POVs and Experience Prototypes

Optimizing K-12 Teaching Environments

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Initial Needfinding and POV

Learning for post-college professionals

We met **Aileen**, an elementary school teacher

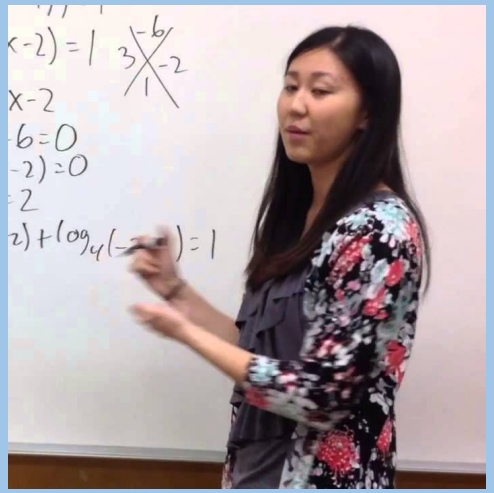
We were amazed to realize that her **biggest challenge** was getting her students to **focus**

It would be game-changing to **find the optimal learning environment for every student**

Final Needfinding Interviews

Jonathan Agin
Social studies
Grade 7-12
NYC

Sharon Matsuoka
Mathematics
Grade 6-12
Southern CA



Aileen Chang
All subjects
Grade K-1
Northern CA

What we found

Variability in students' preexisting knowledge

"Teach to the middle student"

Variability in lesson delivery methods

Confusion and frustration over time

New lesson plans are hard

Emphasis on classroom management

Teaching "much more of an art than a science"

POV Statement #1

We met **Jon**, a former high school social studies teacher

We were amazed to realize that lesson plans are typically **passed down by predecessors** or take **1.5 to 2 hours** a day to prepare

It would be game-changing to make lesson planning **easier and more collaborative** for teachers

POV Statement #2

We met **Sharon**, who has taught math for 5 years at various high schools

We were amazed to realize that she needs to "**teach to the middle student"** to deal with varying skill levels

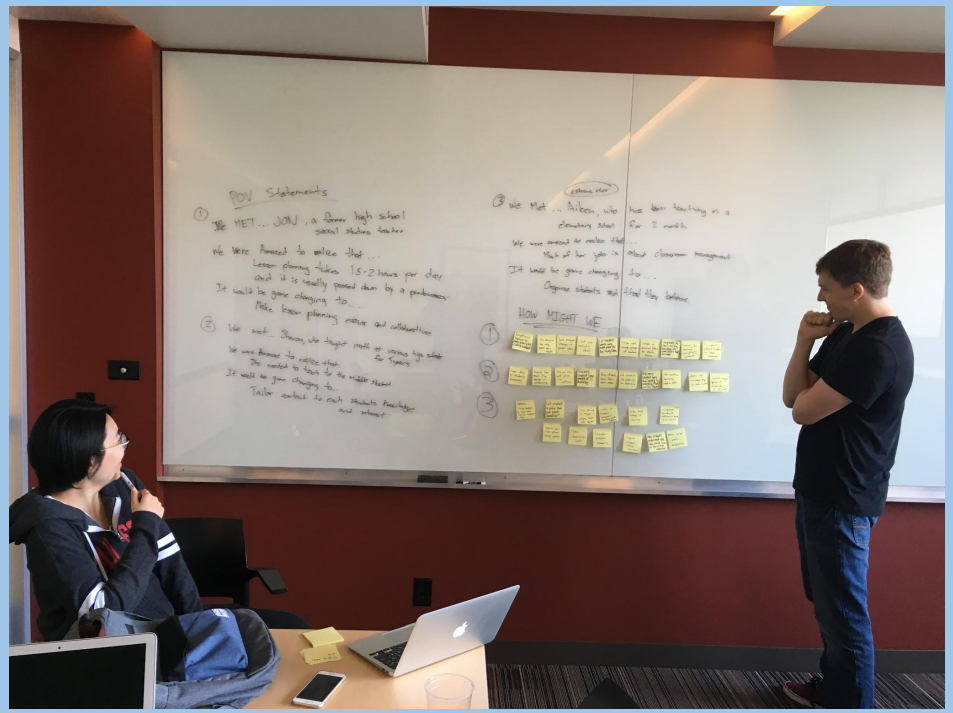
It would be game changing to **tailor content to each student's knowledge and interest**

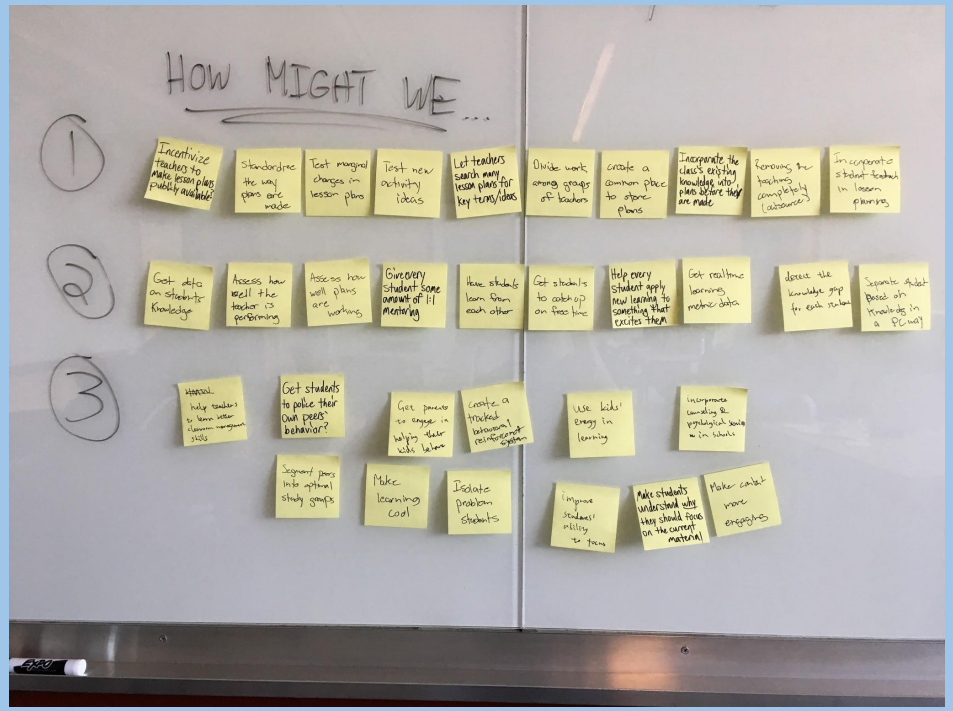
POV Statement #3

We met **Aileen**, a new elementary school teacher

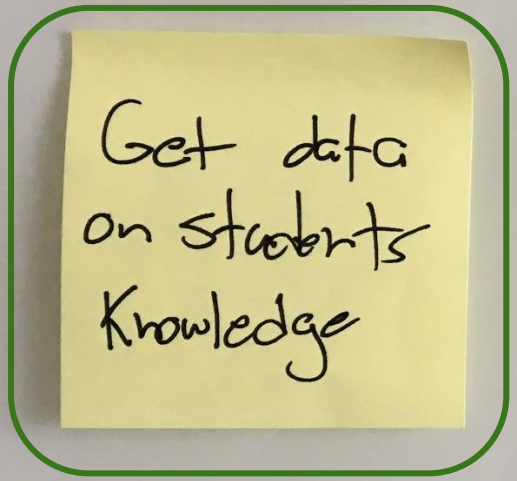
We were amazed to realize that much of her job comes down to **classroom management**

It would be game-changing to **set students up for good behavior**


POV Statements
HOW MIGHT WE


HOW MIGHT WE...
Incentivize teachers to make lesson plans publicly available
Standardize the way plans are made
Test marginal changes in lesson plans
Test new activity ideas
Let teachers search many lesson plans for key terms/ideas
Divide work among groups of teachers
Create a common place to store plans
Incorporate the class's existing knowledge into plans before they are made
Removing the teaching completely (classroom)
Incorporate student feedback in lesson planning
Get data on students' knowledge
Assess how well the teacher is performing
Assess how well plans are working
Give every student some amount of 1:1 mentoring
Have students learn from each other
Get students to catch up on free time
Help every student apply new learning to something that excites them
Get real-time learning metrics/data
Direct the knowledge gap for each student
Separate student based on knowledge in a PC way
Get students to police their own peers' behavior?
Get parents to engage in helping their kids learn
Create a tracked behavioral reinforcement system
Use kids' energy in learning
Incorporate counseling & psychological services in schools
Segment peers into optimal study groups
Make learning cool
Isolate problem students
Improve students' ability to focus
Make students understand why they should focus on the current material
Make content more engaging

Top 2 HMWs

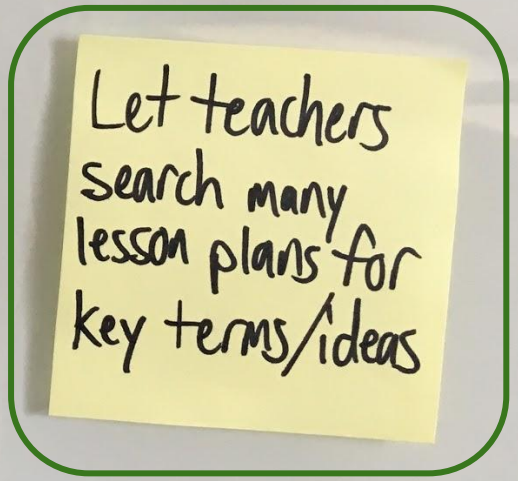


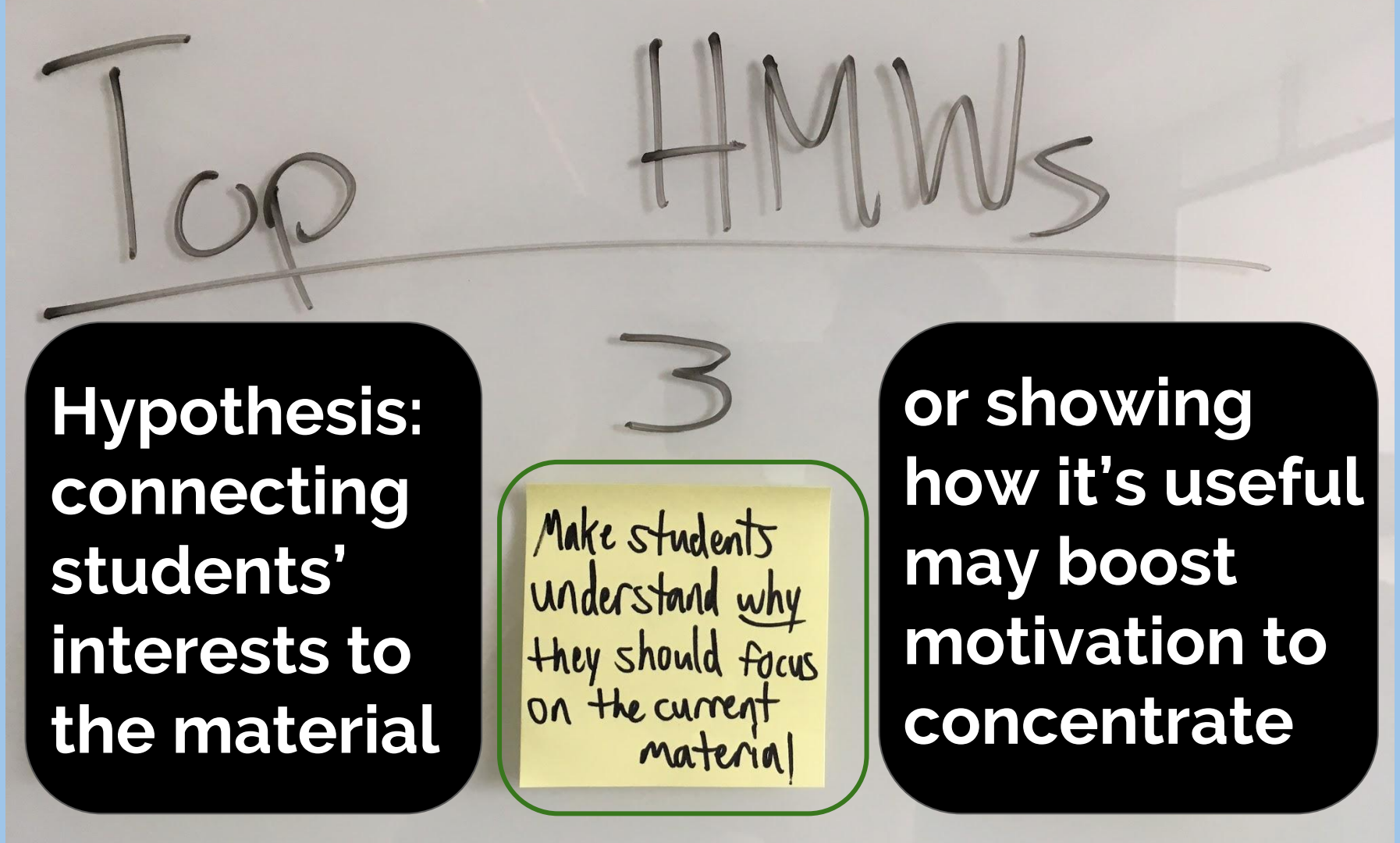
Help teachers see and address individual differences + pass knowledge on to future teachers

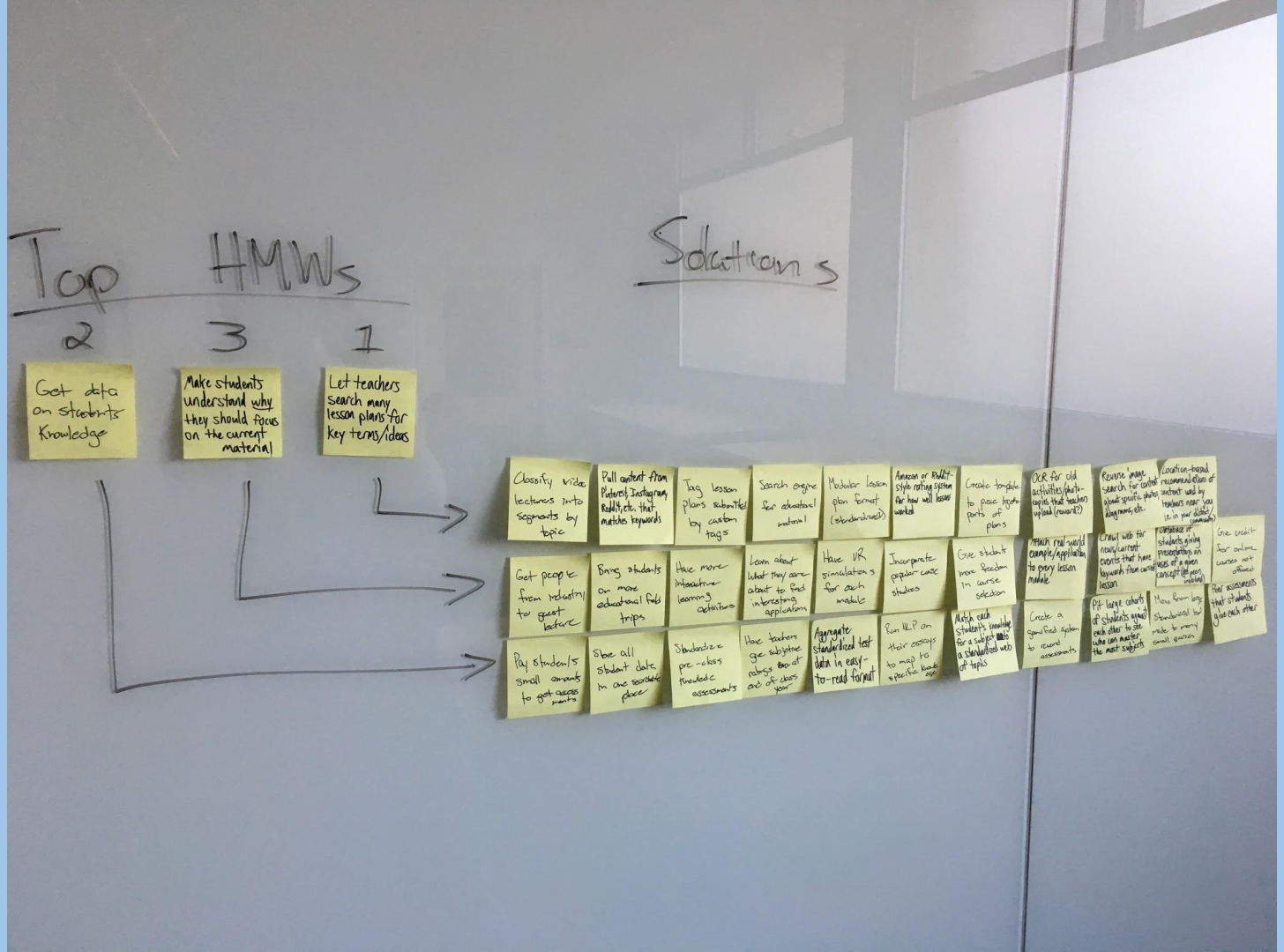
Top HMWs

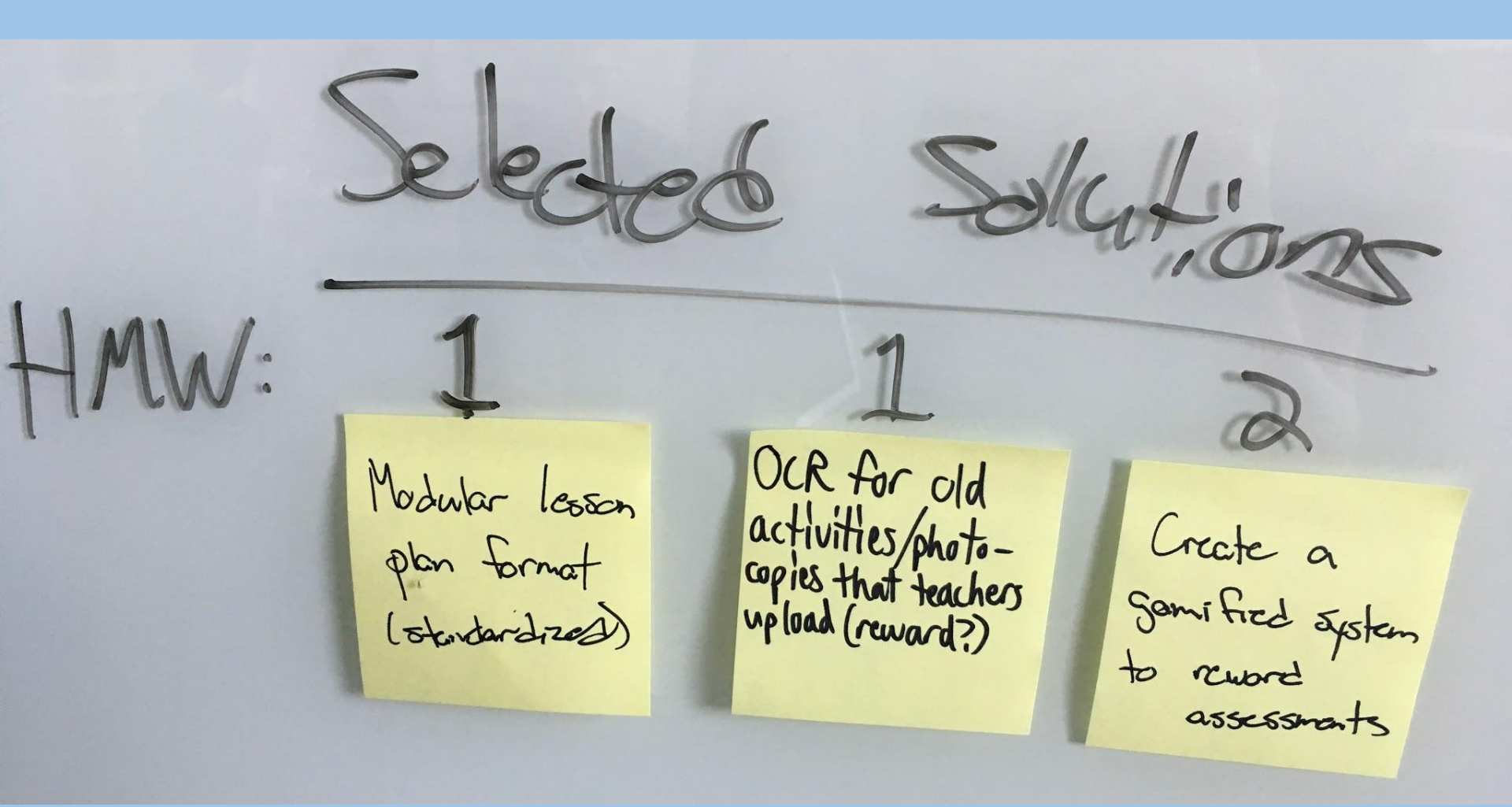
1

Best lesson plans are scattered across many websites and schools; why not consolidate?




Top HMWs
3
Hypothesis: connecting students' interests to the material
Make students understand why they should focus on the current material
or showing how it's useful may boost motivation to concentrate


Top HMWs
2
Get data on students' knowledge
3
Make students understand why they should focus on the current material
1
Let teachers search many lesson plans for key terms/ideas
Solutions
Classify video lectures into segments by topic
Pull content from Pinterest, Instagram, Reddit, etc. that matches keywords
Tag lesson plans submitted by custom tags
Search engine for educational material
Modular lesson plan format (standardized)
Amazon or Reddit-style rating system for how well lesson worked
Create template to piece together parts of plans
OCR for old activities/photocopies that teachers upload (rewards?)
Reverse image search for content about specific photos, diagrams, etc.
Location-based recommendation of content used by teachers near you (e.g. in your district/community)
Get people from industry to guest lecture
Bring students on more educational field trips
Have more interactive learning activities
Learn about what they are about to for interesting applications
Have VR simulations for each module
Incorporate popular case studies
Give student more freedom in course selection
Match real world example/application to every lesson module
Create web for newly/current events that have keywords from curriculum
Conference of students giving presentations on pieces of open concept (per year, maybe)
Give credit for online courses not offered
Peer assessments that students give each other
Pay students small amounts to get access
Store all student data in one searchable place
Standardize pre-class modular assessments
Have teachers give subjective ratings end of class year
Aggregate standardized test data in easy-to-read format
Run NLP on their essays to map to specific knowledge
Match each student's knowledge for a subject to a standardized set of topics
Create a Spaced system to reward assessments
Put large cohorts of students against each other to see who can master the most subjects
Move from long Standardized test mode to many small quizzes


Selected Solutions
HMW:
1
Modular lesson plan format (standardized)
1
OCR for old activities/photo-copies that teachers upload (reward?)
2
Create a gamified system to reward assessments

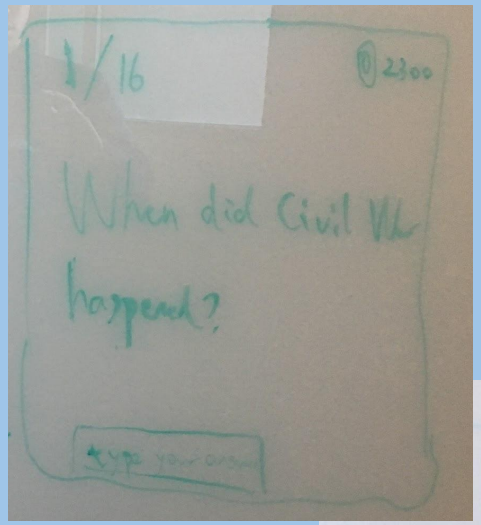
Experience Prototype Testing

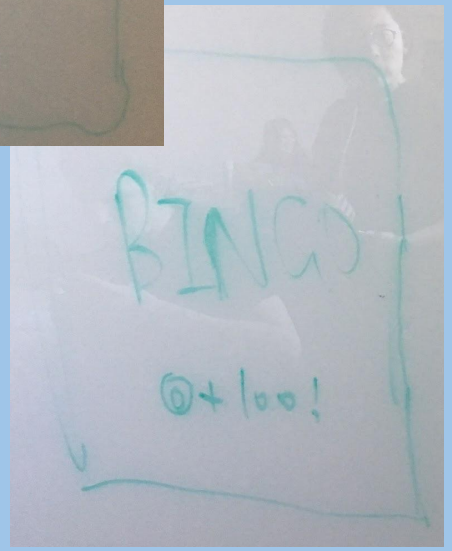
Dr. Karin Forssell
Stanford GSE

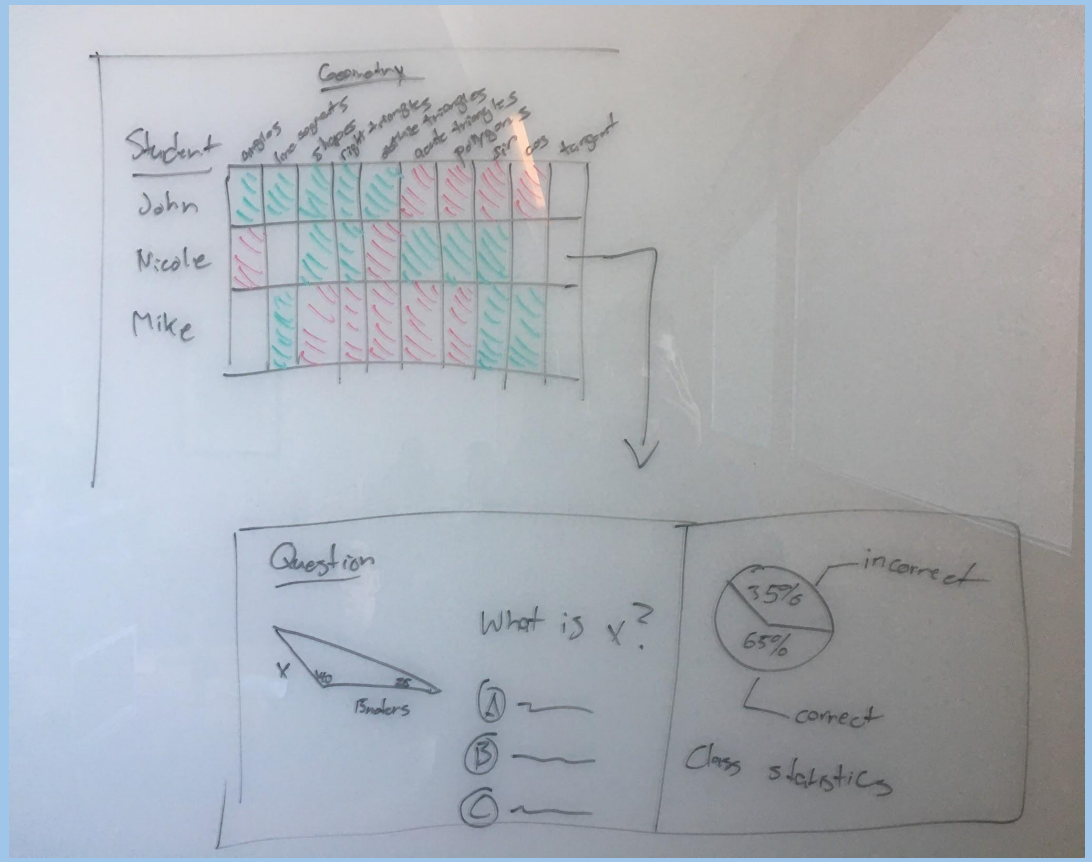
Amanda Klein
High school history

Elle Dodd
Elementary school

Experience Prototype #1

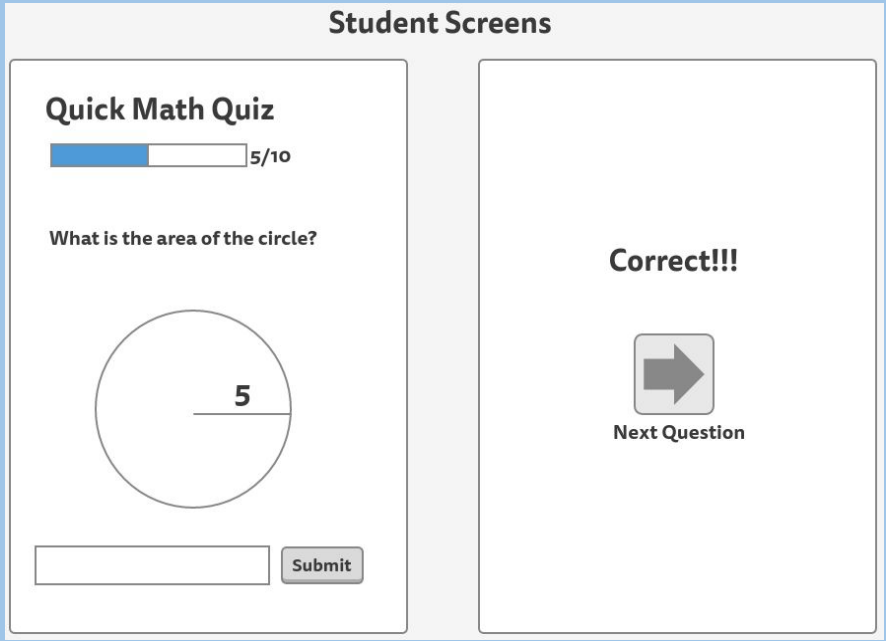




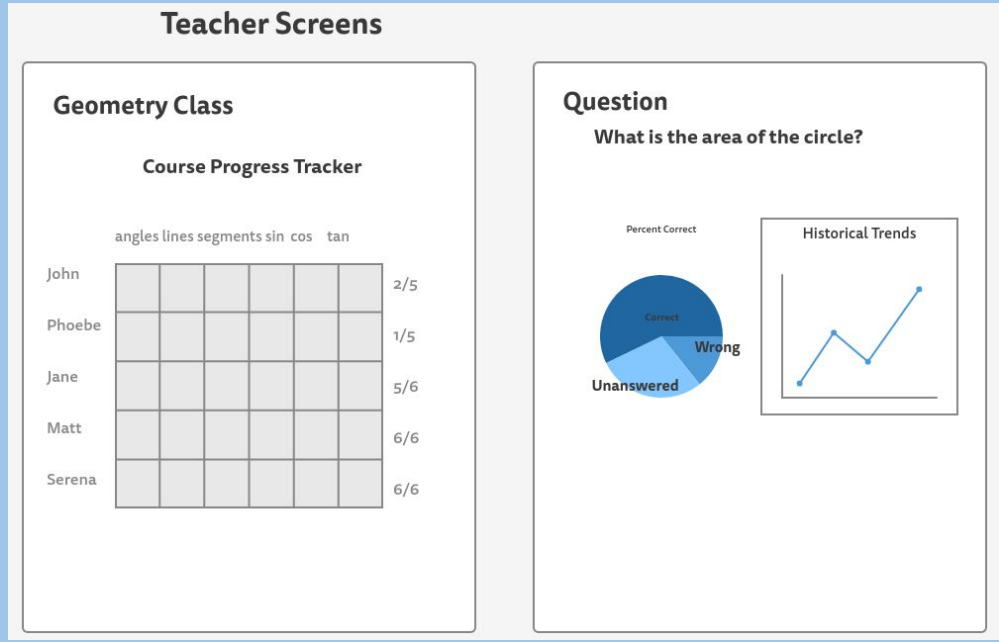


Experience Prototype #1

Student Screens



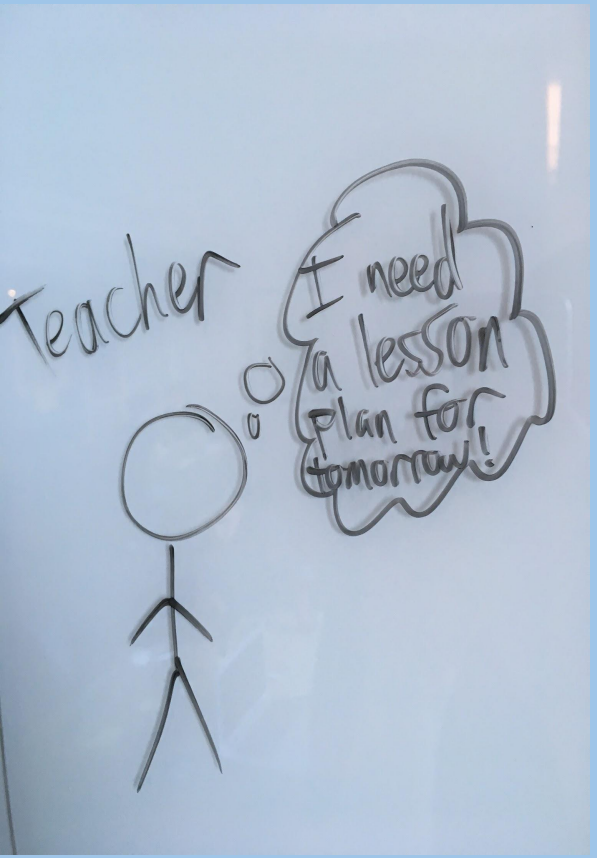
Teacher Screens

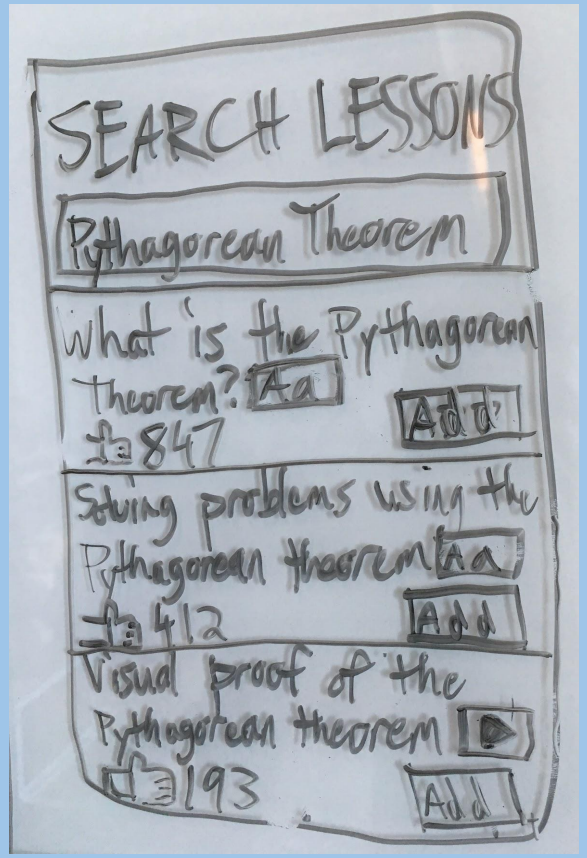


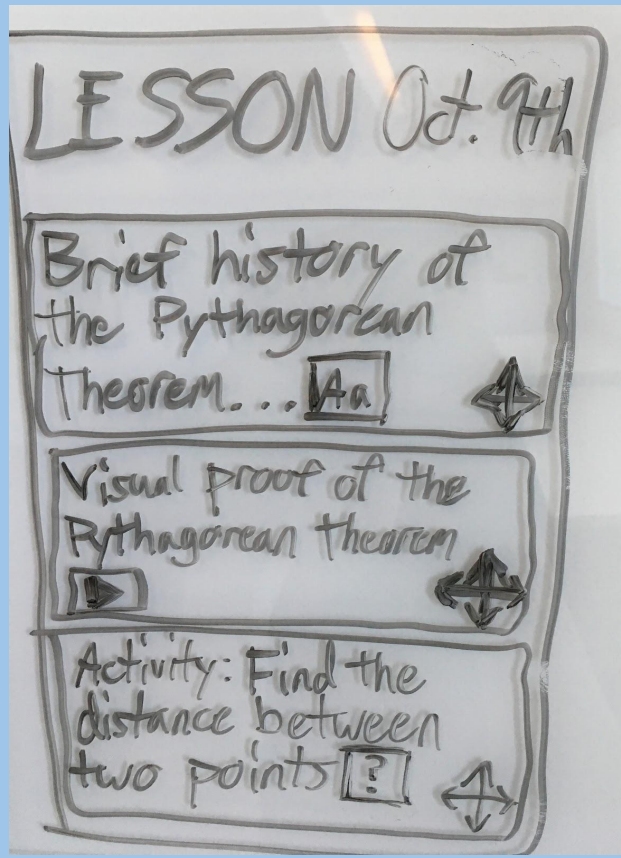
Experience Prototype #1

Things that worked	Reveals trends/distinctions, which many are trying to do; teacher screens are clear on what students know
Things that didn't work	Not easy to break knowledge down with such granularity or ask the right questions
Surprises and new learnings	Need to further investigate how to delineate "knowledge units"
Assumption(s)	Summative assessments don't capture this kind of data (true); there must be ways to make learning units more modular, testable (new assumption)

Experience Prototype #2



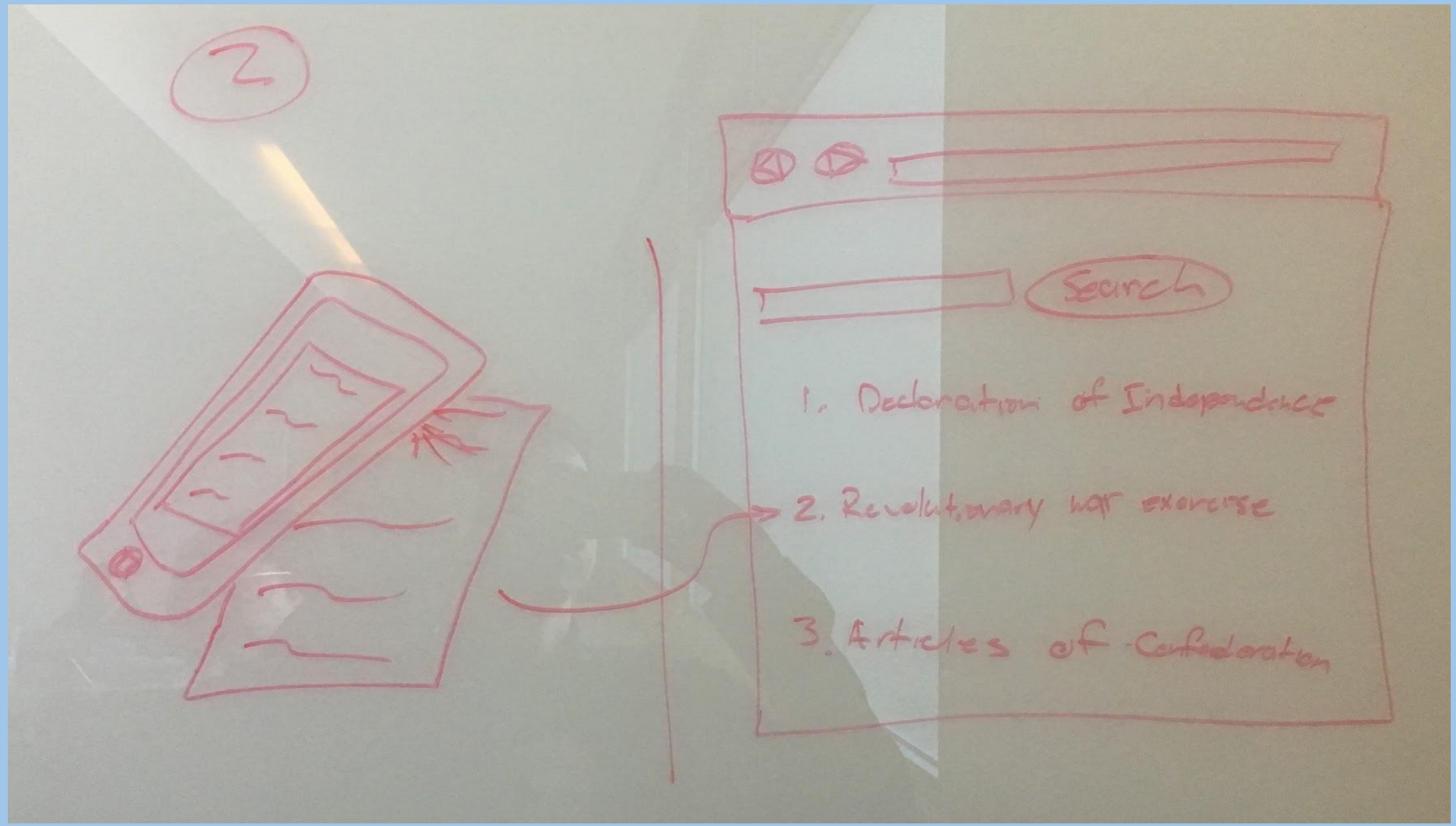




Experience Prototype #2

Things that worked	“Can snag what you need;” handy way to adapt to different classes
Things that didn’t work	Hard to understand Doesn’t have significant enough advantage over Google Docs
Surprises and new learnings	“Just this year, I’ve learned 5-10 new programs;” if UI not simple and clear enough, end result won’t even matter
Assumption(s)	Adaptation for different class needs is wanted (true); modularity and flexibility is immediately apparent (false); one user was confused

Experience Prototype #3



Experience Prototype #3

Things that worked	Addresses real problems Works like “Teachers Pay Teachers”
Things that didn’t work	Doesn’t hit **core** of problem Works like “Teachers Pay Teachers”
Surprises and new learnings	Main problem is amount of work **after** lesson (assessing, re-planning, etc.) not the availability of resources
Assumption(s)	Good digital lesson plans are scarce (false); many lesson plans are already made and shared digitally, also easy to collaborate on (e.g. Google Docs)