

Evolving

a Learning Analytics Platform

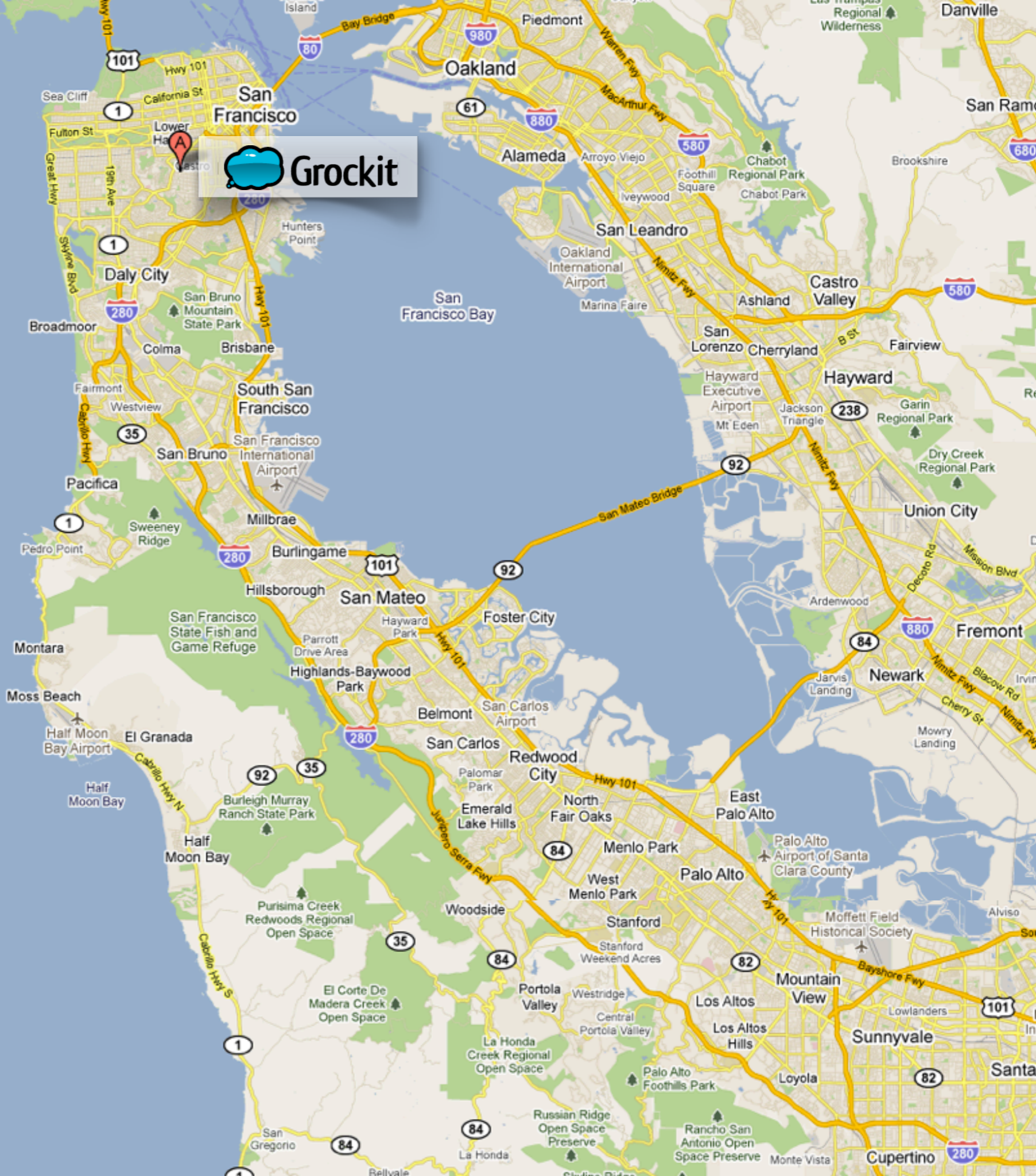


Ari Bader-Natal

ari@grookit.com



February 28, 2011



Questions to ask when evolving a platform:

Questions to ask when evolving a platform:

The **first** question

Questions to ask when evolving a platform:

The **first** question

The **interesting** questions

Questions to ask when evolving a platform:

The **first** question

The **interesting** questions

The **infrastructure** question

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The **discovery** question

Questions to ask when evolving a platform:

The **first** question

The **interesting** questions

The **infrastructure** question

The **subset** question

The **missing data** question

The **pro-active** question

The **effort** question

The **discovery** question

The **production** questions

Questions to ask when evolving a platform:

The **first** question

The **interesting** questions

The **infrastructure** question

The **subset** question

The **missing data** question

The **pro-active** question

The **effort** question

The **discovery** question

The **production** questions

The **audience** question

The context questions

What is Grockit?
Where? Why? How?

GMAT

GMAT



Read explanations for questions you've answered

Get expert explanations and tips for how to get the right answer faster.

[Start Review](#)

Lessons

Work with instructors in group classes and one-on-one.



Group Study

Chat live with other students, trade tips, and learn by teaching.



Solo Practice

Practice against the clock and focus where you need it.



Your Performance

Quantitative **31%**

Verbal **22%**

[Performance Details »](#)

Your Reviews

Get expert explanations for questions you've answered.

[Review Now »](#)

Calendar



Tomorrow
3:05am

Quantitative Group Study

GEO - Review

Skills: Problem Solving, Geometry; Difficulty: Moderate

6 people attending



7/14/10 4pm

Verbal Group Study

Skills: Assumption, Diction; Difficulty: All

2 people attending



Get more test taking strategies and tips on admissions by tutors
[GMAT Blog »](#)



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Grockit.com

One person shared this.



Roomies! « College Prep

7 people shared this.



Grockit User cherry a.

3 people shared this.



Facebook social plugin

Quantitative Leaders



Morgan I.

2899 xp earned



John D.

2835



khushbu j.

2306

[view top 10](#)

Verbal Leaders



manh linh h.

5989 xp earned



Rohit s.

2126

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GMAT

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 Start Review

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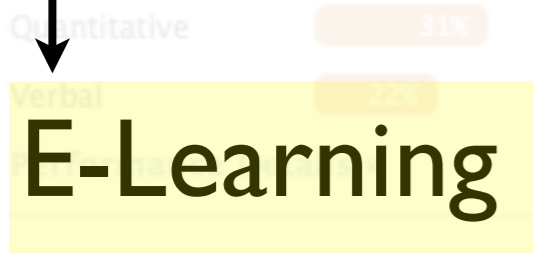
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Your Performance



E-Learning

Your Reviews

Get expert explanations for questions you've answered.
Review Now >

- Grockit.com One person shared this.
- Roomies! < College Prep 7 people shared this.
- Grockit User cherry a. 3 people shared this.

Calendar

Tomorrow 3:05am	Quantitative Group Study GEO - Review Skills: Problem Solving, Geometry; Difficulty: Moderate 6 people attending
7/14/10 4pm	Verbal Group Study Skills: Assumption, Diction; Difficulty: All 2 people attending

Intelligent Tutoring Systems

Quantitative Leaders

- Morgan L. 2899 xp earned
- John D. 2835
- khushbu j. 2306

view top 10

Verbal Leaders

- manh linh h. 5989 xp earned
- Rohit s. 3126

Get more test taking strategies and tips on admissions by tutors
GMAT Blog >

Computer-Supported Collaborative Learning

SAT

SAT

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**Grockit.com**

One person shared this.

**Roomies! « College Prep**

7 people shared this.

**Grockit User cherry a.**

3 people shared this.



Facebook social plugin

Math Practice

[Start Now](#)

Reading Practice

 Use timer[Start Now](#)

Writing Practice

[Start Now](#)

Personalized Practice

**Writing Diagnostic**[Start](#)**Reading Diagnostic**[Start](#)**Math Challenge**[Start](#)

Specific Skills

Target specific skills or difficulty levels.
[Create a custom game »](#)

Your Performance

Math 46%Reading 14%Writing 18%

Your Reviews

Get expert explanations for questions you've answered.

[Review Now »](#)

Math Leaders

**elvind c.**

1459 xp earned

**Fed N.**

1345

**Gary Z.**

1049

[view top 10](#)

Reading Leaders

**Huy M.**

1513 xp earned

**Dhara**

1005

**MALEK A.**

783

System control
(adaptive study)



Math Practice

Reading Practice

Use timer

Solo Practice

Practice against the clock and focus where you need it.



Start Now

Start Now

Start Now

Writing Practice

Personalized Practice



Writing Diagnostic

Start



Reading Diagnostic

Start



Math Challenge

Start

Specific Skills

Target specific skills or difficulty levels.
[Create a custom game >](#)

Learner control
(custom-specified study)

System control
(adaptive/IRT assessment)

Your Performance

Math

Reading

Writing

14%

3%

Your Reviews

[Review Now >](#)

SAT

[Invite your friends >](#)

Recent Friend Activity

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Roomies! < College Prep 7 people shared this.

Grockit User cherry a. 3 people shared this.

Facebook social plugin

Gary Z. 1049

[view top 10](#)

Reading Leaders

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Dhara 1005

MALEK A. 783

SAT

SAT

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Work with instructors in group classes and one-on-one.



Group Study

Chat live with other students, trade tips, and learn by teaching.



Solo Practice

Practice against the clock and focus where you need it.

[Invite your friends »](#)

Recent Friend Activity

Login

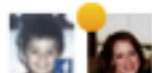
You need to be logged into Facebook to see your friends' activity

Reading Practice

[Start Now](#)

Writing Practice

3 people studying in 1 group

[Join Now](#)

Math Practice

3 people studying in 1 group

[Join Now](#)

Targeted Practice for Specific Skills

[Create Your Own](#)

Reading

Difficulty: easier; Skills: Sentence Completion, One-blank questions

1 person studying

[Join Now](#)

Today 12:05 pm

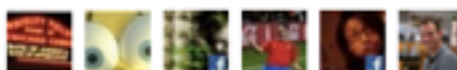
[Details](#)

Upcoming Practice Sessions

[Schedule](#)

Writing

6 people attending

[Cancel Reservation](#)

Tomorrow 3:00 pm

[Details](#)[Recommend](#)[view more ▾](#)**Grockit.com**

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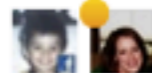
Synchronous Coordination

Reading Practice

[Start Now](#)

Writing Practice

3 people studying in 1 group

[Join Now](#)

Math Practice

3 people studying in 1 group

[Join Now](#)

Targeted Practice for Specific Skills

Reading

Difficulty: easier; Skills: Sentence Completion, One-blank questions

1 person studying



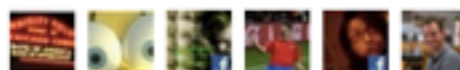
Asynchronous Coordination

Upcoming Practice Sessions

[Schedule](#)

Writing

6 people attending

[Cancel Reservation](#)

Tomorrow 3:00 pm

[Details](#)[Recommend](#)[view more](#)

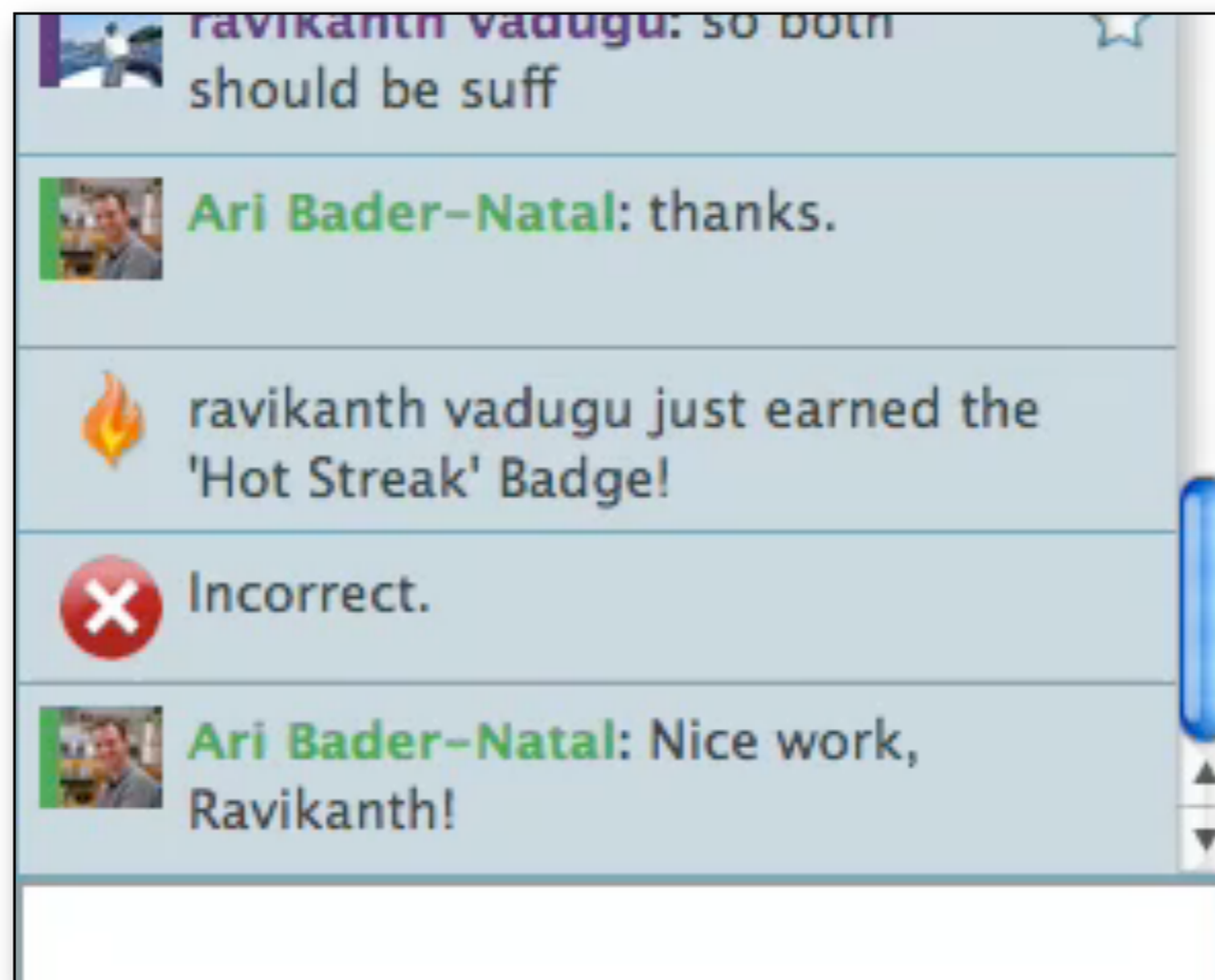
- Fed N. 1345
- Gary Z. 1049
- view top 10
- Reading Leaders
- Huy M. 1513 xp earned
- Dhara 1005
- MALEK A. 783

Social and motivational value of having a cohort of peers:

- opportunities to **ask for assistance** (just-in-time guidance)
- opportunities for **discussion** (both on-task and off-task)
- opportunities to **earn recognition** (for assisting others)

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Exit Game

Premium Member

Review Mode: Review and discuss, continue when ready



Question

An explanation for this answer is available if you review this game.

Waiting...

edit this question

Is $x > y$?

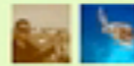
(1) $x = y - 1$

(2) $\frac{x}{3} = y - 5$

Choices

- A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.

An explanation for this answer is available if you review this game.



- B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.

- C. BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

An explanation for this answer is available if you review this game.



- D. EACH statement ALONE is sufficient.

An explanation for this answer is available if you review this game.



- E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are needed.

	chase cairncross	★ 38	🟢 16362	ready
	indra sharma	★ 0	🟢 110	ready
	Eric Backstrom	★ 0	🟢 541	ready
	D. Oguntona	★ 3	🟢 5396	In Progress
	Ari Bader-Natal	★ 15	🟢 19	ready

Discussion

in values for 2 to see if you can prove it wrong

Eric Backstrom: 2 doesn't work if you plug 5 in for y to get 1

Eric Backstrom: thats how i did 2

chase cairncross: you can try negative values too

indra sharma: i got confused

indra sharma just earned the 'Socialite' Badge!

Share your thoughts...


Submit



Shahzaib Bajwa

Islamabad

 Recommend

 Be the first of your friends to recommend this.

I am a SAT taker from Pakistan. Presently, I am doing A Levels (British Education). I love to write narratives and descriptives, and I am good at it. I love to do SAT Math and Writing. SAT reading always scares me due to the vocab.

I am an extremely chatty person; loves to talk all the time. I am also very comical. I bet you will enjoy playing with me. I am also interested in doing GRE and ACT. GRE is the most interesting test. I really like it, especially when my favorite tutors are there to explain.

I am a very big user of Grockit. I have one of the highest XP and GP achieved by any student on Grockit, even higher than most of tutors. As you can see from my Grockit Points, I am an extremely helpful person; love to explain everything.

Feel free to join me in a game or message me so we can schedule a game. You can also ask me for things other than SAT; I would love to help.

Good luck for your test :)

See you in a game.

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GMAT

XP 265

GP 2

Level 4

ACT

XP 1350

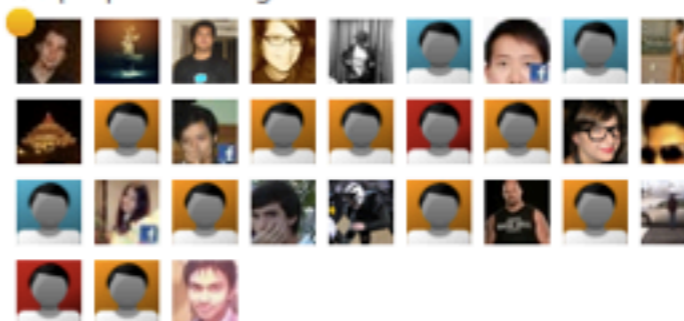
GP 40

Level 6

Upcoming Games

Writing with Jordan Schonig
Office Hours

30 people attending

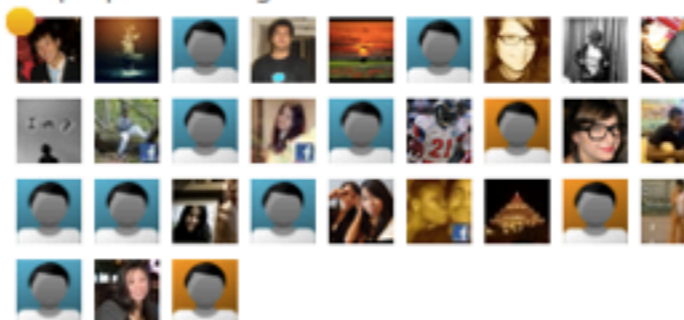


Full
Jan 1, 4:00 pm

[Details](#)

Reading with Edmund Tran
The last word

30 people attending



Full
Dec 31, 11:55 pm

[Details](#)



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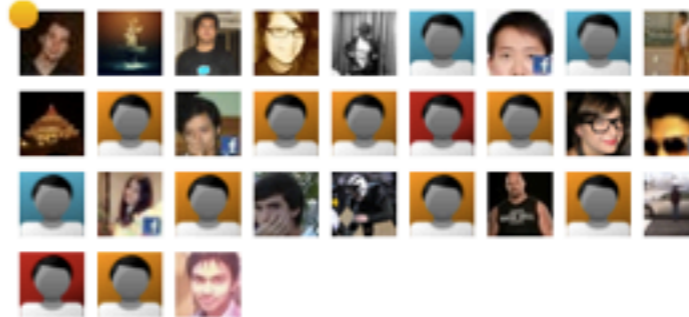
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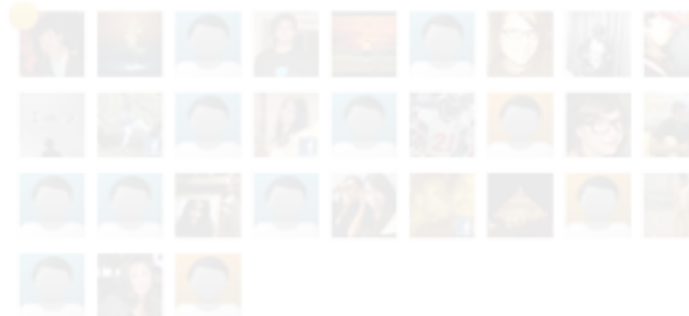
30 people attending



Full
Jan 1, 4:00 pm
Details

Reading with Edmund Tran
The last word

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Full
Dec 31, 11:55 pm
Details

Learning goals


Study plans


SAT	
XP	63232
GP	1734
Level	10


GRE	
XP	3466
GP	42
Level	8


Academy	
XP	0
GP	0
Level	1


SAT Achievements


-  Socialite


-  Hot Streak
241 times

-  Team Player

-  100 Questions Correct


-  Hot Steak
39 times

-  Reviewer

-  Well Rounded

Testimonials


[Write a Testimonial](#)

- 

Kristen Gleason 11/23/2009

after 283 questions and roughly 12 hours with Shahzaib Bajwa, Kristen said:


Shahzaib is a very dedicated student and a valuable member of the deer family! :) He is a jack-of-all trades and is always up to something new. I'm always pleased to see him join a game, because he is so dedicated to his fellow students. Keep up the hard work, Shahzaib!

- 

radhika b. 02/18/2010

after 271 questions and roughly 18 hours with Shahzaib Bajwa, radhika said:


Haha...I noticed today and saw i had still not written a testimonial for you so here i am....!!! Well if you have read Zaibs profile he says hes bad at vocab...Well beware thats a big fat lie !!! His vocabs too strong !!! He will throw words at you like pulchritudinous....hullabaloo....nd what not !!! His vocabs too strong !!!! :D...Now back to main point !! Zaib is sooo sweet....One of my sweetest friends on grockit !! He is a hardcore Grockiteer. Its better to call him Mr Grockit than zaib...he truly deserves that name...!!! He is Grockit's valuable member...its official ambassador even !!! :D....And ya he has i guess the highest points on this site !!!...But what i truly like about him is his friendly nature...hes friendly, jolly , funny ndd.....fun to play with !!! Glad to have u as my frnd Zaib !! Nd ya one day for sure i'll beat u in points !!!

- 

Hasna Z. 11/15/2009

after 255 questions and roughly 13.5 hours with Shahzaib Bajwa, Hasna said:


Shahzaib is one of the really great guys i've encountered on grockit!He's a very earnest student and sometimes you can easily confuse him for a tutor for he chats like one...he'll always be antlers to me and i really enjoy playing with him!

- 

Olivia R. 01/15/2010

after 220 questions and roughly 9 hours with Shahzaib Bajwa, Olivia said:


Shahzaib is a good friend, and he's so smart! I always enjoy doing games with him! Always a fun and educational time. Thanks man! Flattery=GP forever :)

- 

Amanda Chen 11/11/2009

after 173 questions and roughly 8.5 hours with Shahzaib Bajwa, Amanda said:


Shahzaib's a great addition to a game (look how many grockit points he has guys!). he throws out "parallelism!", "dangling modifiers!", "wordiness!" like a SAT pro with every question he sees. but he is slightly ridiculous for taking that many A level subjects. i hope you know i expect greatness.

- 

Sarah N. 11/21/2009

after 63 questions and roughly 2.5 hours with Shahzaib Bajwa, Sarah said:

Shahzaib, you work amazingly hard and set your standards high. Keep it up. I even mentioned you on my blog (briefly)! Hope you don't mind. :)

- 








Martin Soho 12/11/2009

SAT	
XP	63232
GP	1734
Level	10

GRE	
XP	3466
GP	42
Level	8

Academy	
XP	0
GP	0
Level	1

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11/11/2009



Martin Sobn

12/11/2009

Indicator of helpfulness

Recognition of achievements

Recognition from peer learners

The **first** question

What are people actually *doing*?

Just look around in the database.

Just look around in the database.

- `select count(*) from learners;`

Just look around in the database.

- `select count(*) from learners;`
- `select * from discussions;`

Just look around in the database.

- `select count(*) from learners;`
- `select * from discussions;`
- `select * from responses;`

Just look around in the database.

- `select count(*) from learners;`
- `select * from discussions;`
- `select * from responses;`
- `select avg(time) from responses`

The interesting questions

Exploratory Data Analysis...

What is *effective*? What is *engaging*?

What is *effective*? What is *engaging*?

- How does frequency and duration of discussions during group study sessions differ between high school students and post-college learners?

What is *effective*? What is *engaging*?

- How does frequency and duration of discussions during group study sessions differ between high school students and post-college learners?
- Do students who work in groups spend more time on task than those who choose to work alone?

What is *effective*? What is *engaging*?

- How does frequency and duration of discussions during group study sessions differ between high school students and post-college learners?
- Do students who work in groups spend more time on task than those who choose to work alone?
- Which of the various interventions within Grockit lead to the largest learning gains?

What is *effective*? What is *engaging*?

- How does frequency and duration of discussions during group study sessions differ between high school students and post-college learners?
- Do students who work in groups spend more time on task than those who choose to work alone?
- Which of the various interventions within Grockit lead to the largest learning gains?
- Do peer-awarded points motivate more discussion in small group settings?

What is *effective*? What is *engaging*?

- How does frequency and duration of discussions during group study sessions differ between high school students and post-college learners?
- Do students who work in groups spend more time on task than those who choose to work alone?
- Which of the various interventions within Grockit lead to the largest learning gains?
- Do peer-awarded points motivate more discussion in small group settings?
- How does an Item Response Theory model compare to a Knowledge Tracing model, in terms of predictive accuracy or responses?

What is *effective*? What is *engaging*?

- How does frequency and duration of discussions during group study sessions differ between high school students and post-college learners?
- Do students who work in groups spend more time on task than those who choose to work alone?
- Which of the various interventions within Grockit lead to the largest learning gains?
- Do peer-awarded points motivate more discussion in small group settings?
- How does an Item Response Theory model compare to a Knowledge Tracing model, in terms of predictive accuracy or responses?
- Are video explanations more effective than written explanations?

Question:

Question:

Are the questions currently available appropriate for the current population of learners?

Question:

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- Are there enough hard questions?

Question:

Are the questions currently available appropriate for the current population of learners?

- Are there enough hard questions?
- Are there enough easy questions?

Question:

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- Are there enough hard questions?
- Are there enough easy questions?

Actionable:

Question:

Are the questions currently available appropriate for the current population of learners?

- Are there enough hard questions?
- Are there enough easy questions?

Actionable:

If there isn't a good fit, ask the content authors to start focusing on writing what is currently most needed.

The infrastructure question

How can we *streamline* analysis?

collection

collection

selection

collection

selection

analysis

collection

selection

analysis

visualization

collection

selection

analysis

visualization

distribution


```
rake generate:query QUERY=RM_summary_distributions
```

collection

selection

analysis

visualization

distribution

```
rake generate:query QUERY=RM_summary_distributions
```

collection



RM_summary_distributions.sql

selection

analysis



RM_summary_distributions.r

visualization

distribution



RM_summary_distributions.yml

```
rake generate:query QUERY=RM_summary_distributions
```

collection



RM_summary_distributions.sql

```
(
  select q.item_difficulty as estimate, t.name as track, "Questions" as type
  from questions as q, question_sets as qs, subtracks as st, tracks as t
  where q.question_set_id=qs.id and qs.subtrack_id=st.id and st.track_id=t.id
) UNION ALL (
  select cae.estimate, t.name as track, "Students" as type
  from current_ability_estimates as cae, tracks as t
  where cae.track_id=t.id and cae.estimate is not null
);
```

selection

analysis



RM_summary_distributions.r

```
require(Hmisc)
open_image("wright", write_to_artifacts_yaml=TRUE)
histbackback(
  split(x$estimate, x$type), probability=T,
  main=c("Wright Map of all item difficulties and student abilities", x$track),
  ylab="Parameter Estimates"
)
close_image()
```

visualization

distribution



RM_summary_distributions.yml

```
title: How are students distributed over the ability scale? How are questions
distributed of the difficulty scale? How do the two distributions line up?
notes: 
artifacts: 
```

```
rake generate:query QUERY=RM_summary_distributions
```

collection

selection

analysis

visualization

distribution



RM_summary_distributions.sql

```
(
  select q.item_difficulty as estimate, t.name as track, "Questions" as type
  from questions as q, question_sets as qs, subtracks as st, tracks as t
  where q.question_set_id=qs.id and qs.subtrack_id=st.id and st.track_id=t.id
) UNION ALL (
  select cae.estimate, t.name as track, "Students" as type
  from current_ability_estimates as cae, tracks as t
  where cae.track_id=t.id and cae.estimate is not null
);
```



RM_summary_distributions.r

```
require(Hmisc)
open_image("wright", write_to_artifacts_yaml=TRUE)
histbackback(
  split(x$estimate, x$type), probability=T,
  main=c("Wright Map of all item difficulties and student abilities", x$track),
  ylab="Parameter Estimates"
)
close_image()
```



RM_summary_distributions.yml

```
title: How are students distributed over the ability scale? How are questions
distributed of the difficulty scale? How do the two distributions line up?
notes: 
artifacts: 
```

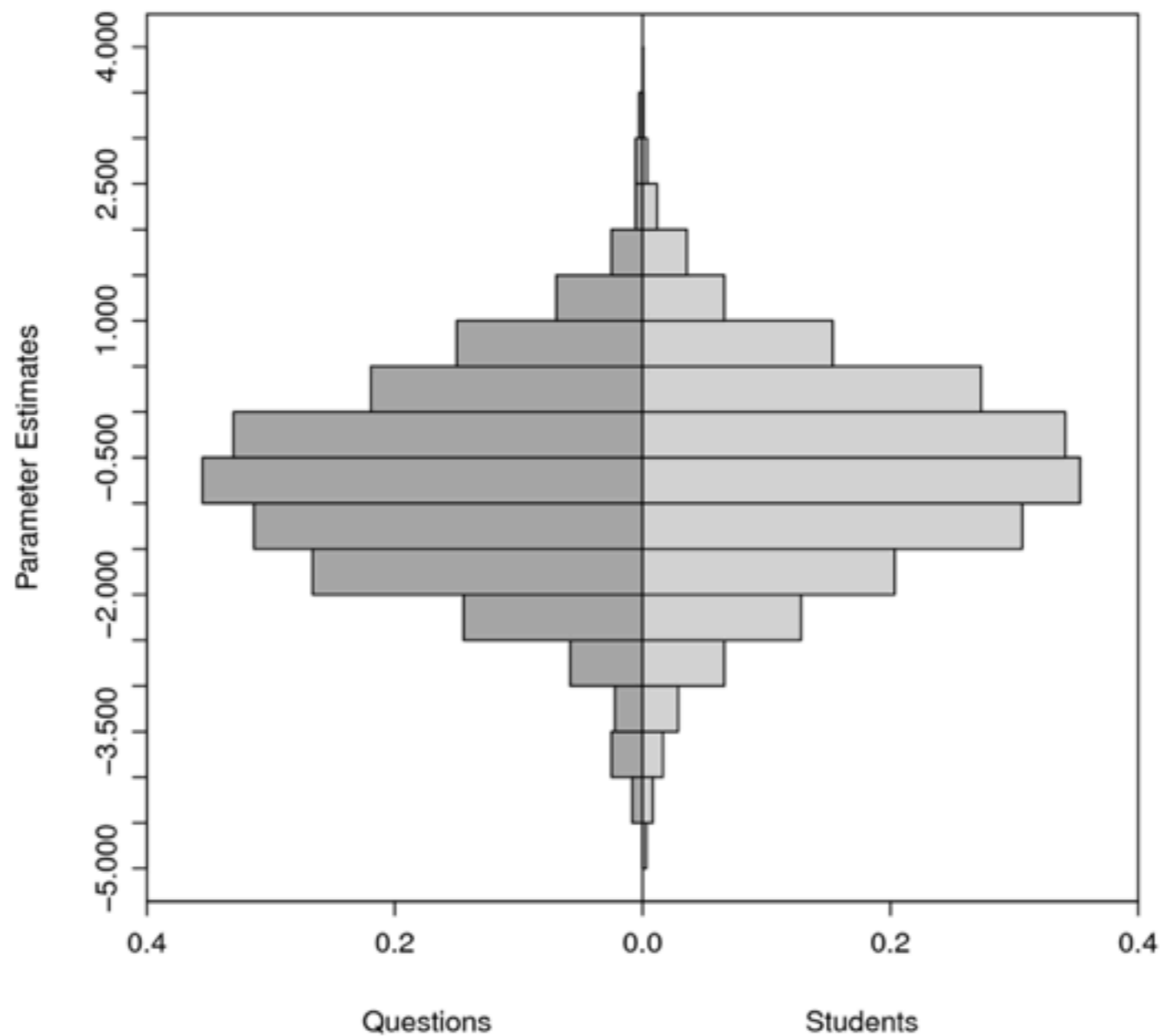
```
rake analysis:run QUERY=RM_summary_distributions
```

query: **RM_summary_distributions** view: **UserNotBotAndNotAdmin+QuestionVisible**

2011-02-25 (Fri) 10:17:47 PM

How are students distributed over the ability scale? How are questions distributed of the difficulty scale? How do the two distributions line up? [show only this query](#)

Wright Map of all item difficulties and student abilities
SAT Reading



The subset question

How can we ask the *same question* of *different subsets* of the available data?

Example views

VIEW=all	<i># Includes all data in database.</i>
VIEW=GameSinceBeta1	<i># Includes games played since 2008-09-29.</i>
VIEW=GamesInPast48Hours	<i># Includes games played in the past 48 hours.</i>
VIEW=GroupAcademy	<i># Only Academy group data qualifies.</i>
VIEW=GroupBrainGame	<i># Only BrainGame group data qualifies.</i>
VIEW=GroupSAT	<i># Only SAT group data qualifies.</i>
VIEW=QuestionVisible	<i># Includes only questions that are visible in games (i.e. published).</i>
VIEW=UserCreatedIn200906	<i># Includes only users with accounts created in 6/2009.</i>
VIEW=UserCreatedInPastTwoMonths	<i># Includes only (non-bot, non-admin) users created in the previous two months.</i>
VIEW=UserHasAnsweredAtLeastFiftyQuestions	<i># Questions may have come from any groups (user has answered at least 50).</i>
VIEW=UserLoggedInInPastTwoMonths	<i># Includes only (non-bot, non-admin) users who were created or logged in within the previous two months.</i>
VIEW=UserNotBotAndNotAdmin	<i># Excludes admins.</i>
VIEW=UserPeerTutor	<i># Only users participating in the initial beta of the peer-tutoring program.</i>
VIEW=UserPlayedGames	<i># Users are determined based on having one or more qualified game sessions.</i>
VIEW=UserSawGameInSAT	<i># Only users who saw a game in SAT (may not have answered any questions).</i>

Multiple views at once.

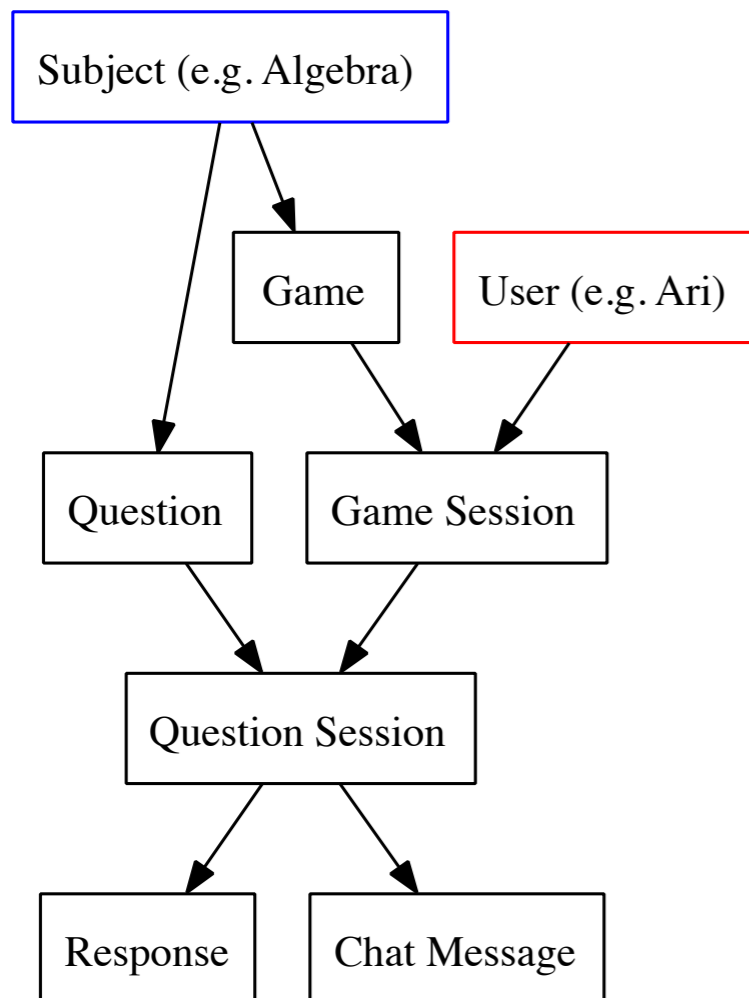
QUERY=probability_time_accuracy *VIEW*=GameGMATQuantitative+UserStudyingForGMAT

QUERY=probability_time_accuracy *VIEW*=GameACTEnglish+UserStudyingForACT

Multiple views at once.

QUERY=probability_time_accuracy *VIEW*=GameGMATQuantitative+UserStudyingForGMAT

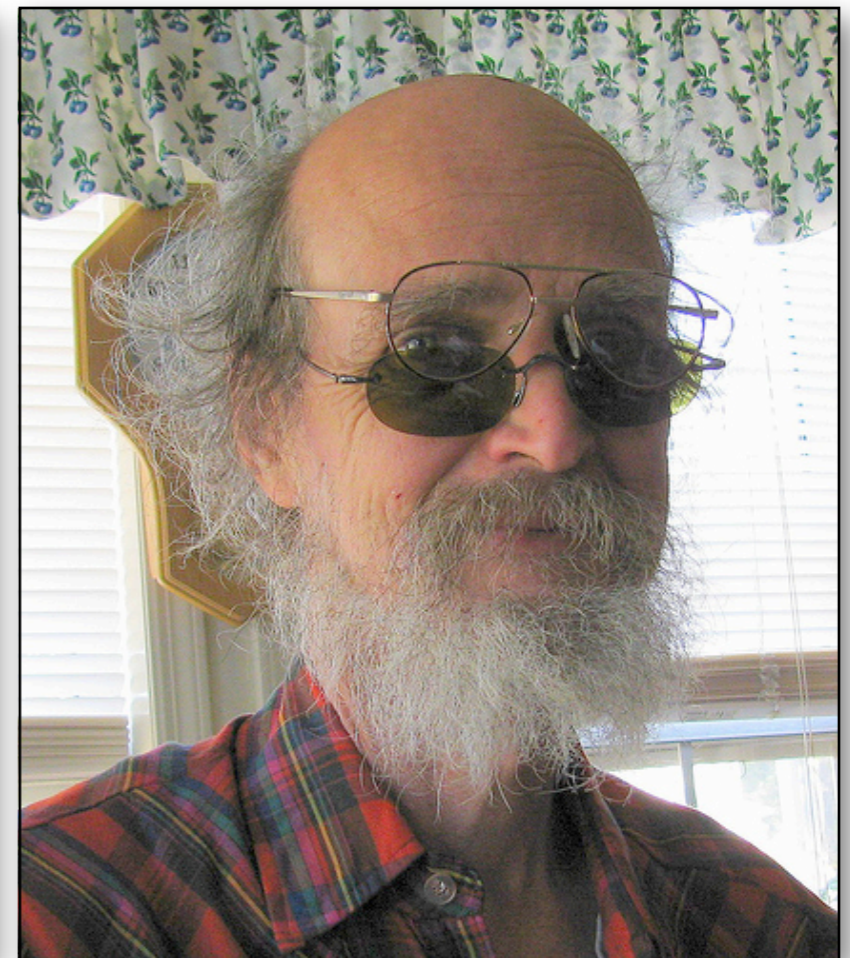
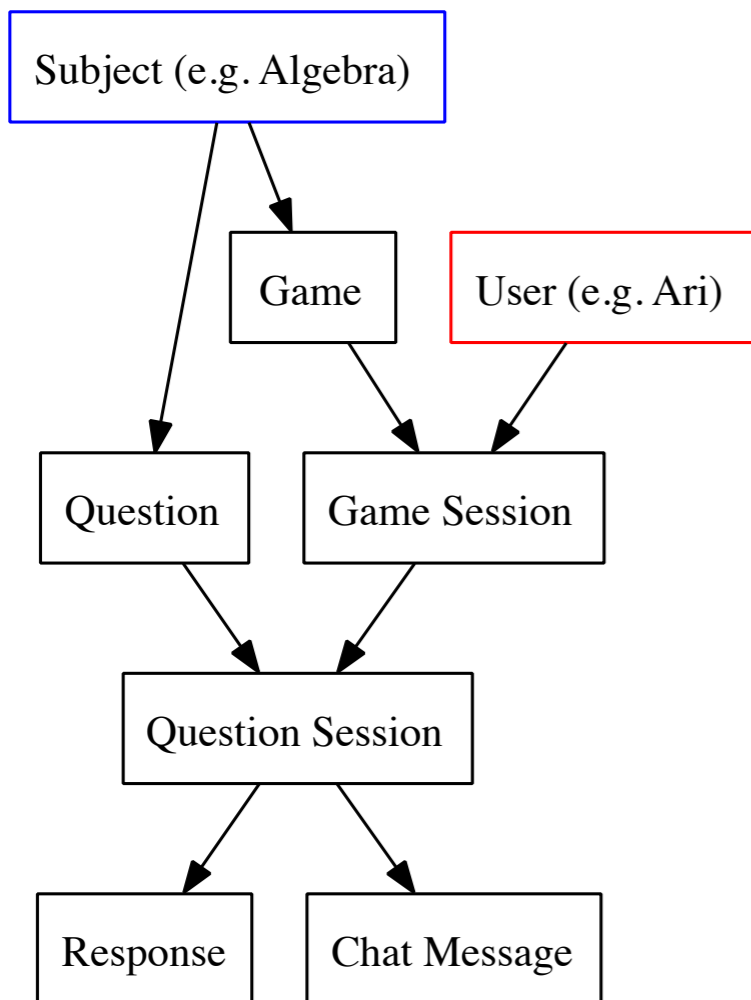
QUERY=probability_time_accuracy *VIEW*=GameACTEnglish+UserStudyingForACT



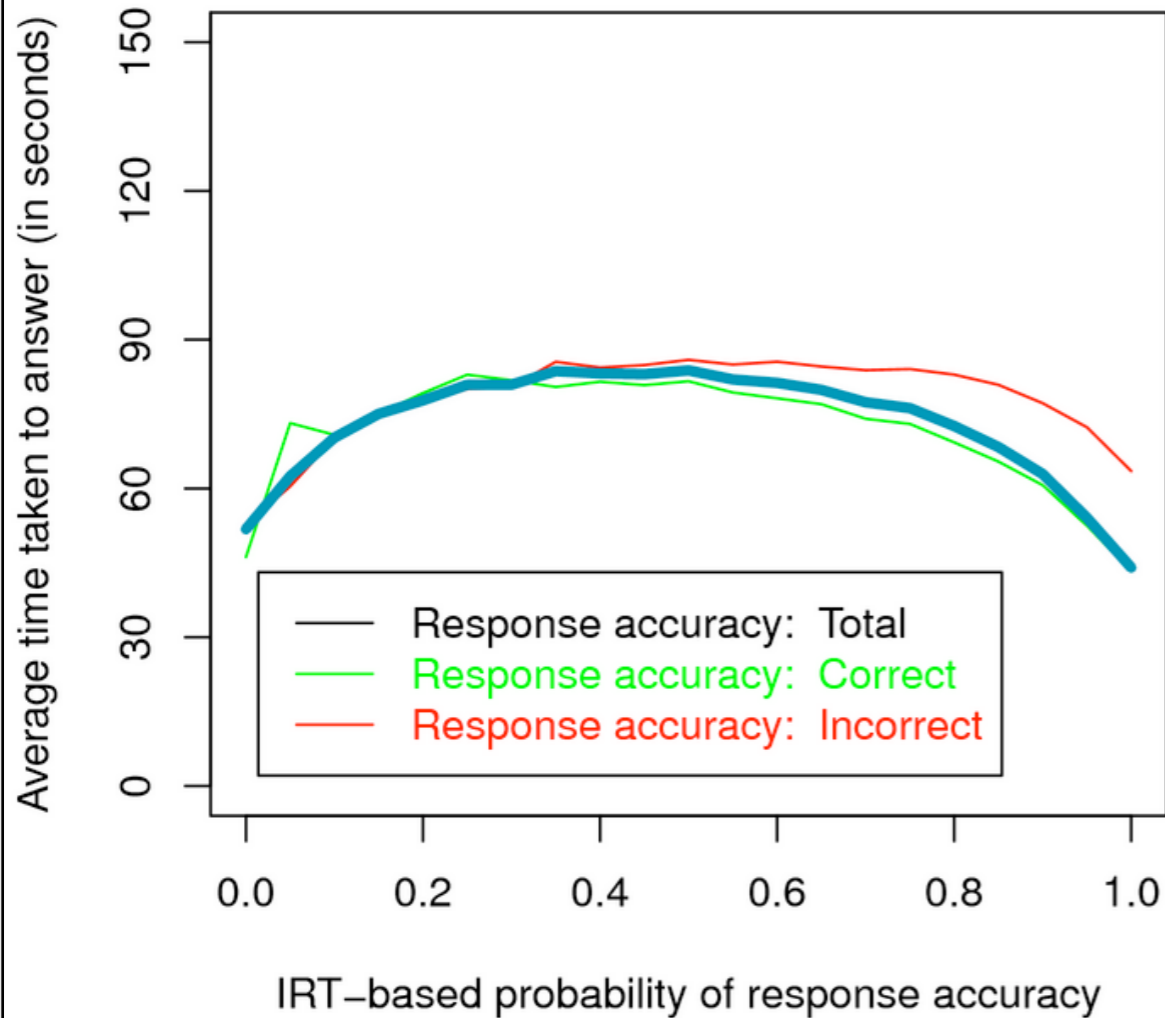
Multiple views at once.

QUERY=probability_time_accuracy VIEW=GameGMATQuantitative+UserStudyingForGMAT

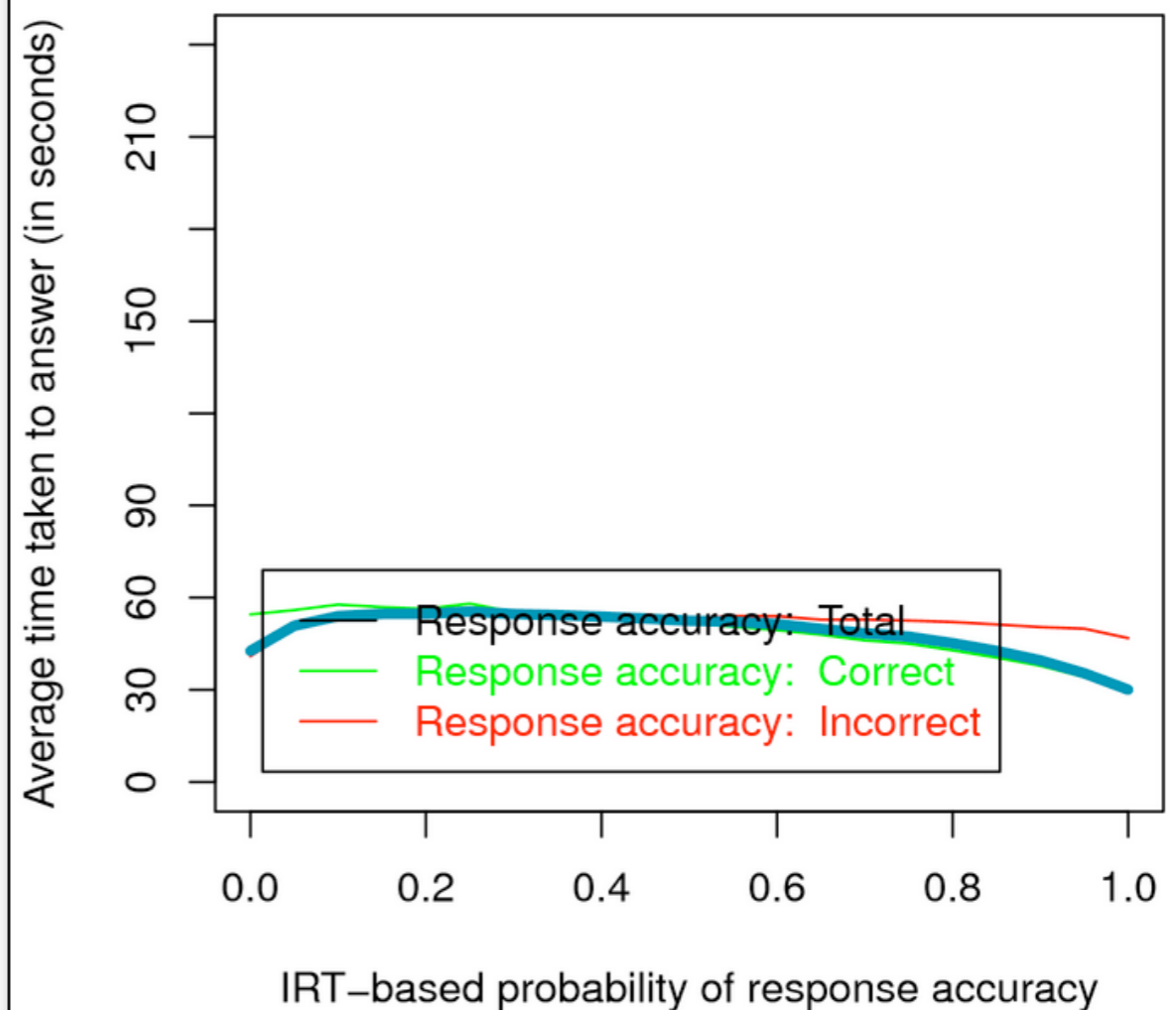
QUERY=probability_time_accuracy VIEW=GameACTEnglish+UserStudyingForACT



Probability of response accuracy vs average time taken to answer for GMAT Quantitative



Probability of response accuracy vs average time taken to answer for SAT Writing





Ari Bader-Natal : [view subscriptions](#)

query: **game_activity_001**

All runs of this single Query

<u>2011-02-26 (Sat) 09:26:24 AM</u>	game_activity_001	UserNotBotAndNotAdmin+QuestionVisible
<u>2011-02-26 (Sat) 06:15:02 PM</u>	game_activity_001	GroupSAT+UserSawGameInSAT
<u>2011-02-26 (Sat) 05:36:48 PM</u>	game_activity_001	GroupGMAT+UserSawGameInGMAT
<u>2011-02-26 (Sat) 06:56:40 PM</u>	game_activity_001	GroupACT+UserSawGameInACT
<u>2011-02-26 (Sat) 07:24:41 PM</u>	game_activity_001	GroupGRE+UserSawGameInGRE
<u>2011-02-26 (Sat) 07:51:04 PM</u>	game_activity_001	GroupAcademy+UserSawGameInAcademy
<u>2011-02-26 (Sat) 08:11:24 PM</u>	game_activity_001	GroupLSAT+UserSawGameInLSAT

The missing data question

What about actions that *leave no trace*?

The screenshot displays the Grockit interface for reviewing a question. At the top, it says "Grockit" and "Reviewing question 1 of 18". The question ID is 4784. The question text asks about the sufficiency of two statements to answer "Is x greater than 2.7?". The choices are: (A) Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient; (B) Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient; (C) BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient; (D) EACH statement ALONE is sufficient; (E) Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data are required. A message indicates "Your answer was incorrect" with "no explanation".

A video player is overlaid on the right side, showing a video titled "Algebra - Properties of Real Numbers" with a play button. The video content shows a man in a blue shirt and a gold crown standing in front of a whiteboard. The whiteboard lists: "Properties of Real #s", "Natural #s 1, 2, 3, ...", and "Whole #s 0, 1, 2, 3, ...".

On the right side of the interface, there is a "Questions in this Review" list. The first question is "Is x greater than 2.7? &n...", with a difficulty of 4pts and skills listed as Number Properties, Decimals, Inequalities, and Data Sufficiency. Below it is another question "Polly's Beauty Supply sells Brand ...".

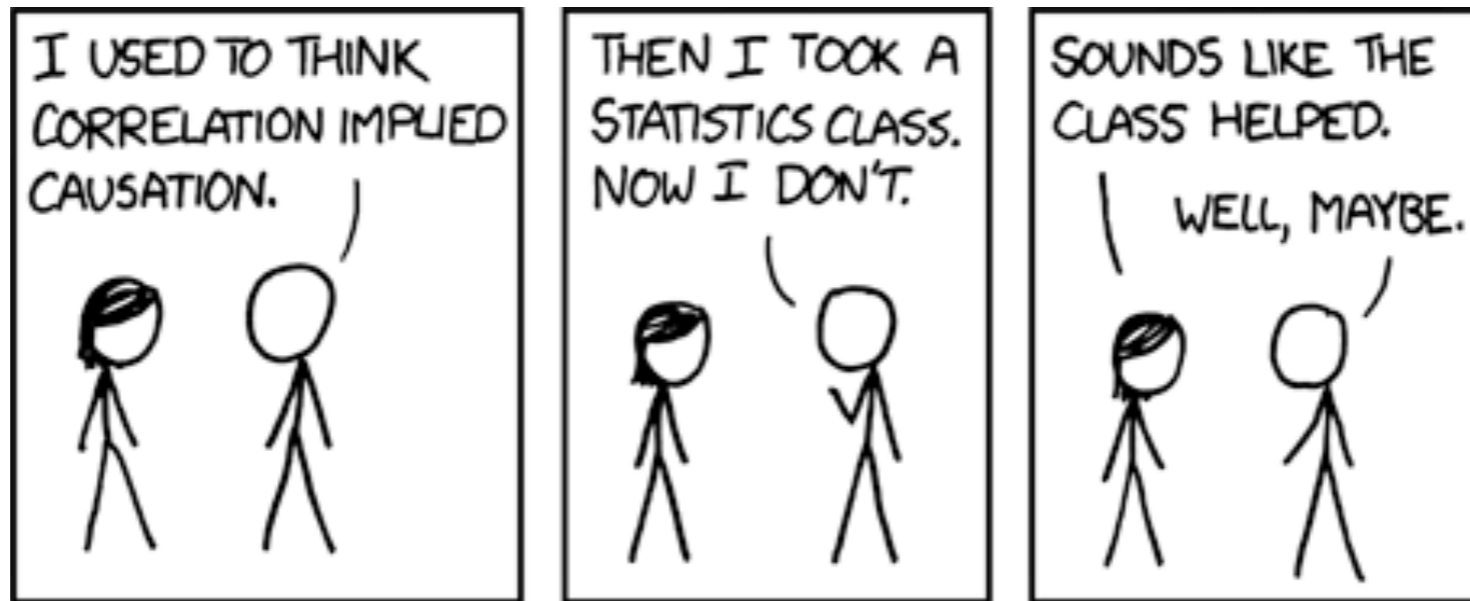
At the bottom left, there is a comment section. A user named "sahara b." has commented "how can 2.7 be greater then 2.8". Another user "Justin G." has commented "Its not asking if 2.7 is greater than 2.8. It is asking if X is greater than 2.7. Statement 2 tells us that X is greater than 2.8 which is greater be greater than 2.7." There is a text input field for "Add a Comment" and a "Post Comment" button.

The **pro-active** question

How can we test out new hypotheses?

The **effort** question

How can we *reduce friction* in experimentation and hypothesis testing?



<http://xkcd.com/552/>

R. Kohavi, R. Henne, and D. Sommerfield. **Practical guide to controlled experiments on the web.** In Proceedings of the 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. ACM, 2007.

<http://bit.ly/exp-long>

<http://bit.ly/exp-short>



Eric Ries: **The one line split-test, or how to A/B test all the time.**

<http://bit.ly/one-line-split>

```
experiment = { "InitialQuestions" => ["EasyFirst", "Normal"] }  
if (SplitTest.find_or_create_assignment(self, "InitialQuestions") == "EasyFirst")  
  show_easy_first  
else  
  show_regular  
end
```

```

experiment = { "InitialQuestions" => ["EasyFirst", "Normal"] }
if (SplitTest.find_or_create_assignment(self, "InitialQuestions") == "EasyFirst")
  show_easy_first
else
  show_regular
end

```

InitialQuestions

Should new students be given easier questions when playing alone, until they answer at least 5 questions correctly?







This test is being assigned and evaluated for new users only.

<i>Subsequent activity</i>	<i>EasyFirst</i> (1657 persons)	<i>Normal</i> (1721 persons)	(difference)	
Participated in further study	73.2% (1213)	67.5% (1161)	(2.6% to 8.9%)	**
Participated in group study	31.4% (520)	27.0% (464)	(1.3% to 7.5%)	*
Logged in again later	30.8% (510)	28.4% (489)		
Participated in group discussion	22.1% (366)	18.4% (316)	(1% to 6.5%)	*
Reviewed past questions	13.9% (230)	12.8% (221)		








The **discovery** question

How can we *deliver* findings effectively?

Latest run for each of your subscriptions [Edit](#)

 2011-02-26 (Sat) 09:26:24 AM	brief UserNotBotAndNotAdmin+QuestionVisible
 2011-02-25 (Fri) 10:17:47 PM	IRT UserNotBotAndNotAdmin+QuestionVisible
 2011-02-25 (Fri) 09:13:00 PM	scores all
 2011-02-24 (Thu) 08:31:21 PM	flvs_teacher_leaderboard all
 2011-02-14 (Mon) 09:17:53 PM	cumulative UserNotBotAndNotAdmin+QuestionVisible
 2011-02-02 (Wed) 01:53:44 AM	monthly UserNotBotAndNotAdmin+QuestionVisible

Select runs from the past 24 hours [or list one-off queries only](#)

 2011-02-26 (Sat) 05:36:29 PM	brief GroupFLVS+UserSawGameInFLVS
 2011-02-26 (Sat) 05:36:29 PM	brief GroupAcademy+UserSawGameInAcademy
 2011-02-26 (Sat) 05:36:29 PM	brief GroupACT+UserSawGameInACT
 2011-02-26 (Sat) 05:36:29 PM	brief GroupSAT+UserSawGameInSAT
 2011-02-26 (Sat) 05:36:29 PM	brief GroupGMAT+UserSawGameInGMAT
 2011-02-26 (Sat) 05:30:20 PM	daily_question_comments all
 2011-02-26 (Sat) 12:17:09 PM	educator_signups UserNotBotAndNotAdmin+QuestionVisible








All available reports

- [analyze_QuestionsForNewUsers_first_ten](#)
- [calculate_cat_score_coefficients](#)
- [CAT](#)
- [class_performance_map](#)
- [cohort_analysis_of_tutored_games_played](#)
- [compare_assessment_methods](#)
- [compare_assessment_smalltags](#)
- [compare_assessment_tagging_models](#)

view: **GroupGMAT+QuestionVisible+UserStudyingForGMAT**








Only GMAT group data qualifies. Includes only questions that are visible in games (i.e. Q,QS,ST,T are all published and not deleted.) Only users studying for GMAT. Does not include admins or bots.

All runs with this View

 2010-08-18 (Wed) 10:17:20 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	questions_per_time
 2010-08-18 (Wed) 10:16:09 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	probability_time_accuracy
 2010-08-18 (Wed) 10:15:52 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	cohort_analysis_of_tutored_games_played
 2010-08-18 (Wed) 10:08:27 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	questions_per_time.r
 2010-08-18 (Wed) 10:08:16 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	gmat_total_range_forecasting
 2010-08-18 (Wed) 10:02:00 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	RM_response_accuracy_difficulty_for_theta0
 2010-08-18 (Wed) 09:33:28 PM	GroupGMAT+QuestionVisible+UserStudyingForGMAT	split_test_by_initial_correct

 report: **brief**

All runs of this report

 2011-02-26 (Sat) 09:26:24 AM	brief	UserNotBotAndNotAdmin+QuestionVisible
 2011-02-26 (Sat) 05:36:29 PM	brief	GroupSAT+UserSawGameInSAT
 2011-02-26 (Sat) 05:36:29 PM	brief	GroupGMAT+UserSawGameInGMAT
 2011-02-26 (Sat) 05:36:29 PM	brief	GroupACT+UserSawGameInACT
 2011-02-26 (Sat) 05:36:29 PM	brief	GroupGRE+UserSawGameInGRE
 2011-02-26 (Sat) 05:36:29 PM	brief	GroupAcademy+UserSawGameInAcademy
 2011-02-26 (Sat) 05:36:29 PM	brief	GroupLSAT+UserSawGameInLSAT



Ari Bader-Natal : [view subscriptions](#)

report: **IRT** / view: **UserNotBotAndNotAdmin+QuestionVisible**

Subscribe

Most recent run

[2011-02-25 \(Fri\) 10:17:47 PM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible

All runs

- [2011-02-25 \(Fri\) 10:17:47 PM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-02-18 \(Fri\) 10:05:45 PM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-02-12 \(Sat\) 08:01:55 AM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-02-04 \(Fri\) 09:00:15 PM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-01-28 \(Fri\) 08:45:59 PM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-01-22 \(Sat\) 03:23:54 AM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-01-15 \(Sat\) 03:03:59 AM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible
- [2011-01-08 \(Sat\) 04:03:18 AM](#) **IRT** / UserNotBotAndNotAdmin+QuestionVisible

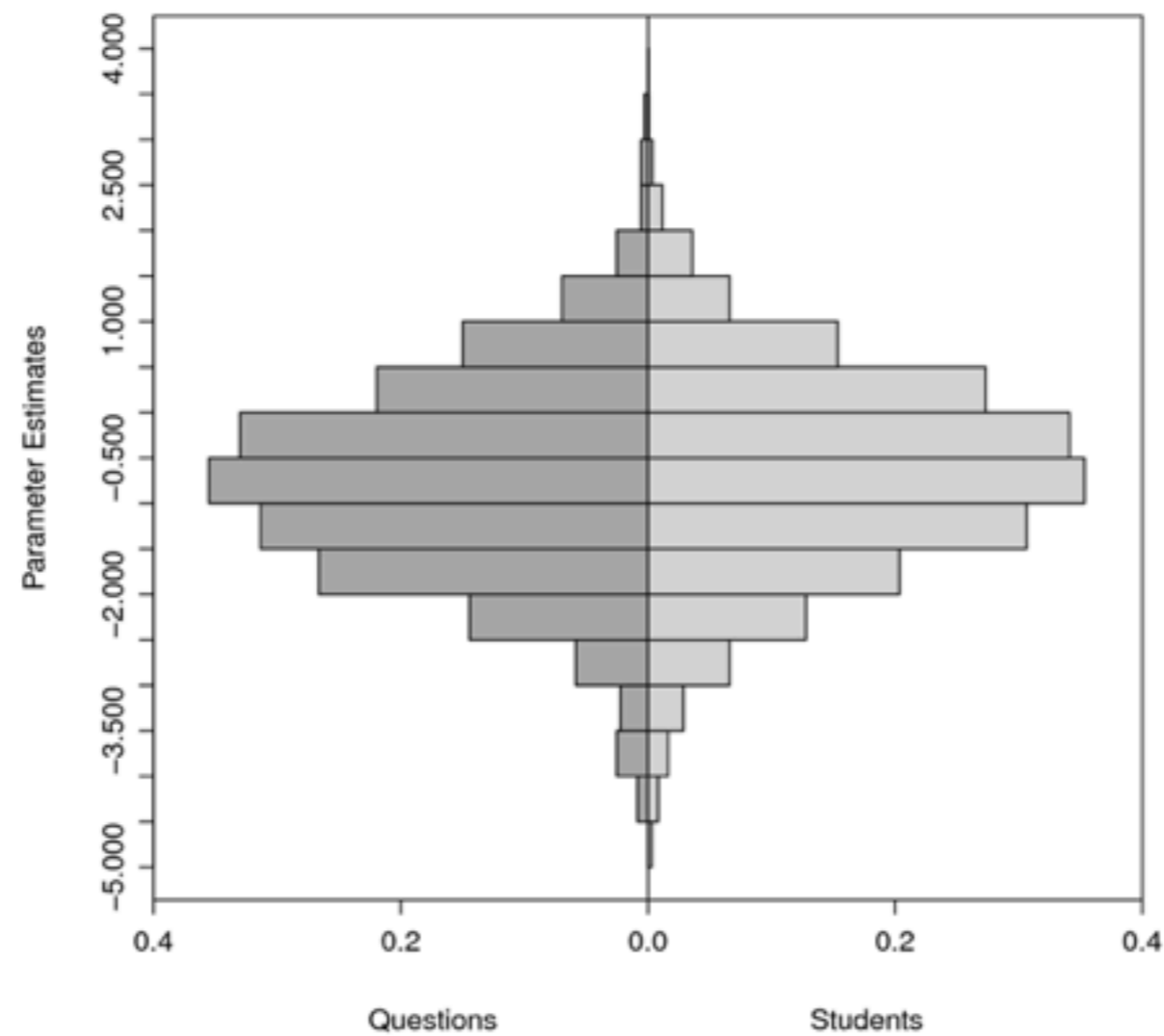
Subscribe

IRT UserNotBotAndNotAdmin+QuestionVisible

[previous run](#) : **2011-02-25 (Fri) 10:17:47 PM** : next run

[download PDF](#)

Wright Map of all item difficulties and student abilities
SAT Reading

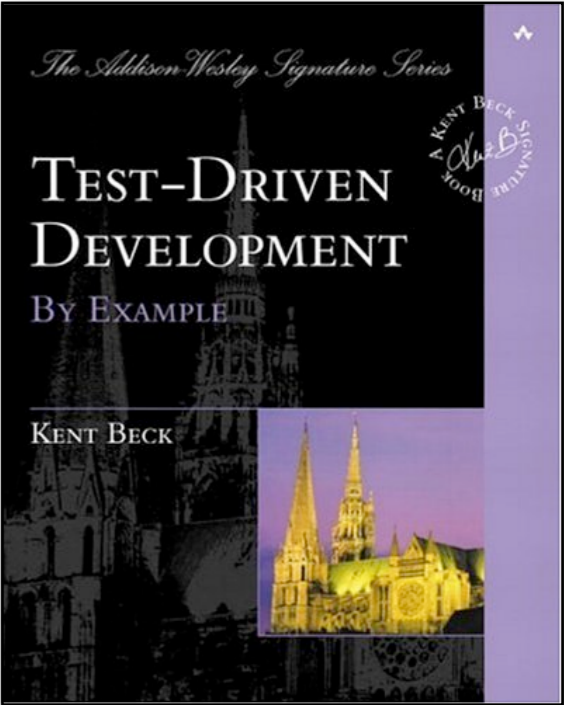
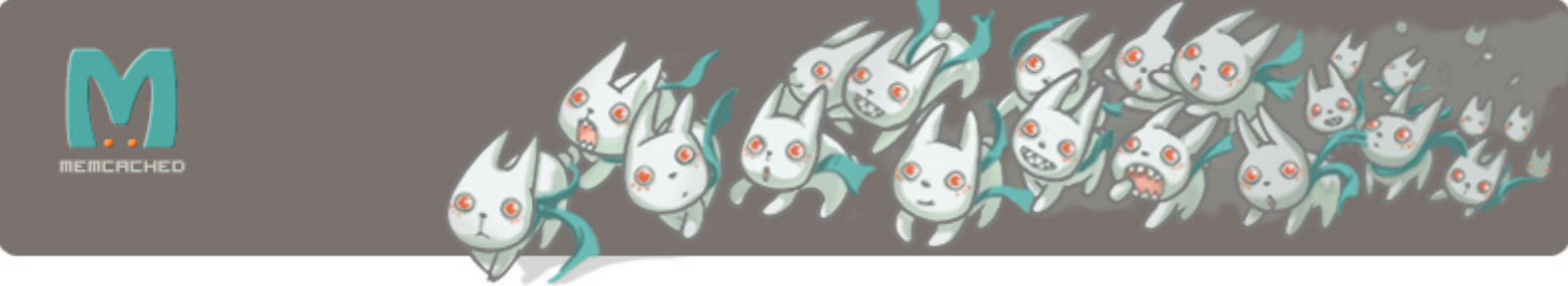


RM_summary_distributions_12

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
-4.80	-1.40	-0.60	-0.65	0.10	3.60
-4.37	-1.53	-0.74	-0.77	-0.02	3.46

The production questions

Scalability? Performance? Reliability?



The audience question

How can this help *teachers and learners*?

Hot Streak
2 times

100 Questions Correct

GMAT Achievements

Socialite

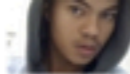
GRE Achievements

Socialite

Hot Streak
10 times

100 Questions Correct

Team Player



hey dude. haha. i took the SAT reasoning test. and I think I did well. The test wasn't that hard, it was long tedious and quite tricky.Thanks for your help the other day. LOL

Performance Analytics

All Difficulties All Time

Sections & Skills	Questions Answered	Average Time	Accuracy (Percent Correct)
GRE	450	0:57	73%
Verbal	382	0:53	72%
Contrast	15	1:21	40%
Continuation	8	1:04	50%
Two Blank	43	1:13	53%
Sentence Completion	67	1:08	58%
Analogies	78	0:50	62%
One Blank	24	0:57	67%
Vocabulary	291	0:47	72%
Antonyms	167	0:40	77%
Short Passage	25	1:20	84%
Reading Comprehension	70	1:17	87%
Inference/Meaning	24	1:11	88%
Long Passage	45	1:15	89%
Big Idea	9	1:18	89%
Detail	22	1:20	91%

Show skills with fewer than 8 questions answered

Quantitative	68	1:15	75%
Exponents and Square Roots	8	1:02	63%
Number Properties	15	1:12	67%
Quantitative Comparison	40	1:21	70%
Strategy: Plug in Answers	13	1:31	77%
Fractions, Decimals, and Percentages	18	0:59	83%

Hot Streak
2 times

100 Questions Correct

GMAT Achievements

Socialite

GRE Achievements

Socialite

Hot Streak
10 times

100 Questions Correct

Team Player

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One Blank	24	0:57	67%
Vocabulary	291	0:47	72%
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Short Passage	25	1:20	84%
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Big Idea	9	1:18	89%
Detail	22	1:20	91%
Show skills with fewer than 8 questions answered			
Quantitative	68	1:15	75%
Exponents and Square Roots	8	1:02	63%
Number Properties	7	1:12	67%
Quantitative Comparison	7	1:21	70%
Strategy: Plug in Answers	13	1:31	77%
Fractions, Decimals, and Percentages	18	0:59	83%

Performance (per-skill)

My unresolved question

Is *evolving* the right approach?

YAGNI: “You Ain’t Gonna Need It”

Ron Jeffries: “Always implement things when you actually need them, never when you just foresee that you need them.”

In the age of #BigData, how do you choose tools for analysis *before* your dataset is undeniably Big? Start with Big tools or YAGNI?

YAGNI: “You Ain’t Gonna Need It”

Ron Jeffries: “Always implement things when you actually need them, never when you just foresee that you need them.”

Your unresolved questions

???

Thanks!

Evolving a Learning Analytics Platform



Grokit

Ari Bader-Natal

ari@grokit.com



[@AriBaderNatal](https://twitter.com/AriBaderNatal)

February 28, 2011