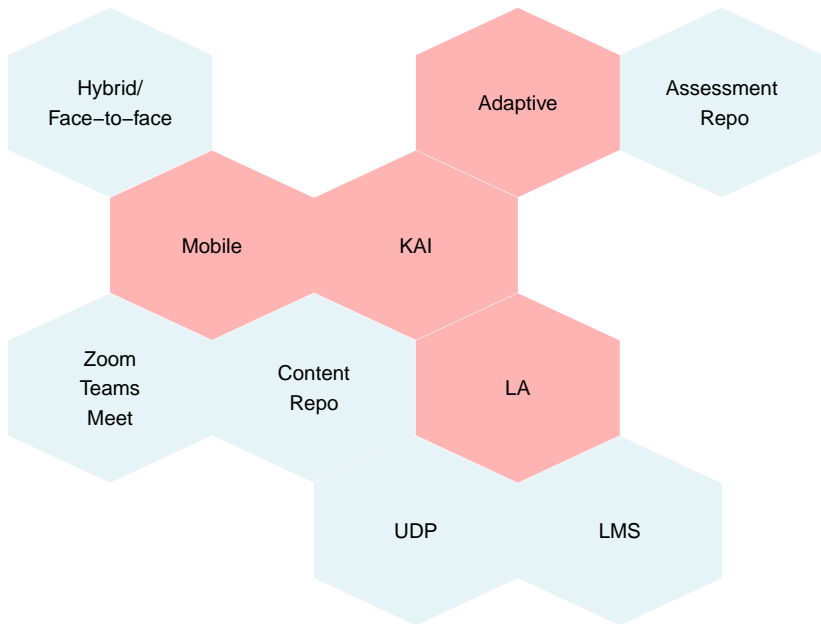


Chi Square Ecosystem

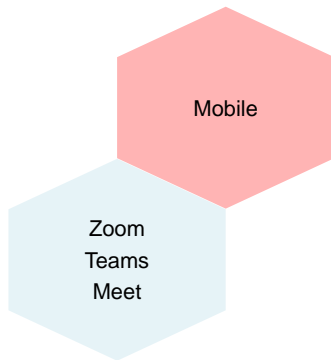
2022-05-22

Chi Square Ecosystem



Mobile

- ▶ Helps create/maintain a feedback loop for instructors using zoon/teams/meet
- ▶ Requires no institutional buy-in
- ▶ Low barrier to entry



Mobile - The Feedback Loop

The mobile app helps instructors create an effective feedback-loop with their students.

- ▶ Ideal for video conference based instruction
- ▶ Also used in hybrid settings
- ▶ Mitigates learning loss

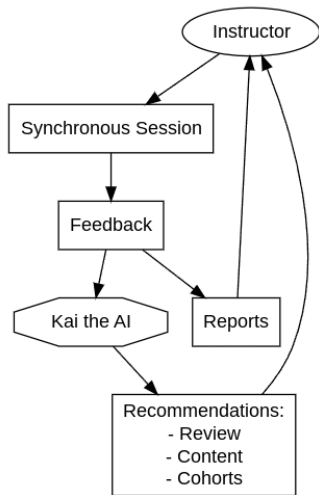
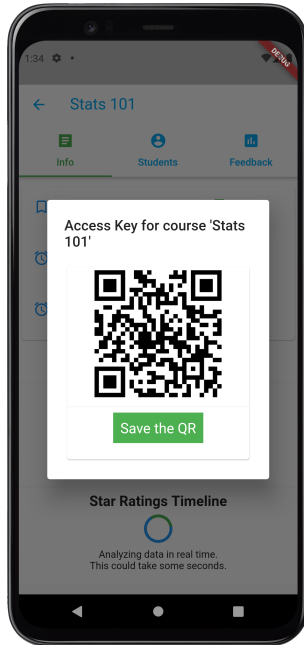
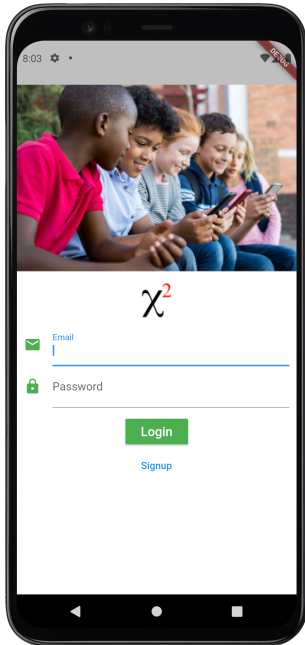


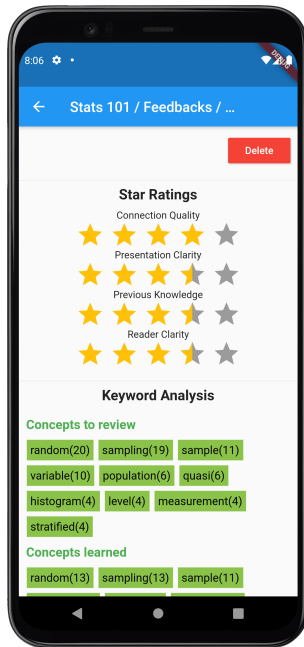
Figure 1: The Feedback Loop

Mobile: setup



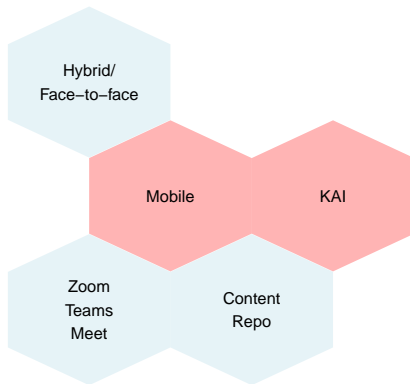
Mobile: Feedback

- ▶ Feedback templates are based on star ratings and free text input of *concepts learned* and *concepts for review*
- ▶ The feedback is typically requested immediately after a zoom session
- ▶ The templates have been kept short and to the point, allowing students to provide feedback in two minutes or less

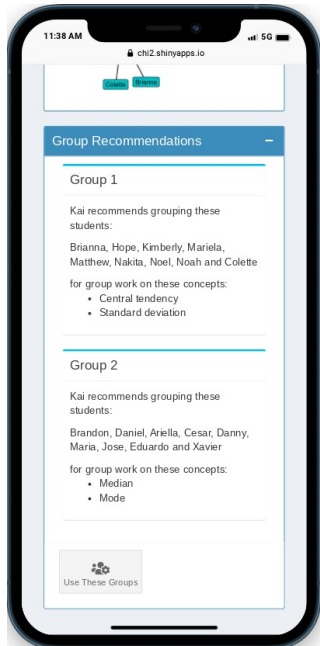
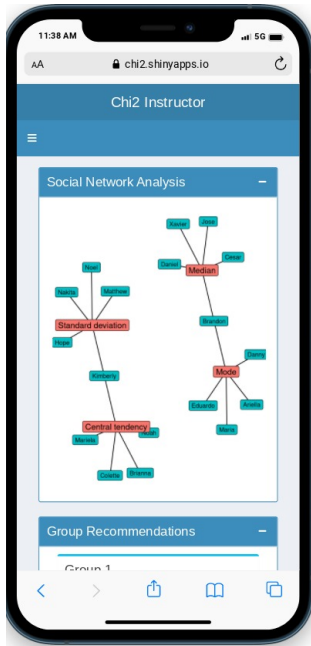


Mobile: Extensions

- ▶ Mobile also used in hybrid setups
- ▶ Can connect to Kai for cohort recommendations
- ▶ Connects to Kai and Content repo for Content Recommendations

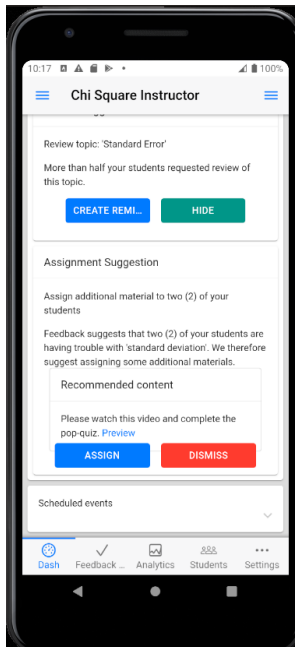


Mobile: Cohort Recommendations



Mobile: Content Recommendations

- ▶ Content recommendations are offered when a smaller group of students have shows problems with a particular topic
- ▶ This saves classroom time and reduces strain on the instructor
- ▶ Recommendations can be deployed through mobile or LMS if integrated
- ▶ Relevant assessments can be recommended



Mobile: Email Interface

- ▶ Reporting takes place via email
- ▶ Reduces dashboard fatigue
- ▶ Increases likelihood that information is actually consumed by instructor
([Dietrichson & Whitmer(2018)])

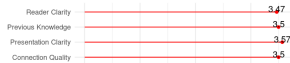
From: Kai the AI <sasha@uvcms.com>
Date: Friday, January 7, 2022 at 8:21 AM
To: jcwhitmer@gmail.com
<jcwhitmer@gmail.com>
Subject: Latest Feedback and Recommendations

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

Mobile: Email Interface

- ▶ When content and cohort recommendations are available (courtesy of Kai), these too will be pushed through the email interface.
- ▶ Instructors may choose to accept or reject the recommendations (or do nothing). Actions are recorded by Kai for continuous personalization and model tuning.

MEAN	VARIANCE
standard	median
median	deviation

Kai's Recommendations

Review in Class

It is recommended to review the following concepts in class:

Review Recommendations

Concept	N Students
Mean	12
Range	12
Variance	9

Assign Content

We also found some content recommendations for specific students:

Content Recommendations			
Concept	Content type	Reference	Assign to (n) Students
Median	Textbook Online	Dietrichson, 2019	8
Standard deviation	Textbook Online	Dietrichson, 2019	7
Central tendency	Textbook Online	Dietrichson, 2019	5
Mode	Textbook Online	Dietrichson, 2019	5

[Review Recommendation and Assign](#)

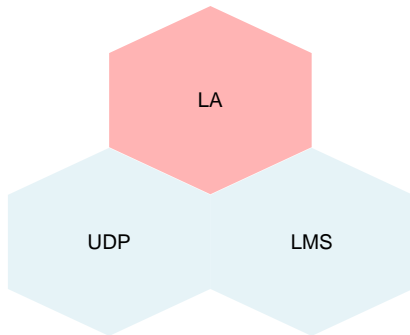
Best regards,

Kai the AI

Kai the AI is an artificial intelligence created and maintained by Chi-Square Labs. (c) Chi Square Laboratories and E G Analytics Inc.

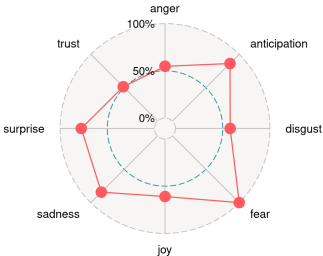
Chi Square Learning Analytics

- ▶ Analyzes LMS data
- ▶ Includes socio-demographic data when available
- ▶ Provides Descriptive, inferential and risk modeling
- ▶ Extensive reporting
- ▶ Plug and Play with Moodle and UDP



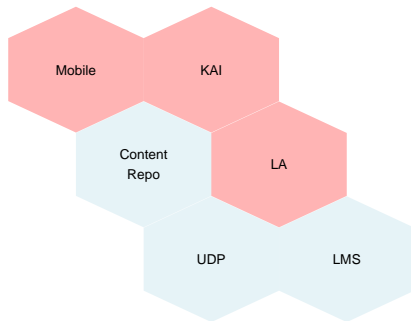
Chi Square Learning Analytics: Descriptives

Metrics Summary			
Distribution		Density	
Metric	Median	Mean	SD
Word Count	112	128	71
Type/Token	0.663	0.675	0.108
FRES	59.68	51.28	157.8
Flesch-Kincaid	10	11	22
Response-lag	408:57:14	504:36:07	432:31:08



Chi Square Learning Analytics: Extensions

- ▶ Addition of Kai allows for advanced predictive analytics through continuous model tuning
- ▶ Kai will also provide actionable recommendations and interpretation of results
- ▶ Content repository allows for LMS integration
- ▶ Feedback through mobile enhances quality of predictions



Chi Square Learning Analytics: Predictive Analytics

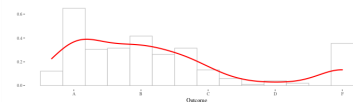
Data

Source(s): Uvizin Data Platform
Courses: 10
Students: 290

Model 1

Type: Ordinal Regression
Outcome Var: Course Grade
Created: May 11, 2020
Backtested: No

Distribution of outcome variable



Students' Grade Prediction

	First	Last	Grade
1	Lindsey	Orion	A
2	Regina	Friesen	A
3	Kathryn	Smith	A
4	Trenna	Vial	B
5	Trenna	Vial	A
6	Olivia	Grabow	A
7	Karissa	Fritch	A
8	Jared	Wilfardsen	A

Trenna Vial

Prediction: **A**
Probability: 79.8%

Probabilities

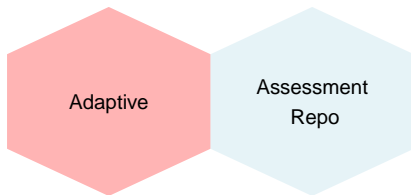
A 79.77%
B 16.89%
C 2.42%
D 0.14%
F 0.77%



Local Model Evaluation (LME)

Adaptive Assessment

- ▶ Allows instructors and/or institutions to efficiently assess student ability (θ).
- ▶ Reduces cost involved in creation of test items
- ▶ Reduces frustration related to “long-form” assessment
- ▶ Requires a test-item repository



Adaptive Assessment: Create Test Bank

- ▶ The instructor selects a repository, relevant grade-levels and the initial theta (expressed in standard deviations)
- ▶ Subject areas to be included should also be specified

The screenshot shows a web form titled "Selection Criteria" with a blue header. It contains three main sections: "Select Repository", "Grade Levels", and "Initial Theta".

- Select Repository:** A dropdown menu with "Demo English" selected.
- Grade Levels:** A horizontal slider with a scale from 3 to 7. The scale has tick marks at 3, 4, 5, 6, and 7. A blue bar highlights the range from 4 to 6. There are blue square markers at 4 and 6, and a grey circle marker at 5.
- Initial Theta:** A horizontal slider with a scale from -3 to 2. The scale has tick marks at -3, -2.5, -2, -1.5, -1, -0.5, 0, 0.5, 1, 1.5, and 2. A blue bar highlights the range from -3 to -0.5. There is a blue square marker at -0.5 and a grey circle marker at -0.5.
- Subject Areas:** A text input field containing the word "Matemáticas".

Adaptive Assessment: Review and Preview

- ▶ Once the selection has been made and filters applied, the instructor may review all the test items
- ▶ Alternatively they can opt for a preview, in which they will take the assessment offered by the test engine


Test Bank

Areas	Matemáticas	40
Category	Application of concepts	18
	Communication	4
	Using algorithms	1
	Resolving problems	17

Preview test bank

Test Length

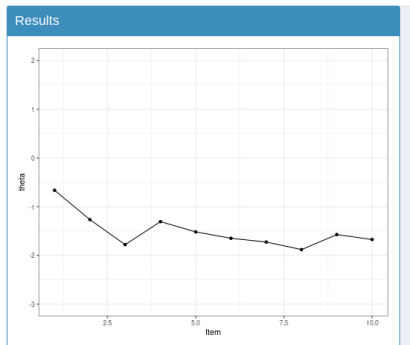
3 10 20



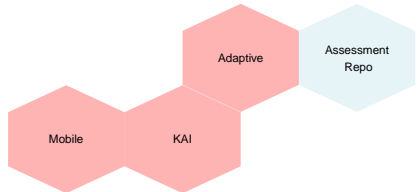
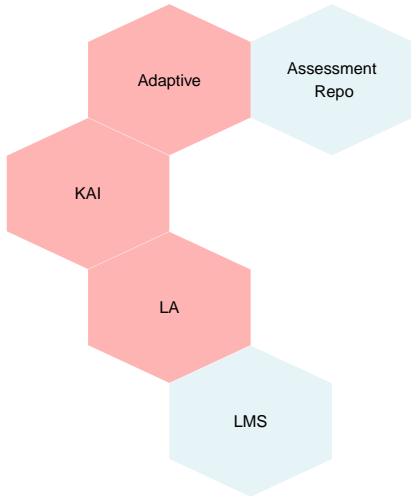
Preview

Adaptive Assessment: Review Results

- ▶ The resulting theta-evolution curve is available for review.
- ▶ Deploying the assessment is done either through a QR-code/link
- ▶ LTI connection is also possible for LMS deployment

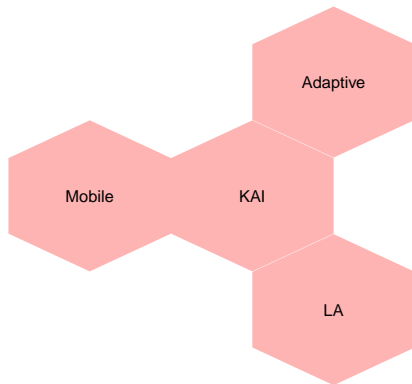


Adaptive Assessment: Extensions



Kai the AI

- ▶ AI component which speaks to the other technologies in the ecosystem
- ▶ Uses NLP to parse non-structures input from Mobile
- ▶ Recommends actions to instructor and/or students
- ▶ May be granted high degree of autonomy



Questions? Contact us

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