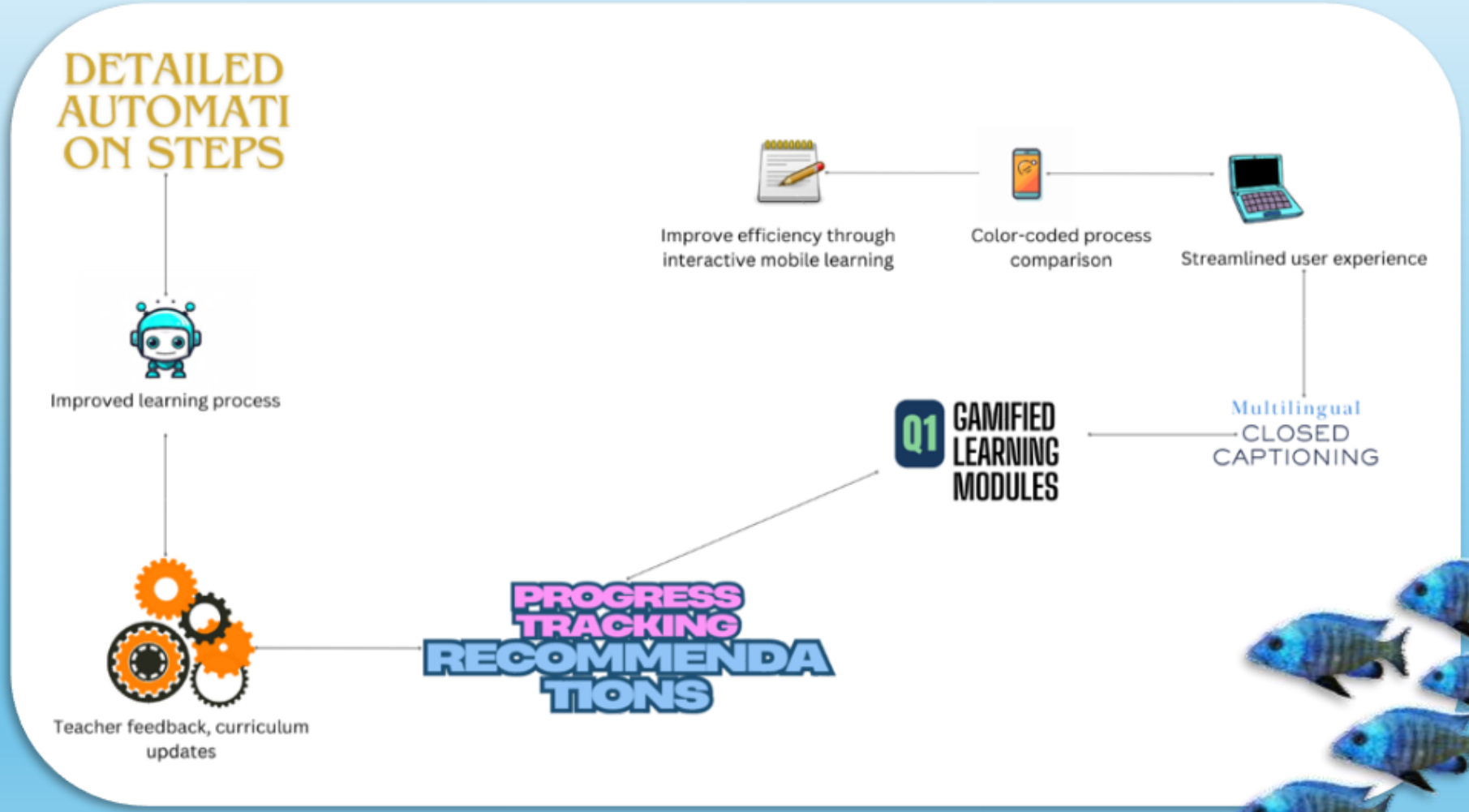
Development Tools

- IDE – VS Code
- Version Control - GitHub
- CI and CD - GitHub Actions and Workflows
- Backend language - Python
- Frontend language – HTML, CSS, & JavaScript
- Testing Frameworks – PyTest & Jest
- Documentation Tool - Pydoc

Major Functional Components

- **L – Docker**
- **A – Django**
- **M - PostgreSQL**
- **P - Python**

Major Functional Components Diagram



Risks

Customer and End User: Failure to use app.
Technical: Downtime disruptions
Security: Data leaks
Legal: FERPA violations

Customer & End User (Risk)

Description

- Users will be unable to find use in our app like other tools, materials, or services.

Probability

- 3, content is not always applicable for everyone.

Impact

- 3, Our app does not achieve its goal of improving the teaching and learning experience.

Technical (Risk)

Description	Probability	Impact
• Downtime in app will interfere with lesson plans. • Content may be unavailable due to network concerns.	• 5, downtime and network outages are very common occurrences in day-to-day life.	• 3, Teachers are left upset due to downtime and potentially unable to teach class if their plans were built around app.

Security (Risk)

Description

- Student/Teacher information is hacked and leaked.

Probability

- 2, many apps are targets for leaks or hacks and we would not be the first.

Impact

- 5, Data leaks will shake trust in developers and less people will use app after such.

Legal (Risk)

Description

- Copyright infringement.
- Private law cases because individuals didn't succeed.

Probability

- 3, if practices are bad around how content is sourced combined with the risk of the end user.

Impact

- 4, Lawsuits and potential loss of clients due to civil cases. Potential loss in memberships/profits due to bad public attention.

Risk Matrix

Likelihood of Occurrence	Impact (Scale 1-5)				
	Very Low 1	Low 2	Medium 3	High 4	Very High 5
Very Low 1					
Low 2					
Medium 3			C1	L1 L2	
High 4					
Very High 5		S1	T1 T2		

Customer and End user:
C1: Unable to find benefits

Technical:
T1: Downtime
T2: Network Issues

Security:
S1: Data leaks

Legal:
L1: Copyright
L2: Private lawsuits

Mitigation (1/2)

Customer and End User

- The application being free with ads offers a degree of mitigation already, but surveys and other user feedback options can reduce probability from 3 to 2.

Technical Risk

- Offer offline copies of certain lessons before lesson times to minimize reliance on the server, mitigating probability to 4 and impact to 2.

Mitigation (2/2)

Security

- Utilize and split data centers to minimize leaks, such that if one center is hacked it will not impact others. This does not impact probability but will reduce impact from 5 to 4.

Legal

- Cite all sources in the correct format, all modules should be unique and created by our company.
- Legal binding contract that we our company is not solely responsible for students to pass their classes. Clause that prevents suing of our company for student failing classes.

Mitigation Matrix

Likelihood of Occurrence	Impact (Scale 1-5)				
	Very Low 1	Low 2	Medium 3	High 4	Very High 5
Very Low 1					
Low 2			MC1 ML1		
Medium 3			C1	L1	
High 4		MT1 MS1			
Very High 5		S1	T1		

Customer and End user:

C1: Unable to find benefits

MC1: Mitigated by feedback

Technical:

T1: Downtime / Server Issues

MT1: Offline copies

Security:

S1: Data leaks

MS1: Split data center

Legal:

L1: Copyright / Private lawsuits

ML1: Citations / End User agreement

Conclusion

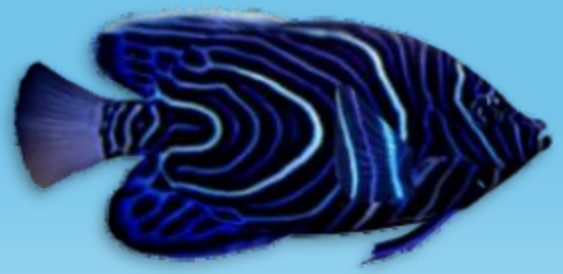
In conclusion, our project is:

- **Bridging the Gap** - Ensuring quality education reaches all students, regardless of background or learning needs.
- **Personalized & Inclusive** - Adaptive lesson plans, accessibility features, and multimodal tools for diverse learners.
- **Engaging and Scalable** - Gamified learning, multilingual support, and the ability to facilitate custom learning paths creates a dynamic, inclusive learning environment.

Together, we're shaping the future of education — one student at a time!

Real World Product vs. Prototype

Features & Functionality	RWP	Prototype (Planned)	Prototype (Actual)
• Personalized learning • Multimodal tools • Gamified modules • Multilingual compatibility • Resource Library • Collaborative Dashboard	• Personalized learning • Multimodal tools • Gamified modules • Multilingual compatibility • Resource Library • Collaborative Dashboard	• Collaborative Dashboard • Gamified modules	N/A



So,… What are you waiting for?

Schooling

Or…

Download *Minnow* to make schooling fun!

Thank You!

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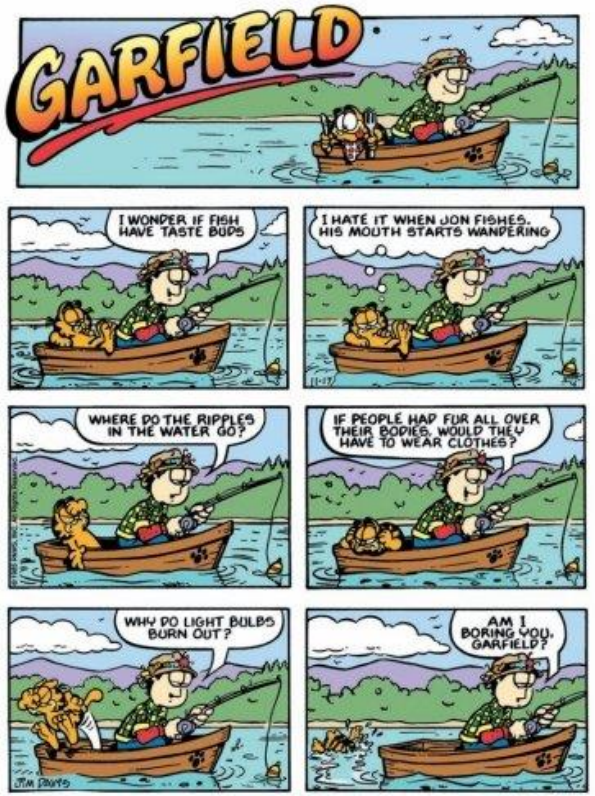
GARFIELD
I WONDER IF FISH HAVE TASTE BUDS
I HATE IT WHEN JON FISHES. HIS MOUTH STARTS WANDERING
WHERE DO THE RIPPLES IN THE WATER GO?
IF PEOPLE HAD FUR ALL OVER THEIR BODIES, WOULD THEY HAVE TO WEAR CLOTHES?
WHY DO LIGHT BULBS BURN OUT?
AM I BORING YOU, GARFIELD?
JIM DAVIS
49


REMEMBER, GARFIELD, THE KEY TO FISHING IS PATIENCE, THE ABILITY TO REMAIN MOTIONLESS FOR HOURS
GARFIELD?
Z
THAT'S MY BOY
WELL, GARFIELD, WHAT DO YOU THINK OF FISHING SO FAR?
I LIKE IT?
WHERE ELSE CAN YOU TAKE A THREE-HOUR NAP AND CALL IT SPORT?
CATCH ANYTHING, BOYS?
YEAH BUT WE THREW 'EM BACK
THEY WERE IN DANGER OF BEING EATEN BY THE BAIT
36


DARN, JERKED TOO HARD AGAIN
1-23