

Siri Learn, Siri Tutor, Siri Teacher

Siri in Education; for Kids

What is Apple's mission statement?

Apple's corporate mission is "to bring the best personal computing products and **support to students, educators, designers, scientists, engineers, businesspersons and consumers** in over 140 countries around the world."

What is the NorthStar metric for this proposal?

We want to **increase user adoption of Siri by 15% after launch**. We define adoption by use of Siri functionality at least once a month.

What is the problem area, or motivation for this proposal?

1. **COVID-19 has made the educational inequality in America glaringly evident.**
 - a. Students have **increasingly less resources to keep up with their education** whilst staying at home. Kids in higher-income families are able to spend money on tutors and resources, but lower-income students are falling behind.
 - b. **23.8 million students will likely drop out of primary school this year** due to inability to keep up with content.
2. **Lower income teens have just as many smartphones as the rest of the population, but far fewer PC's.**
 - a. Most ed-tech companies require subscription services, or are created on the web platform **rendering the services inaccessible to lower income students**.
 - b. **Downloading additional applications generally requires further internet connection, bandwidth, and latency**, and often isn't feasible.
3. **Smartphone adoption has gone up exponentially in developing countries - particularly iPhones.**
 - a. **45% of students in developing countries own smartphones**, and iPhones are one of the top five most popular brands.
4. **Interest in permanent homeschooling has spiked 75% after the pandemic.**
 - a. Parents are more and more interested in keeping their children at home throughout their primary schooling. For such students, **AI tutors will prove invaluable**.
5. **Apple has partnerships with a number of lower income school districts already.**
 - a. Apple already has partnerships with underserved schools by providing them with Apple devices in an effort to increase accessibility - ConnectED.
 - b. By adding functionality to the devices that are already being provided, **Apple can make an even more significant impact**.

Takeaway: A large portion of iPhone owners don't have proper accessibility to education and learning services. By turning Siri into an AI educational tool, Apple will be serving underserved communities & will cater to a rapidly growing market.

What is the product mission?

Apple should address the problem of educational inequity in the world, especially in COVID-era by capitalizing on the widespread adoption of the iPhone. Apple should launch **Siri-Learn, Siri-Tutor, & Siri-Teacher** to offer AI educational services to lower-income, K-12 students so that they can gain further mastery over topics in the realm of mathematics.

What is the size of the market?

There are 2 million homeschooled students.

32% of families in the United States are lower income & cannot afford external tutoring or educational resources - so approximately 41 million students.

In each developing country, approximately 10 million people own an iPhone.

Apple has partnerships with a number of schools, where all students are provided with an Apple device.

Thus, our target market consists of at least **53 million students**.

What does the solution space look like?

Siri Learn

Goal: Creating & posing practice problems on different concepts. Tracking understanding, progress, and problem-areas.

User Archetype: I am a **student in middle school struggling in my Algebra course**. I **don't have the resources to purchase additional textbooks or workbooks** but I want to learn more. **I want Siri Learn to show me practice questions, and to validate my answers or offer me guidance on how to reach the correct answer.**

Technical Development Steps:

1. Identify **inventory of practice problems** over a wide range of topics
2. **Tag practice problems** based on the topic they are related to
3. Create algorithm to **divide each problem into intermediate steps**
4. Create algorithm to **assign Siri text for each intermediate step**
5. Create backend program to **track & display progress** in each topic area
6. AI algorithm to **determine order of practice problems** presented by Siri, based on previous performance/completion

Competitors or Possible Partners:

- **Cognii:** AI platform that can create assessment questions based on a concept inventory.
- **Khan Academy:** Database of math questions organized by concept & grade level.
- **Century Tech:** Practice questions presented in order based on past performance, progress tracked in a dashboard for user tracking.



Siri Tutor

Goal: Understanding student homework questions. Outline the process from start to finish to student before revealing the answer.

User Archetype: I am a **high school student struggling to finish my homework assignment**. I **don't have access to a personal tutor**, but I want to learn how to do the questions and complete my work. **I want Siri Tutor to understand my homework questions, and to teach me how to get to the right answer.**

Technical Development Steps:

1. **Identify or develop in-house image recognition/translation software**
2. Create scaffolds for how to **store & interpret different types of questions**
3. **Identify or develop program synthesis software** to solve a plethora of different types of problems
4. Create algorithm to **generate intermediate steps with Siri text** for explanation

Competitors or Possible Partners:

- **Microsoft Math Solver:** Image recognition + translation software that synthesizes answers to a wide range of math questions. Utilizes Microsoft **program synthesis** research.
- **Pearson Aida:** Solves questions, but tries to redirect students to relevant material before providing the answer.
- **Wolfram Alpha:** Solves math questions, utilized by Pearson Aida.



Siri Teacher

Goal: Explaining different concepts to students. Tracking progress & comprehension.

User Archetype: I am an **elementary school student and I don't understand what I learned in geometry last year**, & **I am at risk of being held back**. I **don't have access to a personal tutor or any additional resources** but I want to learn. **I want Siri Teacher to give me a lecture on basic geometry concepts.**

Technical Development Steps:

1. **Identify a concept inventory & create API to extract**, then synthesize information into mini-lesson plans OR
2. Create an **in-house curriculum with mini-lesson plans**
3. Create **algorithm to turn lesson-plans into Siri dialogue** with branches for different user responses
4. Create a backend **tracking system to display progress** to users

Competitors or Possible Partners:

- **Khan Academy:** Huge database of videos with closed captioning organized by content areas.

- **Rocket Math:** Has different tracks for students to follow, to learn math skills in different concept areas.
- **Robot Ani:** AI powered tutor that teaches students about different concepts across many subject areas - conversationally.



What are the teams at Apple that will be involved?

Machine Learning & AI:

- Team 1: Develop image recognition software
- Team 2: Generate intermediate steps & Siri text using just a problem & solution
- Team 3: Develop program synthesis software to solve any problem
- Team 4: Develop tracking software with AI-based recommendations and/or order
- Team 5: Develop API to identify & extract relevant information from chosen databases/inventories

Design: Do UI/UX research in order to design the optimal user experience.

Software & Services: Build the back-end & front-end of Siri Learn, Tutor, & Teacher using the ML/AI team and the Design team work.

Operations & Supply Chain: Make decisions about prioritization of endeavors based on internal business strategy & operations.

Sales & Business Development: Identify potential business partners in order to balance in-house development with acquisition of technology.

Marketing: Develop a branding strategy as well as a marketing strategy for Siri Learn, Tutor, & Teacher.

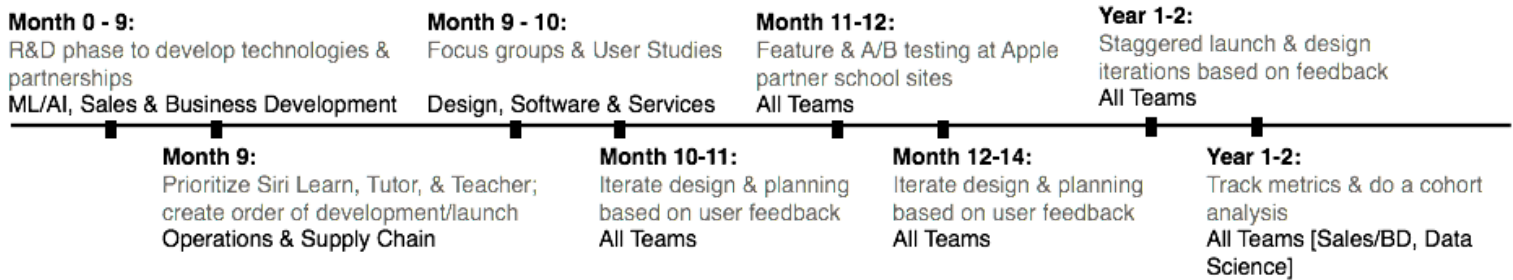
What will we include in the MVP?

Siri Learn: Include a set of 10 practice questions for 50 different topic areas.

Siri Tutor: Solve only basic algebraic equations through voice & pictures.

Siri Teacher: Include 10 minute interactive lessons for 50 different topic areas.

What should the timeline look like?



What will testing look like?

R&D Phase: A/B testing to measure engagement in order to prioritize between Learn, Tutor, & Teacher.

Initial Launch: A/B testing to make decisions about the preferred user flow for Learn, Tutor, & Teacher.

Staggered Launch: Cohort analysis for 1 year to determine time & means of re-engagement with users of Learn, Tutor, & Teacher.

What metrics should we track to evaluate this product?

All:

- Percentage of iPhone users who use the feature
- Avg. # of uses per month per user (on each feature)
- Avg. time spent per month per user (on each feature)

Siri Learn:

- Percentage of intermediate steps used per question
- Percentage completion per topic area
- Percentage of users who access the tracking dashboard
 - Average views per month on the tracking dashboard
 - Average number of accessed topics per user

Key Performance Indicator: Total time users have spent solving problems with Siri Learn

Siri Tutor:

- Percentage of problems that the tutor can recognize & solve
- Percentage of problems that the tutor can divide into understandable steps
- Percentage of users who abandon Siri Tutor before it gives the final answer
- Percentage of time speech vs. camera is used to ask the question

Key Performance Indicator: Total number of questions asked & solved with Siri Tutor

Siri Teacher:

- Average percentage of curriculum that a user accesses
- Percentage of users who report that the content presentation is helpful

Key Performance Indicator: Total time users have spent listening to lessons by Siri Teacher

What are some trade-offs/risks & mitigations?

Risk: Comprehensiveness vs. Earlier Launch

Mitigation: We should perform an A/B test with a human-controlled backend prototype to determine what level of comprehensiveness is a **must have**, and what level is a **nice to have**.

Risk: Cheating, Counterproductive Effect

Mitigation: We are ensuring that these devices can't lead to learning shortcuts because unlike competitors, Siri Tutor will only give the final answer to questions after going through a series of intermediate steps to explain the problem.