

# Kawm

**Making open source  
textbooks accessible,  
social and visual**

# About Me



## Long term goal

Create a tool that empowers Autodidactism for a million people a year



## Senior Capstone goal

- 1) Create a compelling edtech product with Traction and seed funding
- 2) Effectively display the skills I have learnt as a CS + Business major

# Reading academic texts now

Home Tools CS152 Textbook.pdf x Amal.pdf ? Sign In

1001 (1020 of 1151) \*\*\* Share

Section 25.6. Moving 1001

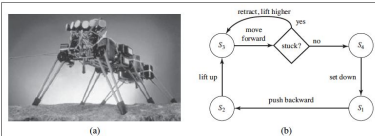


Figure 25.24 (a) Genghis, a hexapod robot. (b) An augmented finite state machine (AFSM) for the control of a single leg. Notice that this AFSM reacts to sensor feedback: if a leg is stuck during the forward swinging phase, it will be lifted increasingly higher.

**25.6.3 Reactive control**

So far we have considered control decisions that require some model of the environment for constructing either a reference path or a potential field. There are some difficulties with this approach. First, models that are sufficiently accurate are often difficult to obtain, especially in complex or remote environments, such as the surface of Mars, or for robots that have few sensors. Second, even in cases where we can devise a model with sufficient accuracy, computational difficulties and localization error might render these techniques impractical. In some cases, a reflex agent architecture using **reactive control** is more appropriate.

For example, picture a legged robot that attempts to lift a leg over an obstacle. We could give this robot a rule that says lift the leg a small height  $h$  and move it forward, and if the leg encounters an obstacle, move it back and start again at a higher height. You could say that  $h$  is modeling an aspect of the world, but we can also think of  $h$  as an auxiliary variable of the robot controller, devoid of direct physical meaning.

One such example is the six-legged (hexapod) robot, shown in Figure 25.24(a), designed for walking through rough terrain. The robot's sensors are inadequate to obtain models of the terrain for path planning. Moreover, even if we added sufficiently accurate sensors, the twelve degrees of freedom (two for each leg) would render the resulting path planning problem computationally intractable.

It is possible, nonetheless, to specify a controller directly without an explicit environmental model. (We have already seen this with the PD controller, which was able to keep a complex robot arm on target *without* an explicit model of the robot dynamics; it did, however, require a reference path generated from a kinematic model.) For the hexapod robot we first choose a **gait**, or pattern of movement of the limbs. One statically stable gait is to first move the right front, right rear, and left center legs forward (keeping the other three fixed), and then move the other three. This gait works well on flat terrain. On rugged terrain, obstacles may prevent a leg from swinging forward. This problem can be overcome by a remarkably simple control rule: *when a leg's forward motion is blocked, simply retract it, lift it higher,*

😞 Isolating experience, difficult to ask for help

😞 Difficult experience scrolling to find images or definitions of term referred to in text

😞 No links to other websites / videos that may illustrate concepts better for a younger audience

Millions of eyes are reading the same  
open-source textbooks

**What if they could help each other out?**

# User Research

## Hypothesis

## Validation

01

College students prefer visual media

- **Survey:** 7/11 indicated they would watch videos to supplement readings
- **Experiment:** Video explanations as alternative to readings on class group chats: 16/20 watched

02

Scrolling is frustrating

- **Survey:** 9/11 found scrolling and definitions to be frustrating
- **Experiment:** *Create prototype for one textbook, do A/B test among classmates\**

03

Difficult to ask for help

- **Survey:** 11/11 had confusions while reading, 8/11 did not know how and where to ask for help
- **Experiment:** Uploaded textbook to Google Drive, only 2/11 left comments -> driving initial traction, *meeting users where they are is important*

**Kawm**

Making textbooks accessible, social and visual

# What is Kawm?

A new reading platform/ plugin that makes reading easier & more social

Introduction to Artificial Intelligence

View Insert Format Tools

**Dictionary of terms**

**Reactive control** – Control that depends on stimulus from external variables

**Reference Path** – Path of possible actions, as mapped on a 2D representation of actuators

**Control Decisions**– Decisions on how and when to move actuators

**1**

**Images in text**



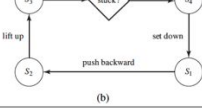


Figure 25.24(a)



(a)



(b)

**Figure 25.24** (a) Genghis, a hexapod robot. (b) An augmented finite state machine (AFSM) for the control of a single leg. Notice that this AFSM reacts to sensor feedback: if a leg is stuck during the forward swinging phase, it will be lifted increasingly higher.

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Share

**2**

Q & A Resources

Amal Muthukumar 8:02 PM Today

Here's a cool video I found that shows this happening!



**3**

Q&A Resources

Amal Muthukumar 8:42 PM Today

500 Wasn't reactive control a subset of anomaly detection? Why is that part of robot kinematics?

Amal Muthukumar 8:42 PM Today

500 It is because the concepts in kinematics apply the concepts in anomaly detection

1

Definitions and images in text are scraped and displayed.

- Less scrolling
- Better understanding

2

Resources that explain better can be shared

- Better understanding
- Greater interest in learning

3

Question and answer segment

- Students no longer stuck
- Social motivation

# Market Opportunity

152 million tertiary students worldwide

50%

use open source textbooks

*Service provided: Tutor Marketplace, targeted ads,  
Freemium model*

75 million x \$20/year  
=  
\$1.5 billion a year

\$20 billion

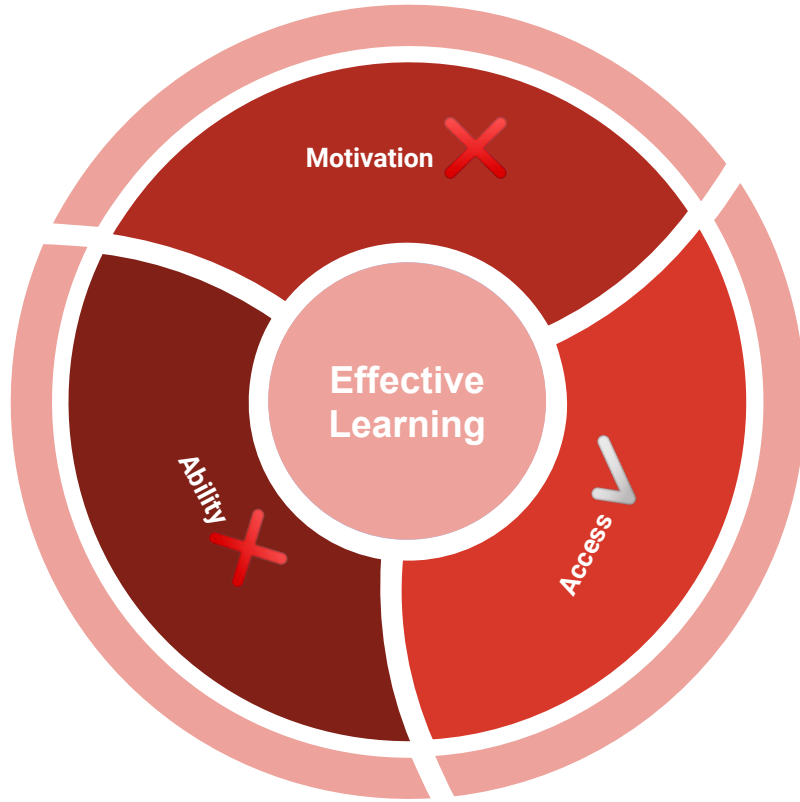
in textbook sales

*Service provided: Stronger outcomes compared to competitors  
Transition from print to digital*

\$20 billion \* 0.05 margin  
=  
\$1 billion a year



# Current State of Online Reading

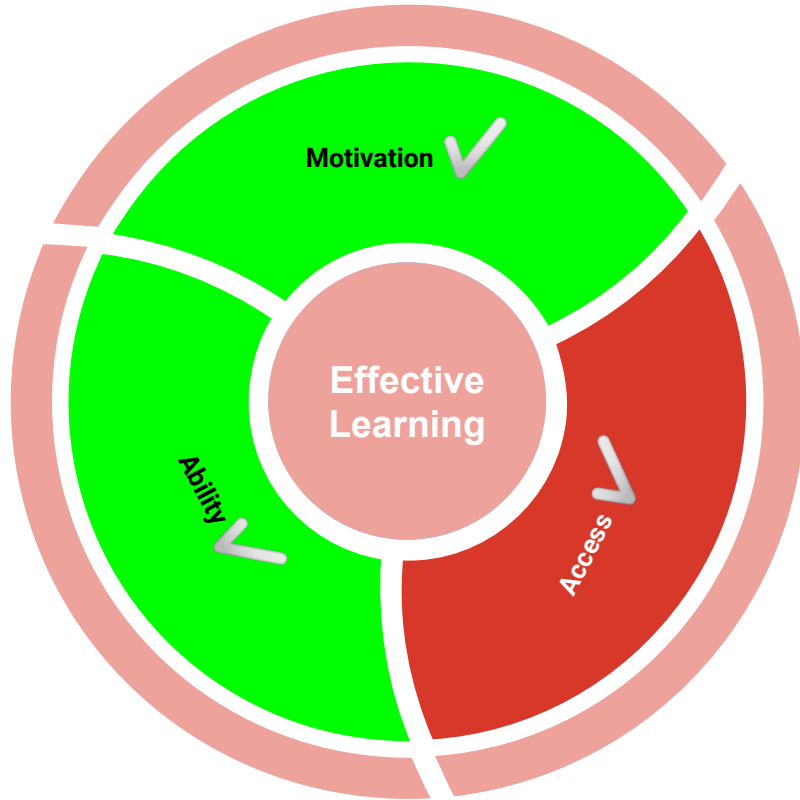


Access - High levels of access to information

Ability - inability to comprehend technical/difficult information, no guidance or ramp up

Motivation - End goal not clearly visible, social motivation lacking

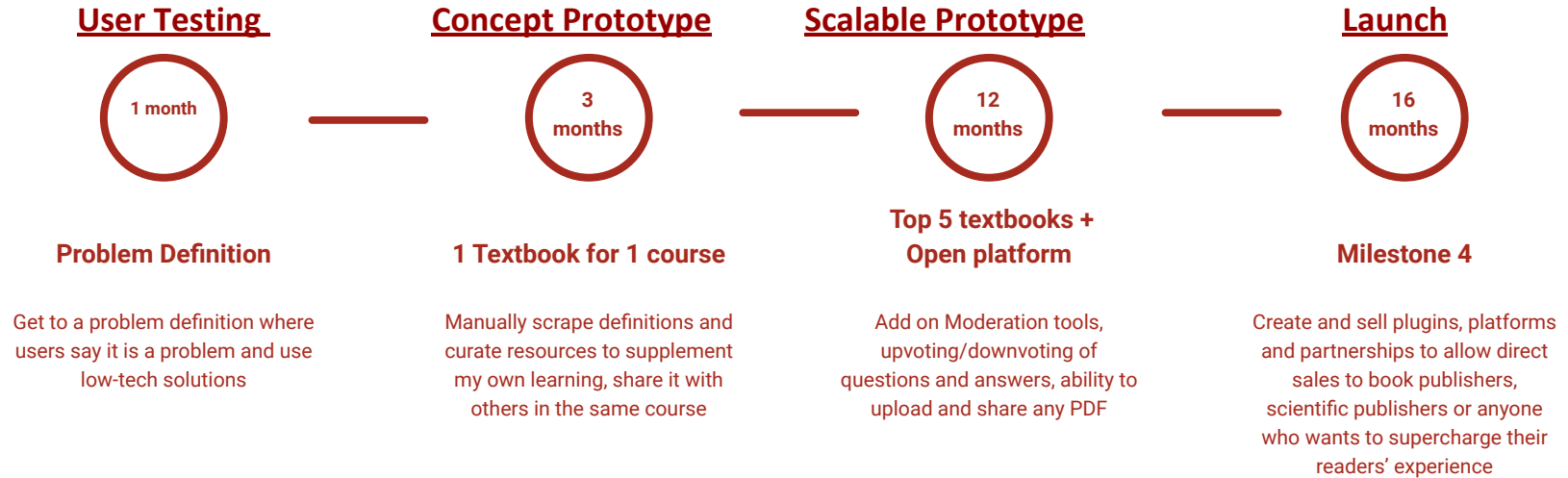
# Kawm supercharges the motivation and ability of online learners



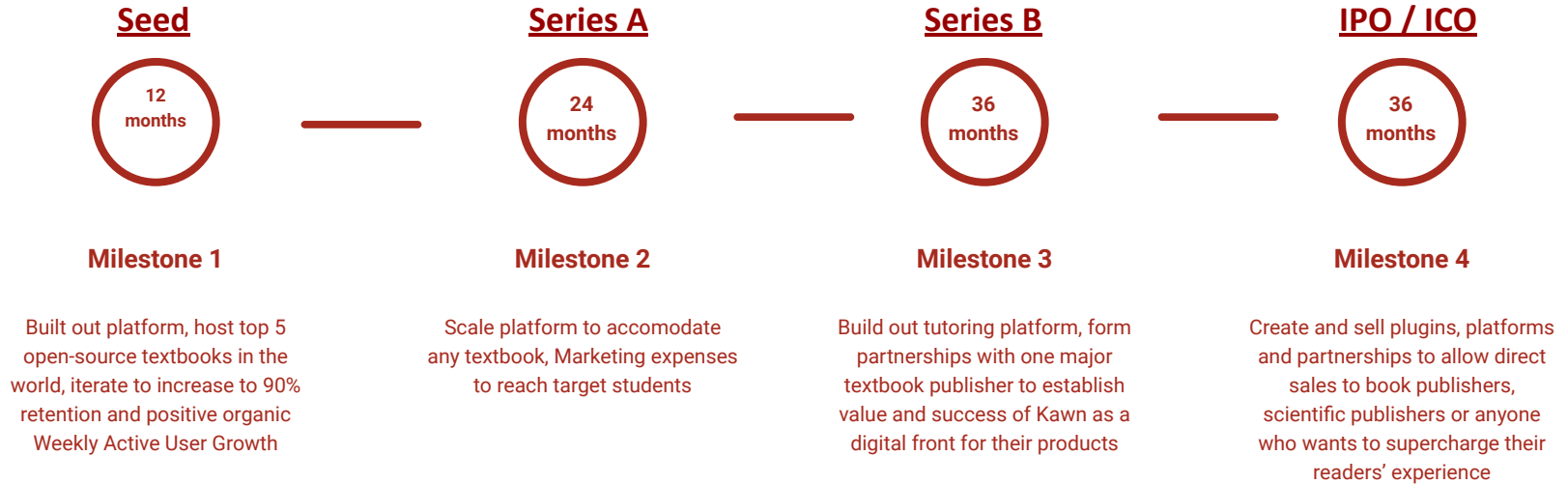
Ability - Dense text is supplemented by other resources, moving dictionary and live community

Motivation - students don't feel stuck anymore - there is a resource / person who can help.

# Pre-funding Roadmap



# Post-funding Roadmap



# Go To Market

- 1) **Closed groups** Launch within universities as a way for higher understanding + engagement
- 2) **Top Textbooks** Getting practice question answers + Definition & Diagram locations for top 20 textbooks
- 3) **Any online text** Create broader open source browser extension to target any online reading

# Other potential use cases

1) **Localization**

Helping comprehension among non-native English speakers with foreign language support

2) **Empowering content creation**

When content creators are rewarded for creating content that addresses specific confusions

3) **Other valuable use cases - religion, documentation etc.**

Drive understanding and engagement

# Exit Strategy 1 – Acquisition / Strategic Partnership

## Pearson Plunges as U.S. Students Shun Textbooks for Online Resources at Rapid Pace

By Callum Keown    Sept. 26, 2019 6:19 am ET

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Text size    —    +



John Fallon CEO of Pearson Getty Images

rapidly than anticipated.”

Pearson's stock plunged on Thursday as the educational publisher warned on profits, blaming weaker U.S. university sales.

The British company said U.S. students were moving away from textbooks to digital products “more

### READ NEXT

Regeneron Stock Slides as French Drug Giant Sanofi Mulls Selling Stake

Sage Therapeutics Stock Is Cratering Because Its Depression Treatment Failed in a Key Trial

Cash Is Usually King In M&A. Not for This Company.

- \$10 billion in annual textbook sales with 30% of market using used books
- Textbook sales falling as students go digital, set to decrease 10% / 5 years (McKinsey)
- \$6 billion in current revenue with 20% margins - \$1.2 billion in investments
- 5 major players, first to “win” digital will have a huge advantage in digital-first world
- K12's platform and community gives a strong acquisition target to establish lead

# Exit Strategy 2 – Initial Coin Offering



- Kawm-coin will be created on the ethereum blockchain and sold to interested investors
- Founders and initial investors will retain all board seats
- Individuals with heavy contributions to community will be provided coins, to encourage community ownership
- Further funding can be obtained by mining more coins, assuming coin prices rise



# Asks

- 1) End goal of traction + prototype -> seed funding - feasible?
- 2) Introductions
- 3) Career advice

# Appendix

# Social Problems Kawm addresses

01

**\$1 trillion in debt over 44 million Americans, cost rising at 2x inflation**

- 15% reduction in home ownership -> lower lifelong equity/net worth
- Entrepreneurship & marriage delayed/never pursued
- Restricts Career choices and lowers job satisfaction
- Less social mobility, greater income inequality as job market changes

02

**Lower income & Minority students fall behind due to being underprepared in high school and lacking support**

- Supplementing text with videos makes understanding concepts easier for digital-native youth who may not have read as extensively
- More extensive online support network to catch a student who's stuck
- Tutoring marketplace reduces cost of individualized personal help

03

**Skills gap - new economy requires collaboration and problem solving, not rote learning**

- Passive reading of textbook becomes active exercise in collaboration and problem solving through answering questions
- Embedded resources and videos bring static text to life with real-world examples, allowing for deeper understanding and problem solving

# Valuation

\$2.5 billion in potential revenues

↓ 80% average profit margin of software companies

\$2 billion in profits

↓ 16x profit - valuation multiple

\$32 billion optimal valuation

↓ Assuming conservative 99% chance of failure

\$320 million valuation

↓ Applying Present Value = Future Value / (1 + IRR)^5, assuming IRR of 50%

\$4.2 million present valuation

In 5 years

# Costs to Reach Milestone

## Costs

|                              |                         |
|------------------------------|-------------------------|
| Web Development Expenditures | \$90,000                |
| Branding, Logo, Video        | \$10,000                |
| Initial Marketing Expenses   | \$15,000                |
| Market Research Expenses     | \$5,000                 |
| <b><u>Total</u></b>          | <b><u>\$120,000</u></b> |

## Equity

5%  
of the company for  
**\$150,000**  
(\$3 million valuation )

# Ask

5% of the company for \$150,000

Investors who 1) Are social-impact focused  
2) Has experience in consumer  
tech, preferably edtech

# Key Term Sheet Provisions

|    |                   |   |
|----|-------------------|---|
| 01 | Option Pool       | Kawm to have a option pool to allow it to provide stock to key employees or active community users, to reward and incentivize actions that make Kawm a thriving community of learning |
| 02 | Board Composition | 6 seats for founders and 1 seat for investor at Seed stage  |
| 03 | Dividend Rights   | 15% per year, exercisable after 2 years with liquidation preference   |
| 04 | Drag along rights | None - founders will decide whether sale or ICO will be best for the community and for the platform when Kawm reaches that stage  |
| 05 | Valuation         | \$3 million post money valuation  |

# Business Plan + Structure

## Angel/ Seed Stage

### **S- Corporation**



## Series A / B / C

### **C - Corporation**

- ✓ Control for personal liability in case of copyright infringement
- ✓ Centralized decision making by management
- ✓ Avoiding Double Taxation
- ✓ Avoid self-employment tax
- ✓ Low start-up expenses

- ✓ Limited Liability
- ✓ Easier to be acquired or to conduct an Initial Coin Offering
- ✓ Allows investment by tax-exempt individuals / investors
- ✗ Double taxation
- ✗ Costly set-up



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