

Interaction Synchronicity in Web-based Collaborative Learning Systems

Ari Bader-Natal

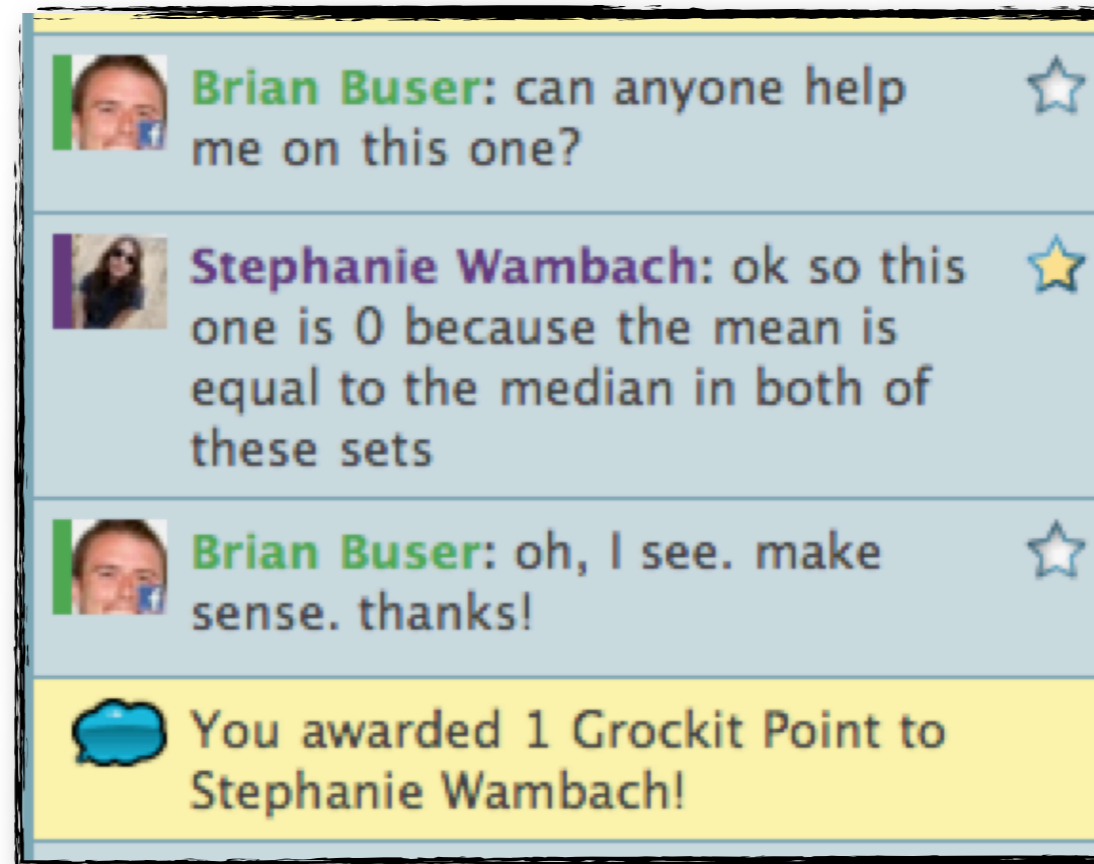
ari@grockit.com





October 27, 2009

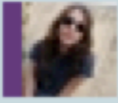





Why support **synchronous** interactions among learners?




The screenshot shows a chat window with three messages and a system notification. Each message includes a profile picture, the user's name, and a star icon. The first message is from Brian Buser asking for help. The second is from Stephanie Wambach explaining a statistical concept. The third is from Brian Buser thanking her. The notification at the bottom indicates that the user awarded a Grockit Point to Stephanie Wambach.

 **Brian Buser:** can anyone help me on this one? 

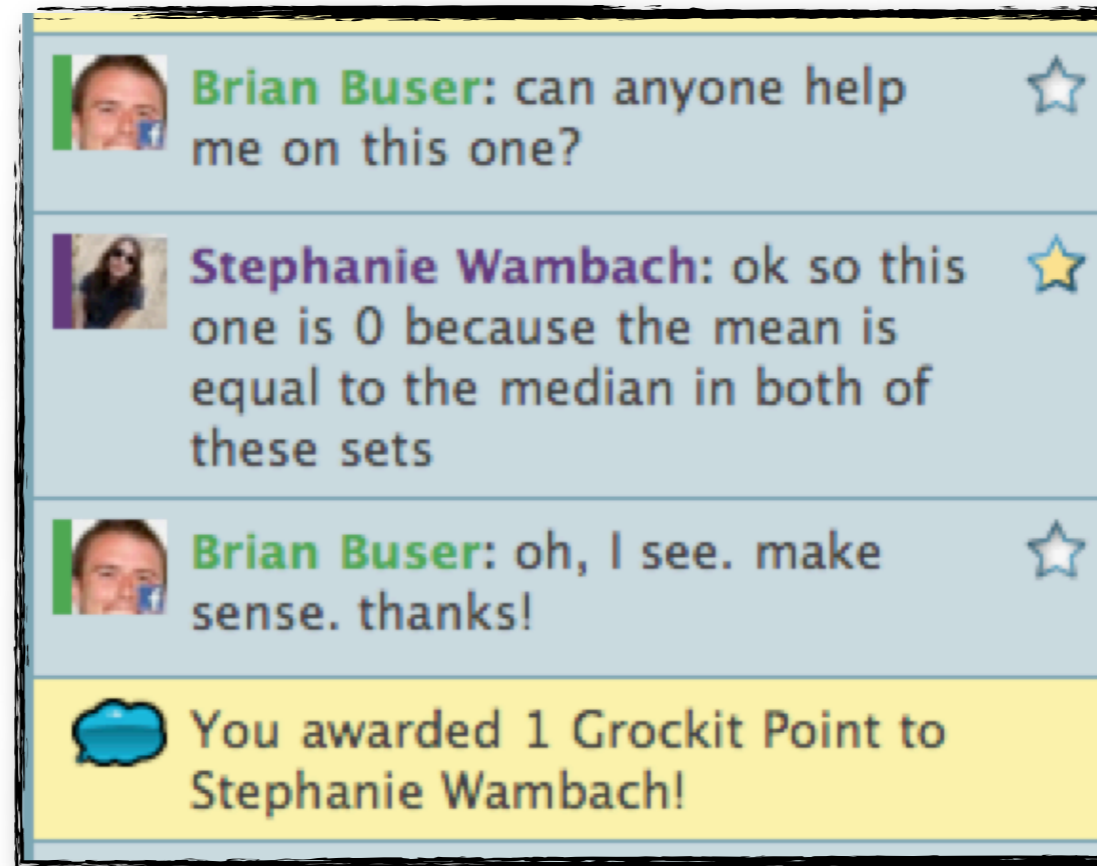
 **Stephanie Wambach:** ok so this one is 0 because the mean is equal to the median in both of these sets 

 **Brian Buser:** oh, I see. make sense. thanks! 

 You awarded 1 Grockit Point to Stephanie Wambach!



Why support **synchronous** interactions among learners?



Social and motivational value of having a cohort of peers:

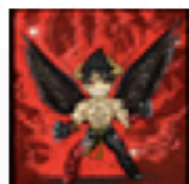
- opportunities to **ask for assistance** (just-in-time guidance)
- opportunities for **discussion** (both on-task and off-task)
- opportunities to **earn recognition** (for assisting others)



Why support **social** interactions among learners?



Why support **social** interactions among learners?

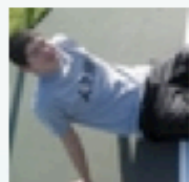


Elvin Unthiah

08/25/2009

has played 81 questions with Tiffany

Looking for someone who will make you feel comfortable while revising here in grockit? Someone who like chattering and helping others while not shifting away from our main objective(revision) ? Well, well, Tiffany is the right person XD it is always nice playing with her. XD

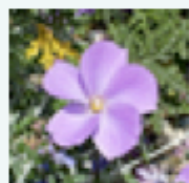


Eric Ng

08/23/2009

has played 27 questions with Tiffany

Tiffany is a great student who is obviously very eager to learn and quickly picks up even difficult concepts! It was a pleasure to work together hope to see you soon!



Arena Reed

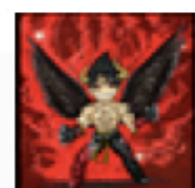
07/23/2009

has played 11 questions with Tiffany

Tiffany is very generous with her knowledge and thinking process while working on questions. She welcomes other students to games and she happily helps the group figure out the best answer choice without just giving it away. People feel smart when they study with Tiffany!



Why support **social** interactions among learners?

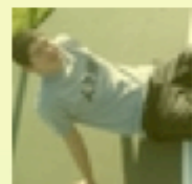


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Social and motivational value of having a cohort of peers:

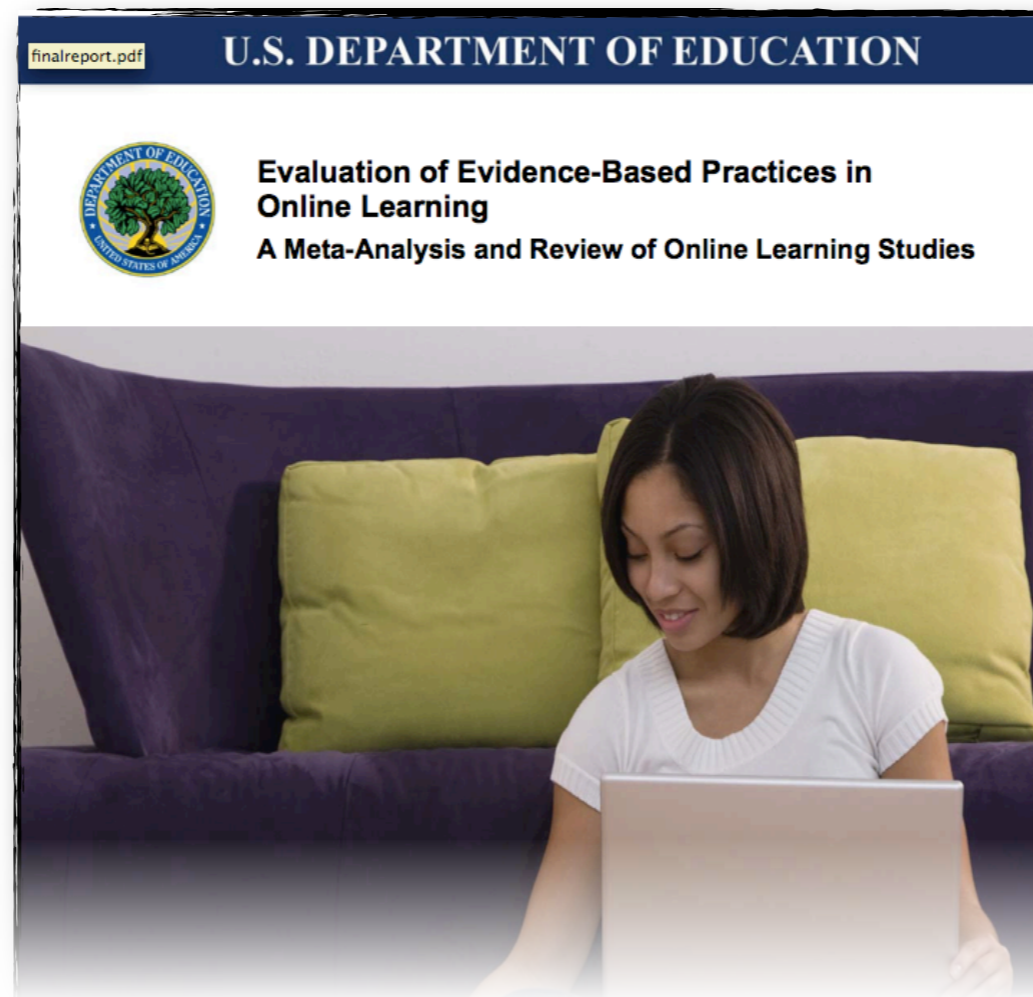
- opportunities to **establish a reputation** among peers
- opportunities for **receive encouragement** from peers
- opportunities for a **study support system** of peers



Why **care** about the social/motivational needs of online learners?



Why **care** about the social/motivational needs of online learners?



Learning higher in *blended/online learning vs. classroom learning*.

- Increased effectiveness may be due to the additional time-on-task.
- Thought: Rather than *controlling* for this, view it as a new *opportunity*:
Higher engagement → more time-on-task → higher learning rates



Outline

- ✓ ● Why support interaction synchronicity among learners?
- How do other learning systems address synchronicity?
- How does **Grockit** achieve web-based synchronicity?
- What have we learned from options in synchronicity?



Why **not** support synchronous interactions in web-based learning systems?



Why **not** support synchronous interactions in web-based learning systems?

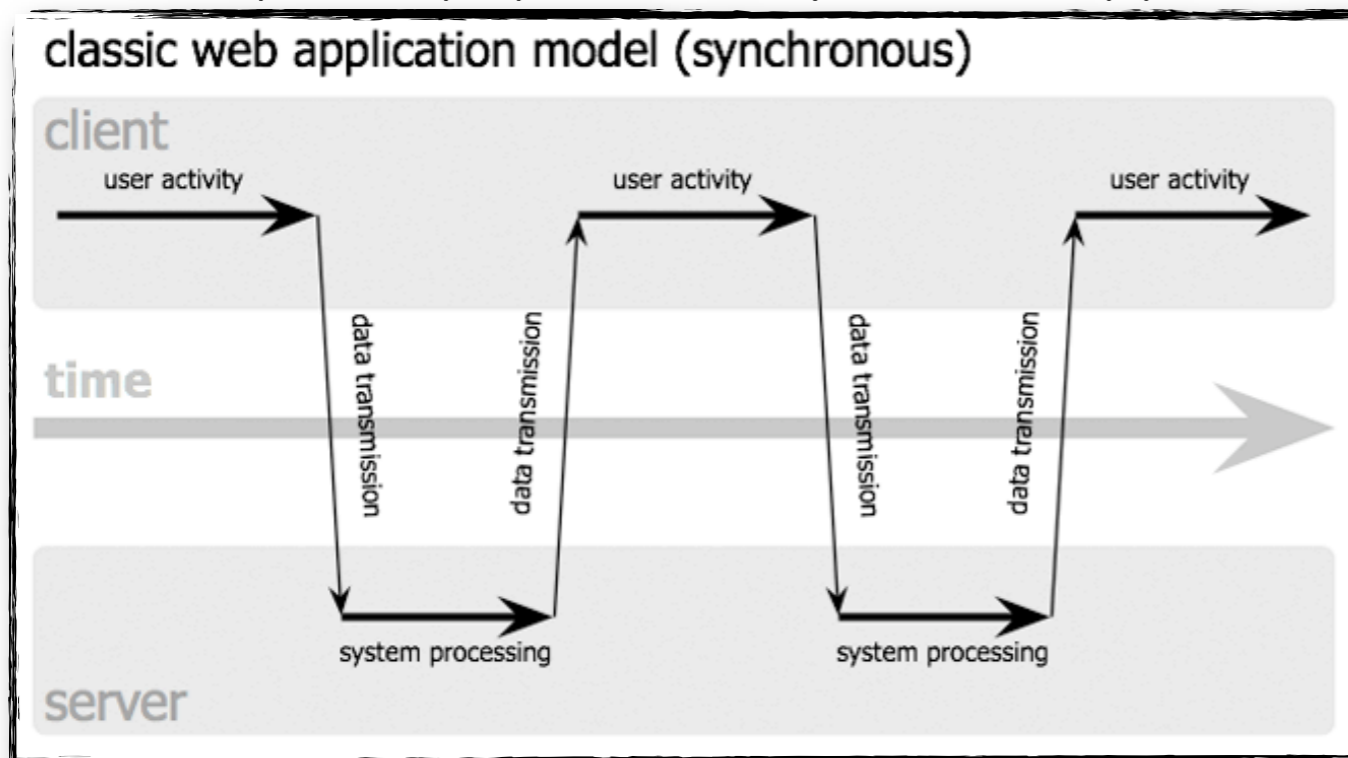
It's difficult. Interaction patterns don't naturally match.



Why **not** support synchronous interactions in web-based learning systems?

It's difficult. Interaction patterns don't naturally match.

<http://www.adaptivepath.com/ideas/essays/archives/000385.php>



Request/response
nature of the web

<http://www.flickr.com/photos/ubclibrary/2701347277/>



Social activity
nature of collaborative learning.



How do **existing** learning systems address synchronicity?



How do **existing** learning systems address synchronicity?

	<i>Asynchronous learner interactions</i>	<i>Synchronous learner interactions</i>
<i>Desktop-based platform</i>	-	Design around the problem
<i>Web-based platform</i>	Avoid / Ignore the issue	Engineer a solution

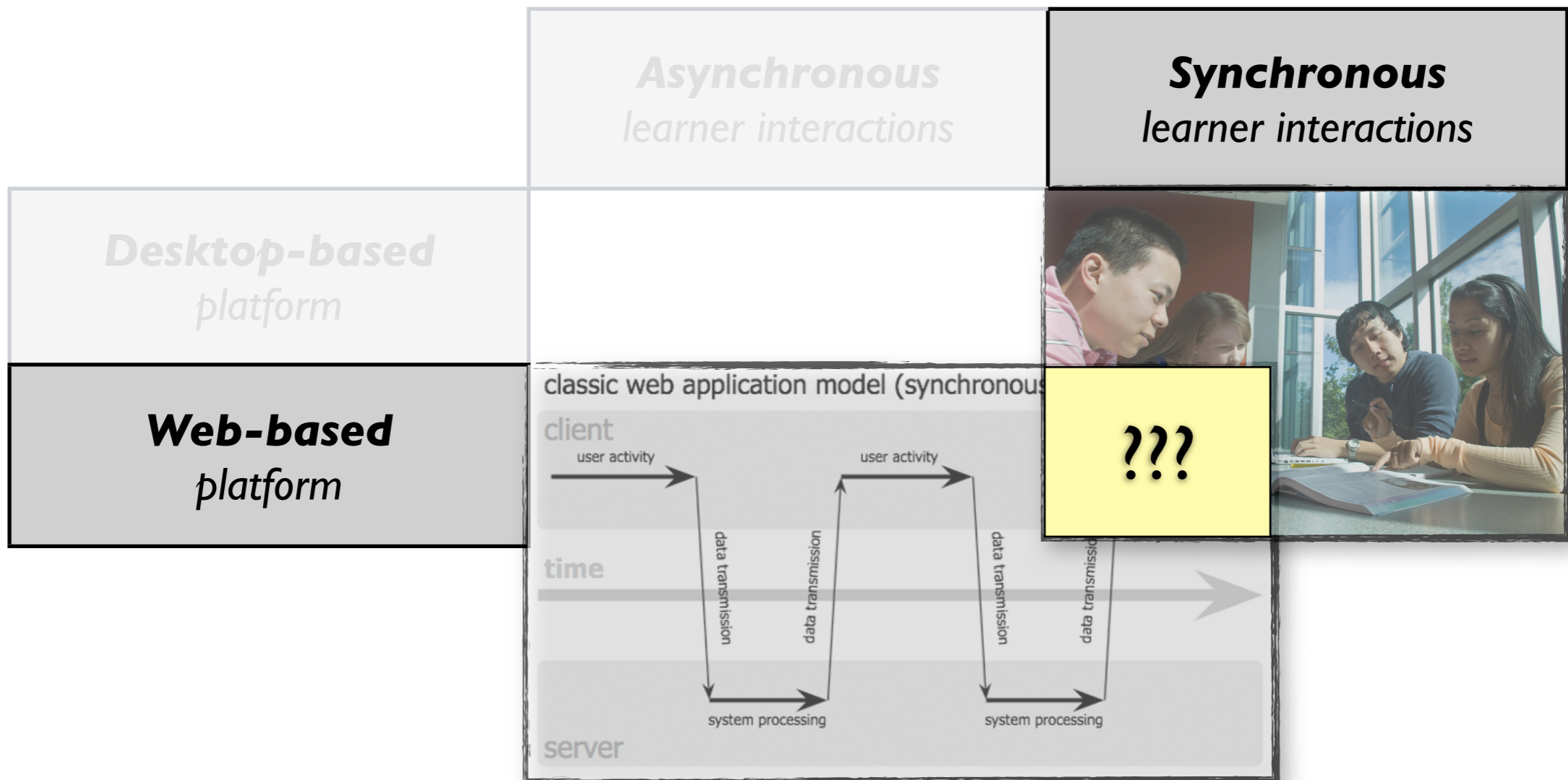


Examples

	<i>Asynchronous learner interactions</i>	<i>Synchronous learner interactions</i>
<i>Desktop-based platform</i>	email-based DE?	Skype, IM, Second Life
<i>Web-based platform</i>	(most) OER, wikis, blogs	Grockit , EduFire, DimDim, WiZiQ, etc.



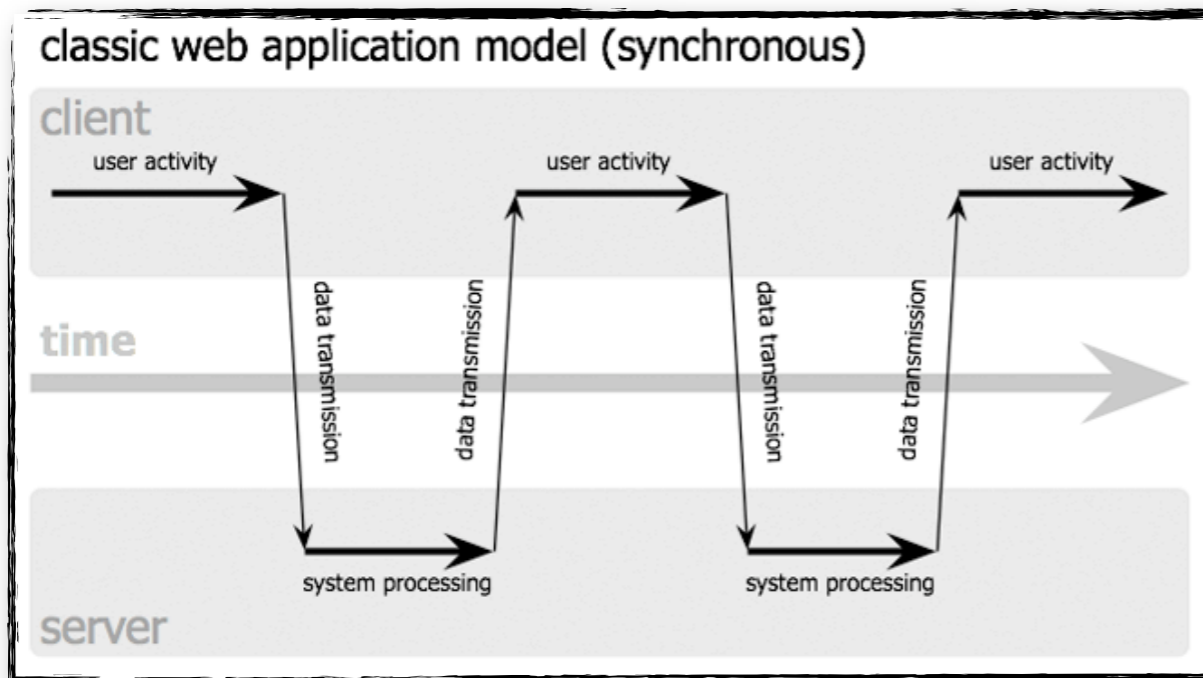
How can **web-based** systems do **synchronous** interactions?



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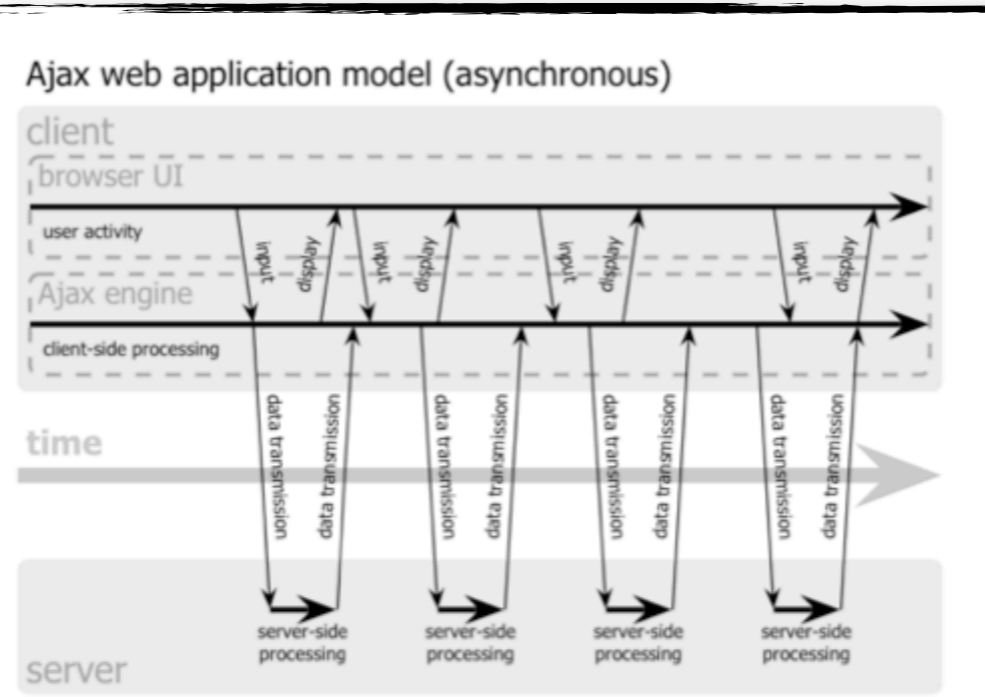
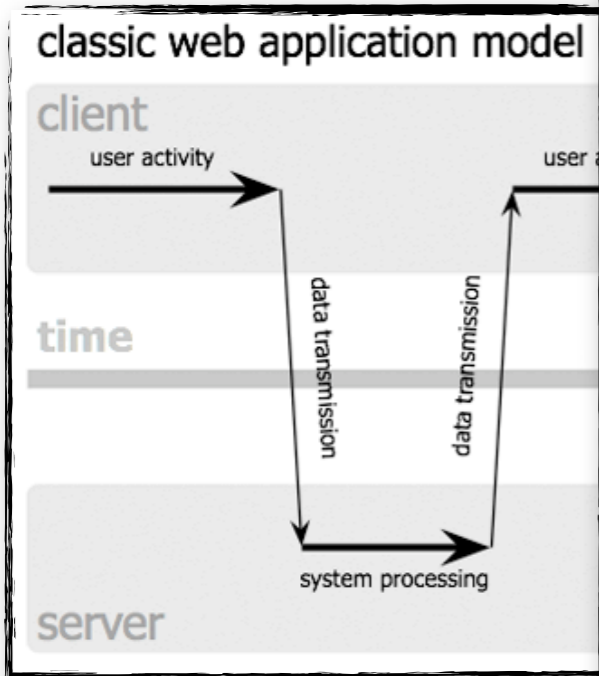


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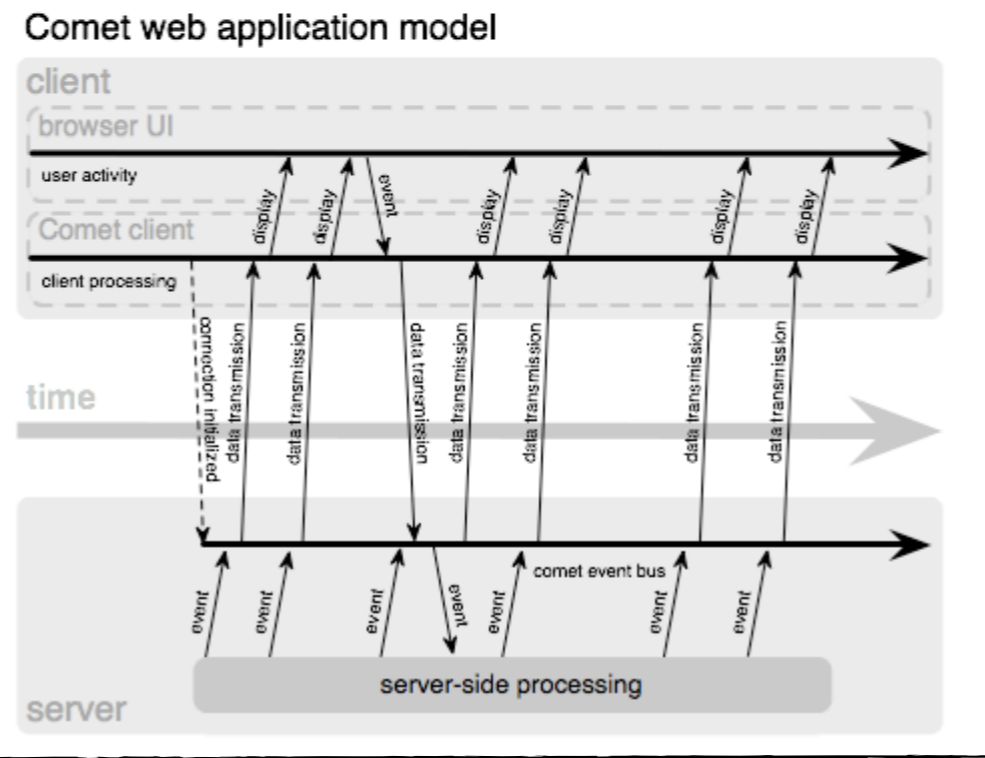


How can **web-based** systems do **synchronous** interactions?

Ajax



Comet



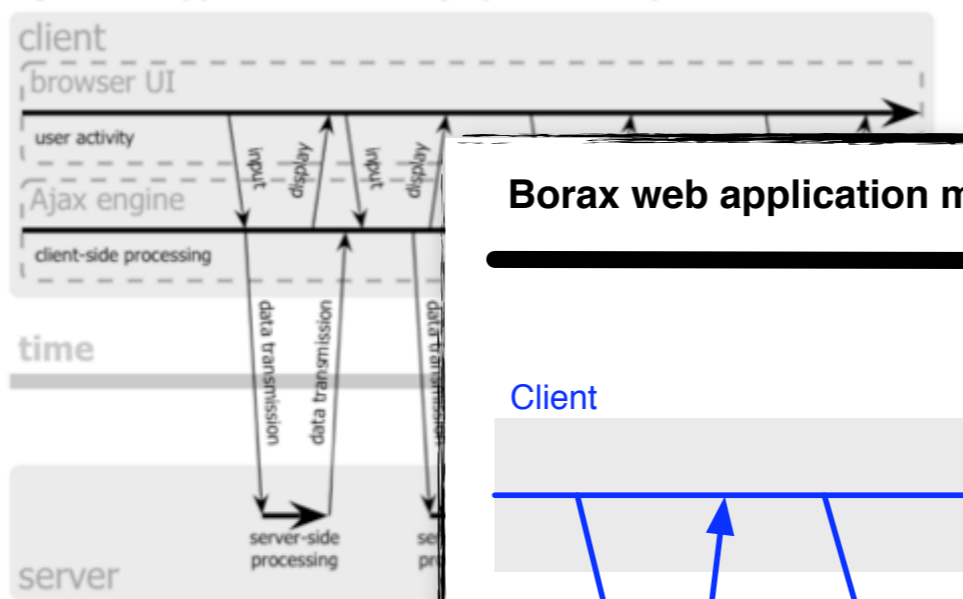
alex.dojotoolkit.org/2006/03/comet-low-latency-data-for-the-browser/



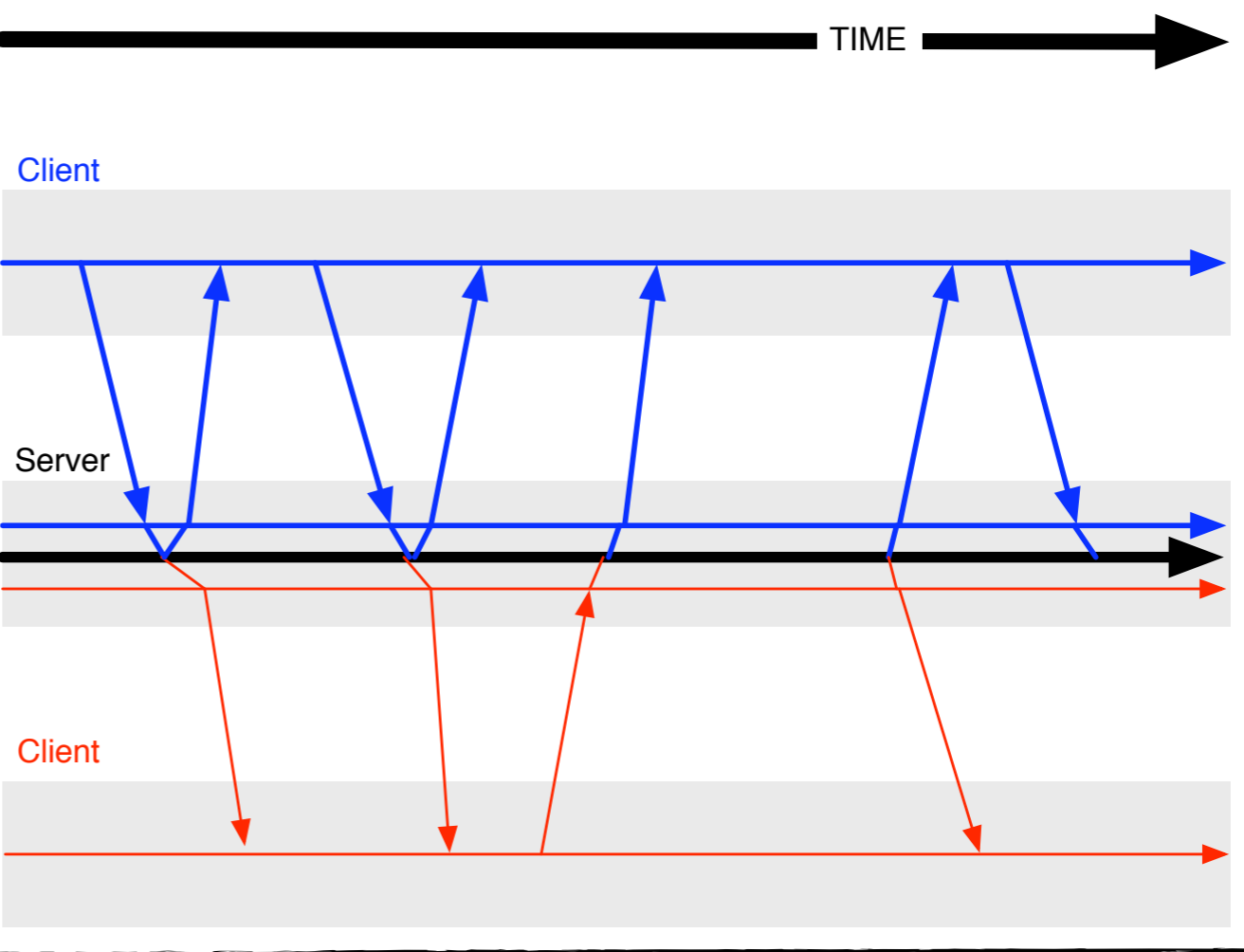
How can **web-based** systems do **synchronous** interactions?

Ajax

Ajax web application model (asynchronous)

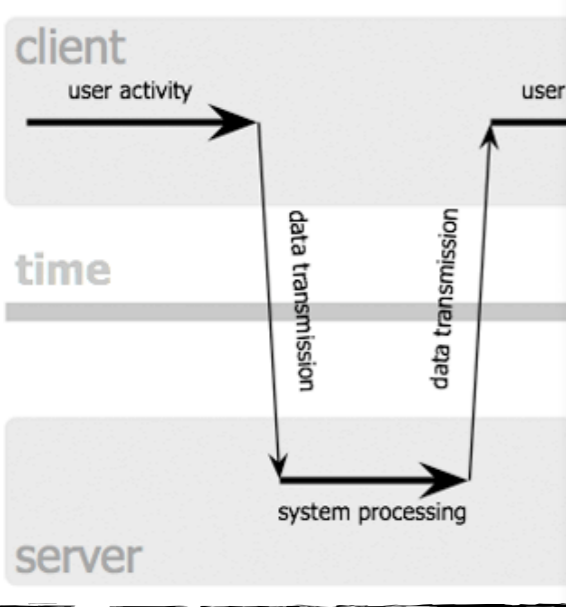


Borax web application model



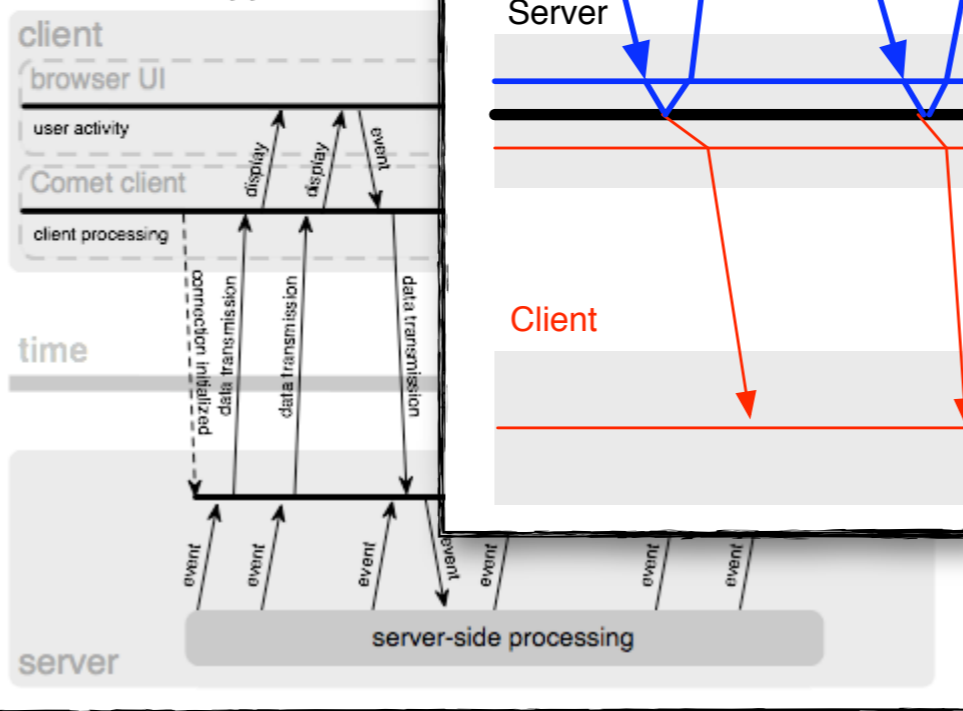
Boraxo

classic web application model



Comet

Comet web application model



alex.dojotoolkit.org/2006/03/comet-low-latency-data-for-the-browser/



MUD / MMO / MMOL



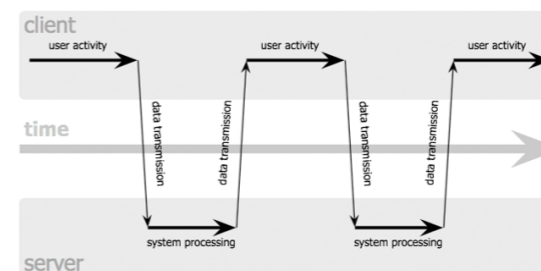
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MUD / MMO / MMOL



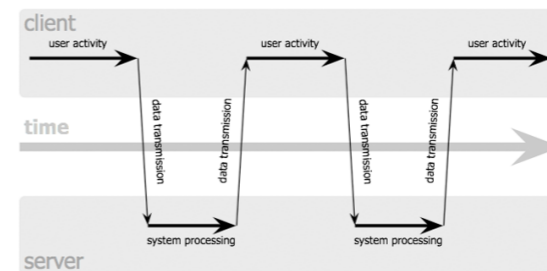
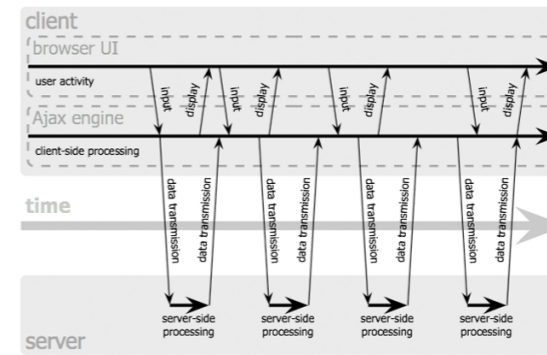
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MUD / MMO / MMOL



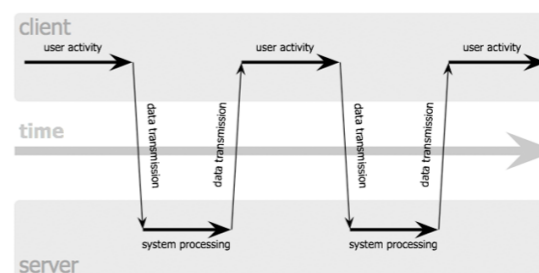
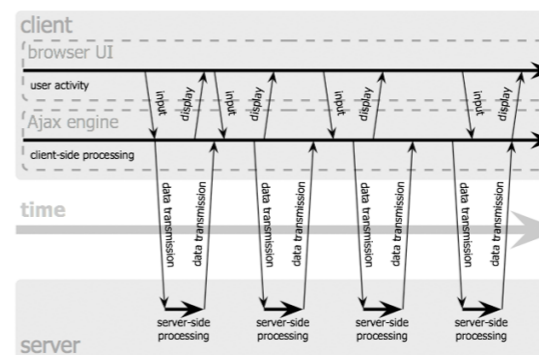
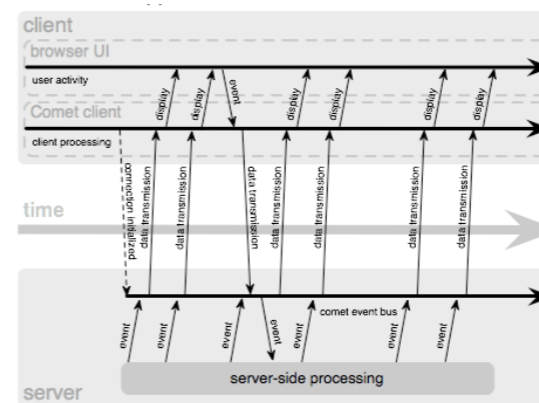
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MUD / MMO / MMOL



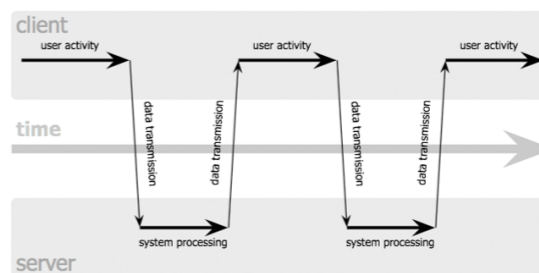
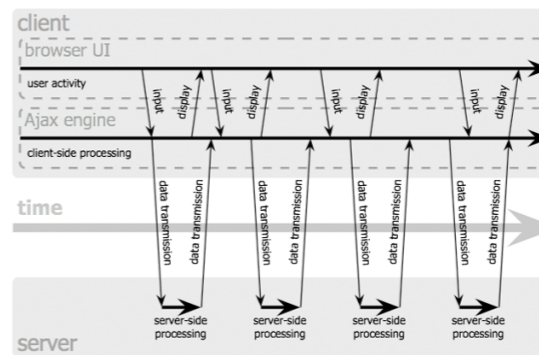
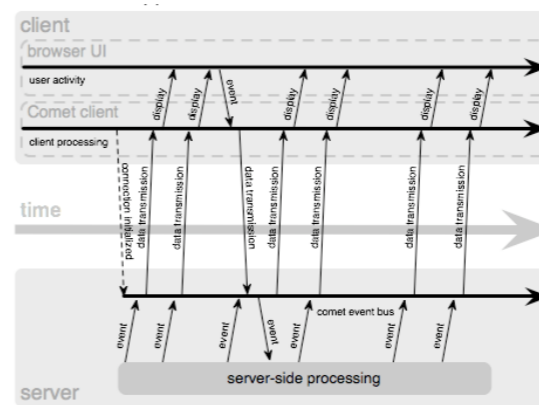
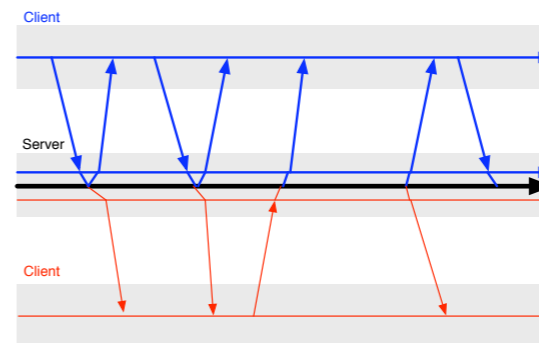
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MUD / MMO / MMOL



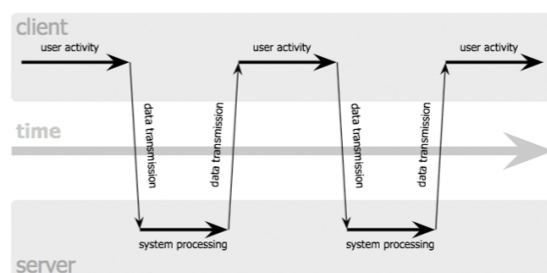
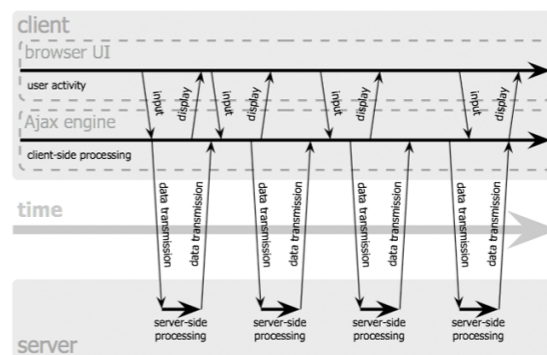
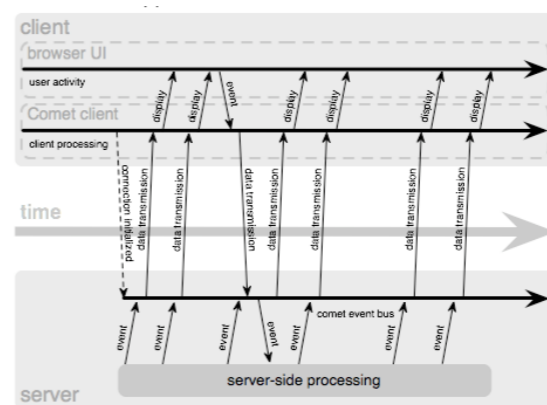
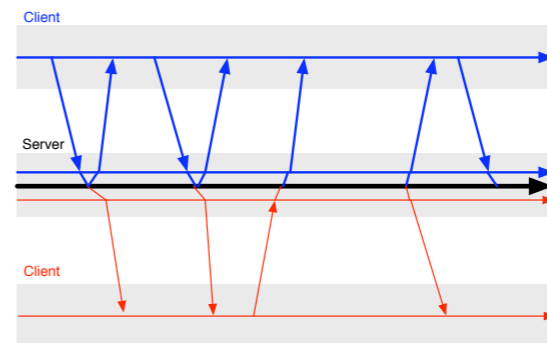
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Given the ability to do synchronous
and/or asynchronous interactions...

	<i>Asynchronous learner interactions</i>	<i>Synchronous learner interactions</i>
<i>Desktop-based platform</i>		
<i>Web-based platform</i>		



Given the ability to do synchronous **and/or** asynchronous interactions...

	<i>Asynchronous learner interactions</i>	<i>Synchronous learner interactions</i>
<i>Desktop-based platform</i>		
<i>Web-based platform</i>		

- Which interactions should be synchronous?
- Which should be asynchronous?
- Which should be a mix?
- What should that mix be?



 Grockit offers:

- **Virtual study groups** for live collaborative learning
- A **social, game-like** environment for learners to **assist and discuss** with one another
- Skill-grained performance analysis to **help students decide** how to allocate their study time
- Adaptive problem selection techniques to help **personalize** study sessions based on prior experience and performance
- Support for both **synchronous** and **asynchronous** interactions among students



Lobby: **coordination** (Async+Sync)



Grockit GMAT - Think. Learn. Be.

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Ari Bader-Natal | [sign out](#)

GMAT

[Join a Game](#)

[Create a Game](#)

[Review Games](#)

Challenges

Quantitative Challenge Available!

Verbal Challenge
answer 20 practice questions to unlock

Solo challenges are adaptive, adjust to your abilities and help optimize your practice time.

Everyone on Grockit starts as a **Beginner**. You'll gain points as you answer questions correctly. Gain enough points and you'll move up to **Intermediate**, **Advanced**, and **Expert**.

Check out [the Grockit blog](#) for tips and announcements of new features to help you prepare for the GMAT.

Invite your friends!

Play a Quantitative Challenge

We've created a solo game targeted specifically at your strengths and weaknesses.

Take Challenge

GMAT Practice Games

Select a subject to start a game

[GMAT Verbal Practice](#)

[Play Now](#) | [Schedule](#)

[GMAT Quantitative Practice](#)

[Play Now](#) | [Schedule](#)

Live Games

Custom GMAT Quantitative Practice

Graphs and Equations

Difficulty: All

Skills: Interpretation of tables, Interpretation of graphs, Solving two linear equations with two unknowns, Solving linear equations with one unknown

In Progress

Scheduled by
Ari Bader-Natal

Join Now

Free

2 Player Game | 1 Spot Available

In Progress

Scheduled by
james bond

Join Now

Free

5 Player Game | 3 Spots Available

Upcoming Games

GMAT Quantitative Practice

Today
10:00pm

Scheduled by
Anil Pesarapu

FULL

Free

5 Player Game | 0 Spots Available

Top GMAT Players

	Dan George 2017 XP earned
	Martin Sobo 1944
	Sreya Ghose 1338
	P H 1314
	tarun 061524 1249
	Zeyno MBA 1095
	Joseph Finley 1003
	Deidre Popovich 957
	John Jo 918
	Brandon Murry 874

most XP in the last 7 days.

Helpful & Friendly

	Martin Sobo 74 GP earned
	Neel Tummala 28
	chase cairncross 24
	Jake Becker 21
	Jim Jacobson 20
	Andrea Alexander 17
	chrissy 8758 16
	Vlad A 16
	Nand sharma 12
	Deidre Popovich 10

most GP in the last 30 days.

XP: Experience Points are earned when you answer questions correctly.

GP: Grockit Points are earned when your helpful discussion

Ari Bader-Natal

Game Round 1: **Problem solving** (Sync)



Exit Game
Premium Member
Answer Mode: Chat and help each other out, then answer
0:26
Grockit

Question

[edit this question](#)

Mary's employer reimburses her driving expenses according to a certain formula. Mary receives a fixed dollar amount for each day she drives for work, plus a certain dollar amount for each client she visits that day. If Mary visits 16 clients on one day, how much will she be reimbursed?

(1) Mary visited 12 questions clients last Monday.

(2) Mary's was reimbursed \$76 for the driving she did last Monday.

Choices

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 needed. ⊘

Discussion

Stephanie Wambach: no worries, let's go on ☆

Brian Buser: Thanks for the explanation Stephanie ☆

Ari Bader-Natal: How did you know that the two together were not sufficient? ☆

Ari Bader-Natal: I'll check that in reviews... ☆

Stephanie Wambach: because you will have to look at the positive/negative signs ☆

Stephanie Wambach: ok next question... ☆

Stephanie Wambach: this is the other type of DS question ☆

Stephanie Wambach: one that asks to find a specific value ☆

Ari Bader-Natal: can we assume that the one day is Monday? ☆

Share your thoughts... Submit



Game Round 2: **Discussion** and **reflection** (Sync)



Exit Game
Premium Member
Review Mode: Review and discuss, continue when ready
0:17
Grockit

Question

An explanation for this answer is available if you review this game. Continue to Next Question

edit this question

If x is average (arithmetic mean) of the first 13 positive multiples of 6 and if X is the median of the first 13 positive multiples of 6, what is the value of $X - x$?

Choices

✘ A. -6

✔ B. 0

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

Your response

✘ C. 6

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

✘ D. 39

✘ E. 42

Ari Bader-Natal

★ 15 ● 47 In Progress

Brian Buser

★ 0 ● 20 ready

Stephanie Wambach

★ 17 ● 3959 In Progress

Discussion

Brian Buser: is this a plug in answers question? ☆

Stephanie Wambach: i think the trick here is that for any evenly distributed set the mean is equal to the median ☆

✔ Correct! You gained 8 XP.

Brian Buser: can anyone help me on this one? ☆

Stephanie Wambach: ok so this one is 0 because the mean is equal to the median in both of these sets ☆

Brian Buser: oh, I see. make sense. thanks! ☆


You awarded 1 Grockit Point to Stephanie Wambach!


Stephanie Wambach: so the two sets are the same - the first positive 13 multiples of 6 ☆

Share your thoughts... Submit



Reviews: **Explanation / commenting** (Async)

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 Grockit

Back to Reviews Previous Reviewing question 2 of 4 Next

Information

Acceptable answers are $3/2$ or 1.5.
 First, multiply out the squares to get $16a^2 + 8ab + b^2 - (16a^2 - 8ab + b^2) \geq 36$. All of the squares cancel out and you are left with $16ab \geq 36$. So, $ab \geq 36/16$. This fraction reduces and we have $ab \geq 9/4$. Now, since it is given that a is not negative and that b is at least equal to a , we know that the least possible value for b occurs when b is equal to a (and not greater than a), and when $ab = 36$ and is not greater than 36. So, since $a=b$, we need to solve for $b^2 = 9/4$. To find that least possible value for b , then, we can take the square root of $9/4$, which is $3/2$ (remember, it is given that b is not negative, so we are looking for the positive square root). The answer can be grid as $3/2$ or 1.5.

Question

[edit this question](#)

Given the following statements, what is the least possible value of b ?

$b \geq a \geq 0$

$(4a + b)^2 - (4a - b)^2 \geq 36$

Answer

Correct Answers

1.5, 3/2












Responses
















	1.50	
	4	

Discussion

	Ari Bader-Natal: tada	
	Ari Bader-Natal: $ab \geq 36/16$.	
	guest 1621324565: if you guess wrong its negative points so i left it blank	
	Joseph Feinstein: anyone no t his	
	guest 1621324565: cancels to what?	
	Ari Bader-Natal: !	
	Ari Bader-Natal: so, $8ab+8ab = 16ab$.	
	Ari Bader-Natal: then, $b^2 \geq 36/16$.	
	Ari Bader-Natal: so, at the least, $b=6/4 = 3/2 = 1.5$	
	Jazzmond S. Jones: not a clue	

Comments About This Question

-  **Khuong Le** [Delete this comment](#) Sunday at 10:07PM
thank! your explanation is really helpful
-  **Tiffany Riley** [Delete this comment](#) Saturday at 02:52PM
thanks- every step is explained and the reason behind the procedures.
-  **EL MALIKI Sofia (FBS)** [Delete this comment](#) Friday at 12:07PM
Thanks y'all!!!! Very helpful!!!
-  **Jazzmond S. Jones** [Delete this comment](#) Saturday at 04:59PM
still confused don't know where the $8ab$ came from
-  **Anantharam Peesapati** [Delete this comment](#) Monday at 09:08AM
really good explanation. thanks!! ;)
-  **kumar manish** [Delete this comment](#) Thursday at 12:05PM
good explanation!
-  **odarri Lewis** [Delete this comment](#) Friday at 09:27PM
thank you!
-  **Sherzod Kutfidinov** [Delete this comment](#) Tuesday at 02:15AM
nice
-  **Sara Gennaro** [Delete this comment](#) Tuesday at 03:02PM
i had no idea how to do the problem beforehand, and the explanation was very thorough and helped a lot!!
-  **Sidak Singh Dhillon** [Delete this comment](#) Saturday at 09:48AM
that's a really good question.
-  **Sidak Singh Dhillon** [Delete this comment](#) Saturday at 09:49AM

-  **Luke Drakas:** wow my multiplication skills arehorrible... ☆
-  **guest 1621324565:** guess not ☆
-  **Ari Bader-Natal:** $(4a+b)^2 - (4a-b)^2$ mostly cancels out. ☆
-  **Luke Drakas:** ohhhh k thanks i understand now ☆
-  **Luke Drakas:** i got that far $(16ab)$ ☆
-  **guest 1621324565:** i simplified to ab is greater than or equal to 4 ☆
-  **Ari Bader-Natal:** divide both sides by 16, and you get... ☆
-  **Ari Bader-Natal:** here's an explanation: ☆
-  **Ari Bader-Natal:** since b is, at the least, equal to a , let's assume that it is A . ☆
-  **Joseph Feinstein:** so it is four? ☆
-  **Ari Bader-Natal:** square root of both sides, and you get $b \geq 6/4$ ☆
-  **Luke Drakas:** .how did u get 1.5? ☆
-  **Ari Bader-Natal:** you're left with $(4ab*2) - (-4ab*2)$ ☆
-  **Ari Bader-Natal:** hope that helps! ☆
-  **guest 1621324565:** smart man ☆

Lessons learned regarding interaction synchronicity:

- implications of question complexity
- implications of activity visibility
- implications of continuous communication
- implications for discussion comments reuse
- implications of group size on discussion dynamics
- implications of community size on group formation



Implications of **question complexity**



Implications of **question complexity**

- Should long passages be visible/included during synchronous interactions?



Implications of **question complexity**

- Should long passages be visible/included during synchronous interactions?

Question

You're probably itching to make a sketch, but that's a total waste of time here. There are far too many possible triangles to sketch even a few out, so let's think up another way to work this one out.

Rather than working out all the triangles, if we work out the plot points of the given points, based on the limitations provided, then we'll know how many triangles can fill the requirements.

Let's start by calculating the number of possible points where angle A could be placed in the coordinate system. Given: $-6 \leq x \leq 2$... we know there are 9 possible x -coordinates for point A ... and given $4 \leq y \leq 9$... we know there are 6 possible y -coordinates for point A .

Now we can determine that there are a total of $(9)(6) = 54$ possible plot points where point A could lie within the limitations provided for the xy -coordinate system.

Now let's figure out where point B could lie. We're told that AB is parallel to the y -axis, so point B will have the same x -coordinate as point A , but it will have a different y -coordinate. We know that there are 6 different permissible y -coordinates, but point A will be occupying one of those, so there will be 5 possibilities left for point B .

Here we can calculate the number of different possible incarnations of line segment AB : 54 possible points for $A \times 5$ possibilities left for point B in each of those = 270 possible variations of line segment AB .

Finally, we have to calculate the possibilities for point C and multiply that by the 270 possibilities for line segment AB . Since we know that AB is parallel to the y -axis and angle A is a right angle, we can figure out that AC will be parallel to the x -axis. This means that point C will have the same y -coordinate as A , but it will have a different x -coordinate.

Of the nine possible x values, A is already taking one up. So we're left with 8 possibilities for C in each of the 270 incarnations of line segment AB , bringing our total possible triangle variations within these limitations to a grand total of 2,160.

edit this question

Right triangle ABC is to be drawn in the xy -plane so that the right angle is at A and AB is parallel to the y -axis. If the x - and y -coordinates of A , B , and C are to be integers that are consistent with the inequalities $-6 \leq x \leq 2$ and $4 \leq y \leq 9$, then how many different triangles can be drawn that will meet these conditions?

Choices *Click to reveal explanations*

A. 54

B. 432

C. 2,160

This one is correct. $(9)(6) = 54$ possibilities for point $A \times 5$ possibilities left for point $B \times 8$ possibilities left for point $C = 2,160$ triangles.

D. 2,916

If you got this answer, you forgot to subtract the points that are already occupied by another point before you multiplied. $9 \times 6 = 54$ possibilities for point $A \times 5$ possibilities left for point $B \times 8$ possibilities left for point $C = 2,160$ triangles.

E. 148,824

This is the number of different triangles within the prescribed perimeter, but if you got this value, you ignored the restriction that angle A is a right angle and line segment AB is parallel to the y -axis.



Implications of **question complexity**

- Should long passages be visible/included during synchronous interactions?

Group size	Avg wait, seconds
2	13.9
3	27.8
4	32.4
5	36.0

SAT Reading data from Aug 2009



Implications of **question complexity**

- Should long passages be visible/included during synchronous interactions?

Question

An explanation for this answer is available if you review this game. [Continue to Next Question](#)

[edit this question](#)



If x is average (arithmetic mean) of the first 13 positive multiples of 6 and if X is the median of the first 13 positive multiples of 6, what is the value of $X - x$?

Choices

A. -6


B. 0

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

 Your response 

C. 6

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





Implications of **activity visibility**

- Should all student activity be visible immediately?



Implications of **activity visibility**

- Should all student activity be visible immediately?

The screenshot displays a Grockit interface for a collaborative learning activity. The main window shows a quiz question with five multiple-choice options (A-E) and a timer set to 0:20. A chat window is open on the right, showing a list of participants and their activity status. The chat window also displays a discussion thread with messages from participants.

Quiz Question: Chat and help each other out, then answer

Choices:

- A \$4
- B \$5
- C \$6
- D \$8
- E \$10

Chat Window:

Participants:

- chase cairncross (ready)
- Martin Sobo (ready)
- Ari Bader-Natal (ready)
- Do Julia (In Progress)

Discussion:

- Martin Sobo: this one is tricky, wording is tough to follow
- Do Julia: they didn't take my answer
- Martin Sobo: 2) tells us that she



Implications of **continuous communication**

- Should students be able to chat while answering questions?



Implications of **continuous communication**

- Should students be able to chat while answering questions?

Group size	Avg wait, seconds
2	13.9
3	27.8
4	32.4
5	36.0

SAT Reading data from Aug 2009



Implications for discussion **comments reuse**

- If a student identifies a comment as ``useful'', can that comment be reused later, in a different context?



Implications for discussion **comments reuse**

- If a student identifies a comment as ``useful'', can that comment be reused later, in a different context?

Brian Buser: can anyone help me on this one?

Stephanie Wambach: ok so this one is 0 because the mean is equal to the median in both of these sets

Brian Buser: oh, I see. make sense. thanks!

You awarded 1 Grockit Point to Stephanie Wambach!

Luke Drakas: i got that far (16ab)

guest 1621324565: i simplified to ab is greater than or equal to 4

Ari Bader-Natal: divide both sides by 16, and you get...

Ari Bader-Natal: here's an explanation:

Ari Bader-Natal: since b is, at the least, equal to a , let's assume that it is A .

Joseph Feinstein: so it is four?

Ari Bader-Natal: square root of both sides, and you get $b \geq 6/4$

Luke Drakas: .how did u get 1.5?

Ari Bader-Natal: you're left with $(4ab^2) - (-4ab^2)$

Ari Bader-Natal: hope that helps!



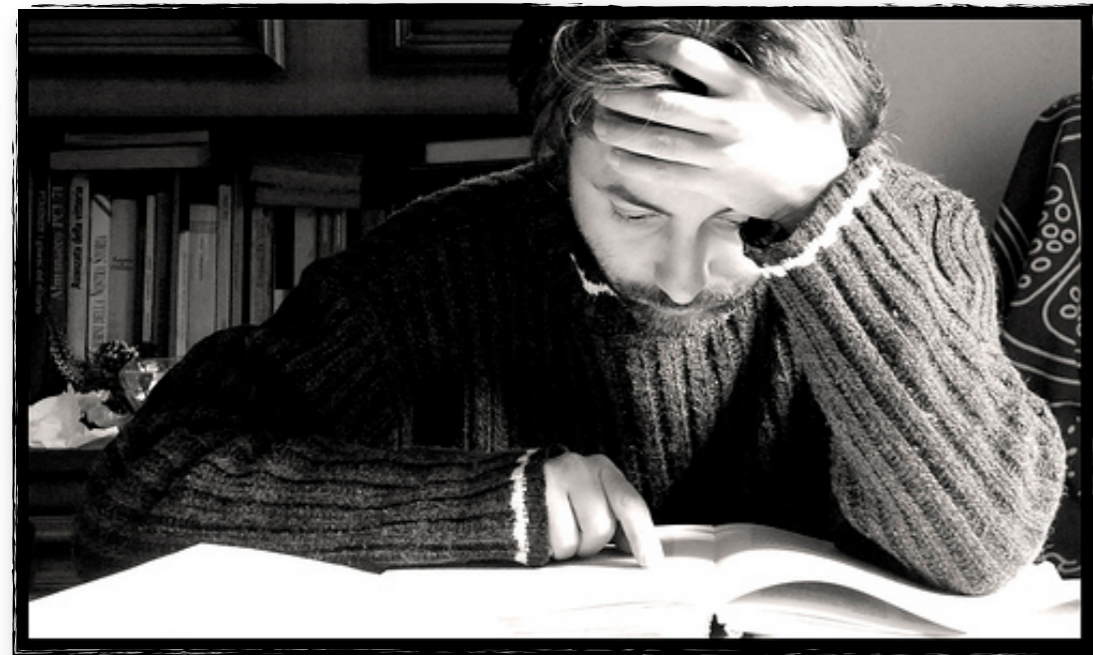
Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



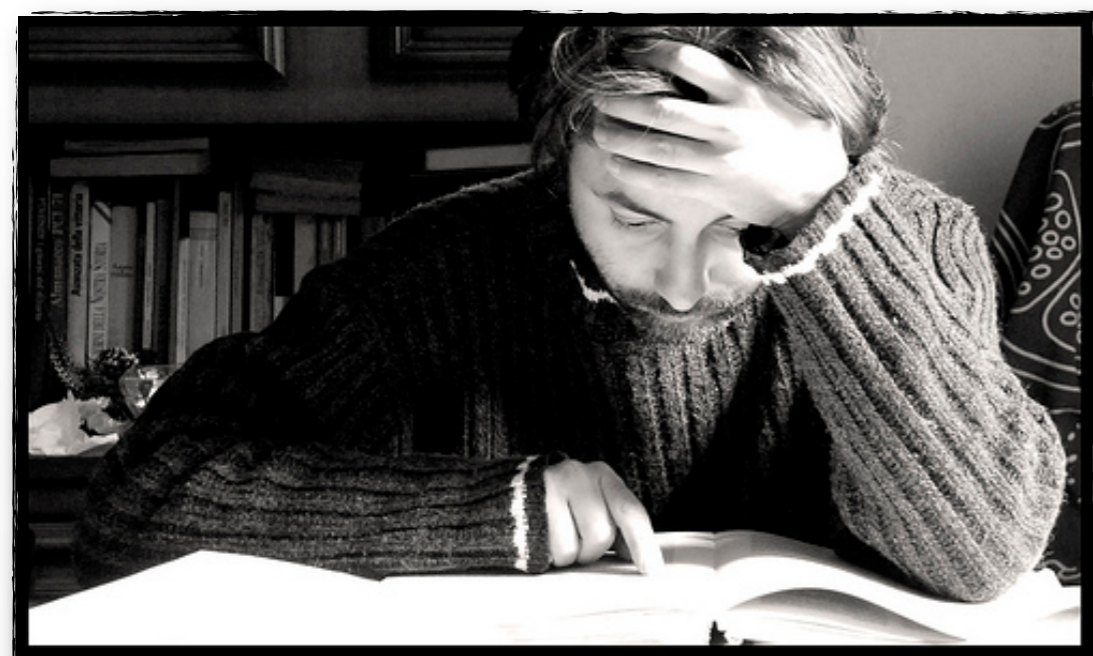
Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



Implications of **group size** on discussion dynamics

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Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



Implications of **group size** on discussion dynamics

- Should the number of students in the activity be limited?



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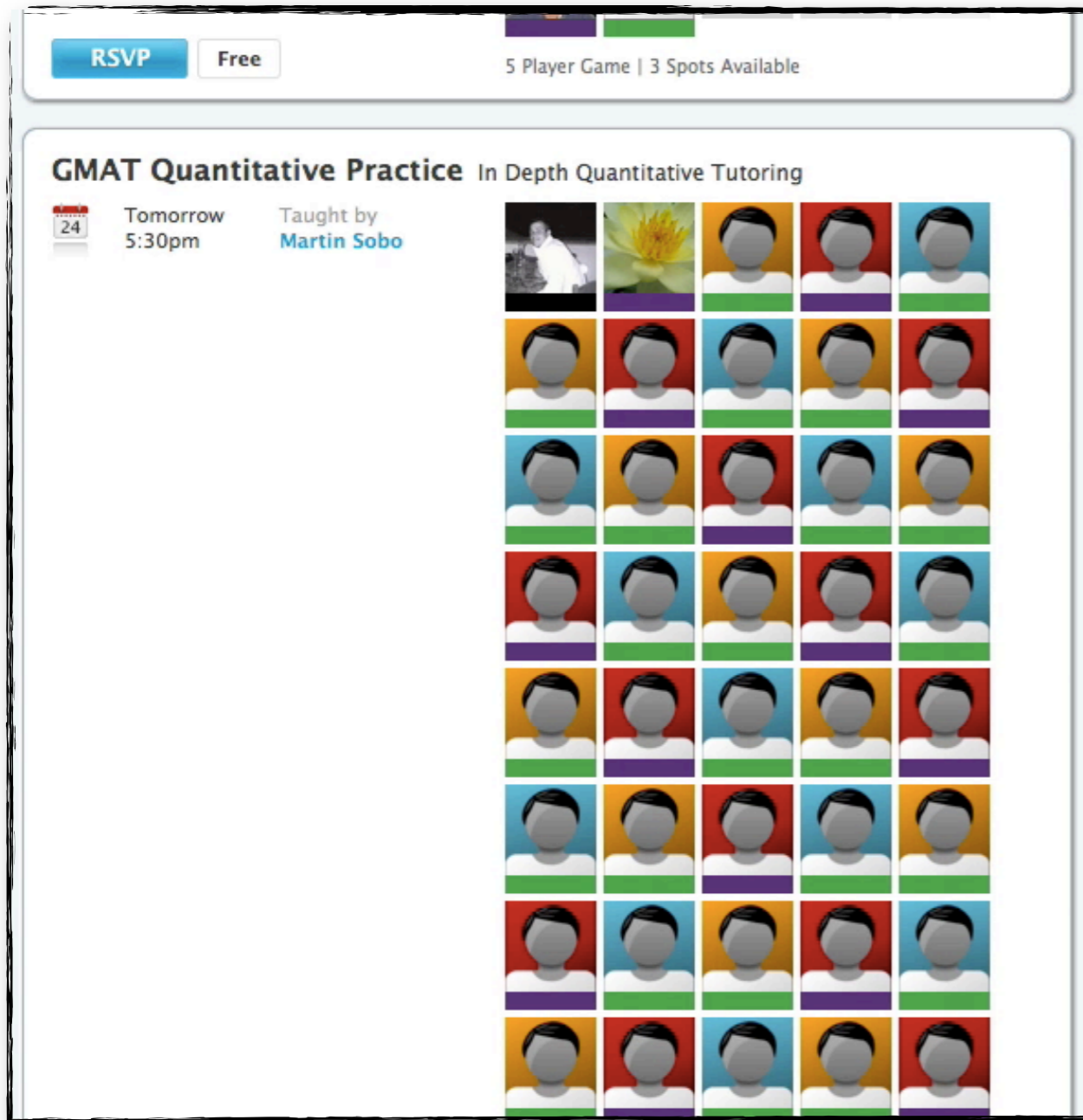
Implications of **group size** on discussion dynamics

- Should the number of students participating in a synchronous learning activity be limited?



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Implications of **group size** on discussion dynamics

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RSVP Free 5 Player Game | 3 Spots Available

GMAT Quantitative Practice In Depth Quantitative Tutoring

24 Tomorrow 5:30pm Taught by Martin Sobo

???



Implications of **group size** on discussion dynamics

- Should the number of students participating in a synchronous learning activity be limited?

RSVP Free 5 Player Game | 3 Spots Available

GMAT Quantitative Practice

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Live Games

Custom GMAT Verbal Practice

Difficulty: Harder
Skills: All

In Progress Scheduled by Ashish Shetty

Join Now Free 5 Player Game | 2 Spots Available

Custom GMAT Verbal Practice

Difficulty: Moderate
Skills: Sentence Correction, Verb form, Parallelism, Agreement, Parallel Structure

In Progress Scheduled by rashi gupta

Join Now Free 5 Player Game | 4 Spots Available

GMAT Verbal Practice

In Progress Scheduled by Ranga Phani Kumar UCH

FULL Free 1 Player Game | 0 Spots Available



Implications of **community size** on group formation

- How can a learning environment reach the critical mass necessary to sustain synchronous activities?



Implications of **community size** on group formation

- How can a learning environment reach the critical mass necessary to sustain synchronous activities?

The screenshot displays a 'Live Games' section with five listings. Each listing includes the game title, status, organizer, player avatars, and availability information.

- ACT Math**: In Progress, Scheduled by Fay Catacutan. 4 Player Game | 0 Spots Available. Status: FULL. Price: Free.
- ACT Math**: In Progress, Scheduled by Cedric Ntwali. 4 Player Game | 3 Spots Available. Price: Free. Button: Join Now.
- ACT English**: In Progress, Scheduled by Ana Silvia Mera. 4 Player Game | 2 Spots Available. Price: Free. Button: Join Now.
- ACT Math**: In Progress, Scheduled by Chloe Garcia. 4 Player Game | 3 Spots Available. Price: Free. Button: Join Now.
- ACT Science**: In Progress, Scheduled by [Name]. 4 Player Game | 3 Spots Available. Price: Free. Button: Join Now.

Implications of **community size** on group formation

- How can a learning environment reach the critical mass necessary to sustain synchronous activities?



Live Games

ACT Math
In Progress Scheduled by Fay Catacutan
FULL Free 4 Player Game | 0 Spots Available

ACT Math
In Progress Scheduled by Cedric Ntwali
Join Now Free 4 Player Game | 3 Spots Available

ACT English
In Progress Scheduled by Ana Silvia Mera
Join Now Free 4 Player Game | 2 Spots Available

ACT Math
In Progress Scheduled by Chloe Garcia
Join Now Free 4 Player Game | 3 Spots Available

ACT Science
In Progress Scheduled by

Discussion & **Conclusion**

- Why support interaction synchronicity among learners?
- How do other learning systems address synchronicity?
- How does Grockit achieve web-based synchronicity?
- What have we learned from options in synchronicity?
 - implications of question complexity
 - implications of activity visibility
 - implications of continuous communication
 - implications for discussion comments reuse
 - implications of group size on discussion dynamics
 - implications of community size on group formation



Credits:



Credits:



Farb Nivi,
Founder/CEO



Credits:



Farb Nivi,
Founder/CEO

The screenshot displays a web interface for a Grockit team. At the top, there is a navigation bar with an 'RSVP' button, a 'Free' label, and a progress indicator showing '5 Player Game | 4 Spots Available'. Below this is the 'Grockit Team' section, which includes a clock icon, the text 'In Progress', and 'Led by Farb Nivi'. A grid of 15 member avatars is shown, with the first one being Farb Nivi. A 'Join Now' button is located at the bottom left of the team section, and the text '15 Person Team | More Spots Available' is at the bottom right. Below the team section is a 'GMAT Verbal Practice' section, which includes a calendar icon, the date 'Oct 28, '09', the time '1:30am', and the text 'Scheduled by Shuang Bastogi'. A row of five avatars is shown below this section.

Grockit
team



Credits:



Farb Nivi,
Founder/CEO

RSVP Free 5 Player Game | 4 Spots Available

Grockit Team

In Progress Led by **Farb Nivi**

Join Now 15 Person Team | More Spots Available

GMAT Verbal Practice

Oct 28, '09 1:30am Scheduled by **Shuang Bastogi**

Grockit
team

Top GMAT Players

- Dan George 2017 XP earned
- Martin Sobo 1944
- Sreya Ghose 1338
- P H 1314
- tarun 061524 1249
- Zeyno MBA 1095
- Joseph Finley 1003
- Deidre Popovich 957
- John Jo 918
- Brandon Murry 874

most XP in the last 7 days.

Helpful & Friendly

- Martin Sobo 74 GP earned
- Neel Tummala 28
- chase cairncross 24
- Jake Becker 21
- Jim Jacobson 20
- Andrea Alexander 17
- chrissey 8758 16
- Vlad A 16
- Nand sharma 12
- Deidre Popovich 10

most GP in the last 30 days.

Grockit
students



Interaction Synchronicity in Web-based Collaborative Learning Systems

Ari Bader-Natal

ari@grockit.com



October 27, 2009

