Mobile, Low-Bandwidth and Low-Tech.
The Story of Chi-Square Mobile

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About us

Context

- Argentina goes into lockdown in March 2020
- Instruction is emergency onlined
- Typically defaulting to video-conferencing
- Only 41.4% of students have access to a computer
- 84% access the internet primarily through a mobile device

Any solution we propose must be mobile first.

The Feedback Loop

- Instructor teaches an online session
- Feedback is immediately requested from students
- Reported in realtime
- Recommendations made by AI

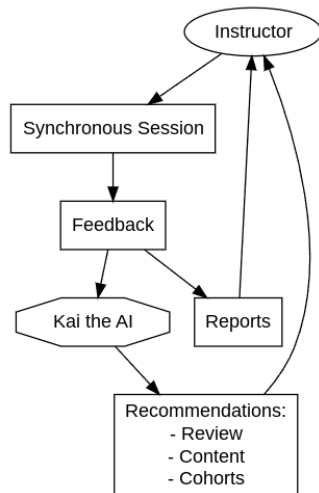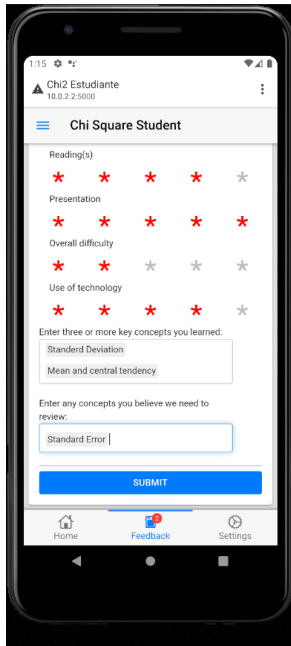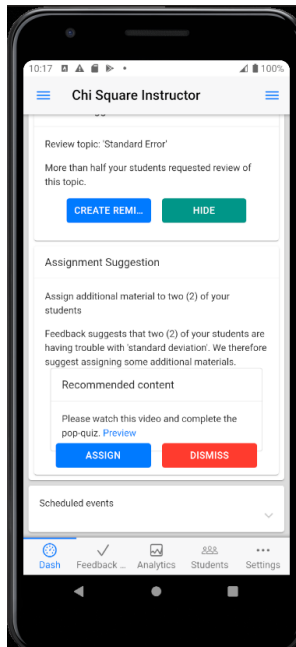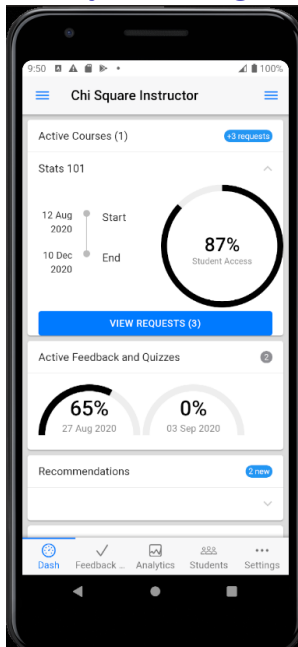Figure 1: The Feedback Loop

First try: "Emergency alpha"

- Shiny + {shinyMobile}
- Backend in mariaDB (AWS)
- Authentication with {cognitoR}
- Distributed as a PWA

First try: "Emergency alpha"

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- works
- updates quickly
- lightweight on devices
- cross-platform

- bandwidth issues detected
- not a native app
- not scalable

Alpha 2.0

- Used template from Android community.
  - e.g.: https://github.com/chi2labs/androidApps
- Quick updates since we're still showing a shiny app
- Playstore distribution

- Requires *some* knowledge of java
- still not scalable
- Android only

In the wild
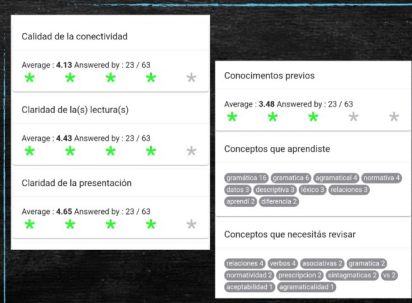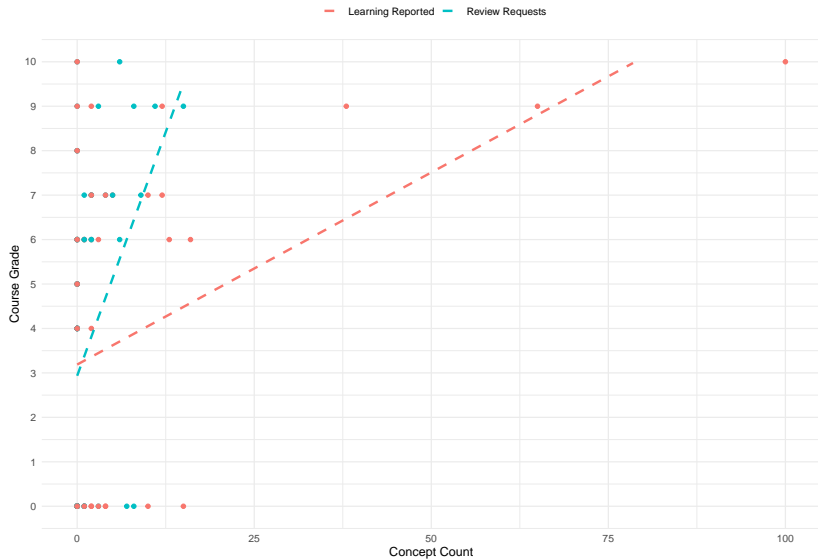
The research track

The research track

- Most distributions are non-normal and some important outliers found in the data. Furthermore grades are on an ordinal scale, therefore:
  - Kendall's Tau (rank correlation)
  - Ordinal regression
- Encouraging results
  - Strong correlation (Tau $> .3$) found
  - Predictive after three weeks use
  - Good feedback from instructors

NLP issues

- Plenty of pretrained models for general and specific purposes (e.g. medical/legal)
- Context of course becomes very specific (invalidating general models)
- Input issues
- Spanish v. English

Beta 1.0

- ▶ True native app with **Flutter**
- ▶ Backend moved to Firebase (Google Cloud)
- ▶ Authentication by Google
- ▶ Analysis in R with plumber API for JIT calculations
- ▶ Content recommendations
- ▶ Email interface

Beta 1.0

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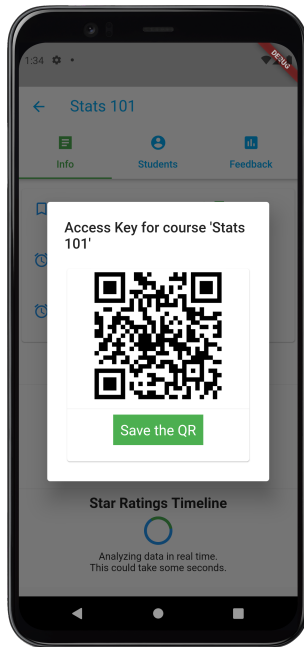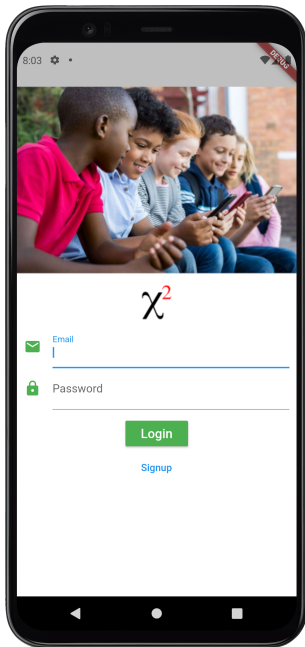
Email integrated {blastula}

Dear Professor Whitmer.

Here are the results from the latest feedback request for your course *Stats1*. The feedback was in relation to the class *Centralization and dispersion"* and expired on December 16, 2021

Star Ratings

Summary of responses to the star-ratings questions:
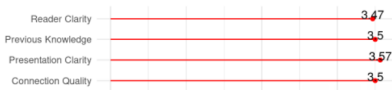
Concepts Learned and Review Requests

Concepts by Category

Concepts Learned	Review Requests
range	mean
deviation	range
mean	variance
standard	median
median	deviation

Feedback from instuctors

"It would be nice to have a unified dashboard online with all the information."

— Prof. Cecilia Magadán

Instructor dashboard

Gramática 2021 Unsam

Summary ⓘ

33 Students	**10** Requests Made	**84** Submissions	**25.45 %** Submissions Completed

Feedbacks ⓘ —

Click on a feedback title for details.

Show [10] entries   Search: [_____]

name ⇅	type ⇅	perc_completed ⇅	startDate ⇅	endDate ⇅
Clase 2	feedback1	36.36	2021-08-13 14:10:00	2021-08-19 02:30:00
Clase 3	feedback1	36.36	2021-08-20 00:05:00	2021-08-26 00:06:00
Clase 4	feedback1	36.36	2021-08-27	2021-09-02 02:30:00

Students ⓘ —

Click on a student for details.

Show [10] entries   Search: [_____]

lastname ⇅	firstname ⇅	email	firstLogin ⇅	lastLogin ⇅
Alderete	Sofia	sofiaalderete558@gmail.com	2021-08-19T22:17:48Z	2021-09-17T13:47:15Z
Arce	Florencia	fiore86@gmail.com	2021-08-20T00:08:49Z	2021-09-17T00:12:59Z

Instructor dashboard

Content Recommendations

funcional

Topic:	funcional
Type:	
Reference:	es.linkedin.com
Applies to:	1 students
Preview:	View

clases de palabras

Topic:	clases de palabras
Type:	
Reference:	openbooks.library.umass.edu
Applies to:	1 students
Preview:	View

ambigüedad categorial

Topic:	ambigüedad categorial
Type:	PDF/Adobe Acrobat
Reference:	www.infoamerica.org
Applies to:	1 students
Preview:	View

adjetivos

Topic:	adjetivos
Type:	
Reference:	www.significados.com
Applies to:	1 students
Preview:	View