The Importance of Peer-Learning:
A Case Study on PeerWise

Sam Green & Kevin Tang
PhD researchers and Postgraduate Teaching Assistants
Psychology and Language Sciences division
University College London
The Importance of Peer-Learning: A Case Study on PeerWise

Sam Green & Kevin Tang
PhD researchers and Postgraduate Teaching Assistants
Psychology and Language Sciences division
University College London

Questions?

http://goo.gl/6AlgLT
How PeerWise works

Paul Denny
University of Auckland, NZ
Question creating

Write question

Write the main text of the question below. Make sure the question is clear and unambiguous, and use language which is professional. Feel free to format the text of your question using the formatting options.

Which of the following is the answer?

Explaination

You should provide an explanation for your answer. This explanation will only be shown to people after they have selected what they think is the answer to your question, and may help to explain to them why the alternative you suggested is indeed the correct answer.

This explains the answer, the possible answers, and the questions (and perhaps even some references...)

Alternatives

Write up to five alternative answers for the question you have written above. Make sure each alternative is distinct, and of course, you that exactly one of the alternatives is the correct answer to your question. You may choose to define fewer than five alternatives (by sin some of the text areas empty), but you must at least provide two alternatives.

You must indicate which of the alternatives is the correct answer to your question by selecting the letter to the left of the alternative.
### Unanswered questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of answers</th>
<th>Author answer rating</th>
<th>Help requested</th>
<th>Author answer</th>
<th>Correctness</th>
<th>Date</th>
<th>Rating</th>
<th>Overall rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>not rated</td>
<td>24 Feb</td>
<td>not rated</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>medium</td>
<td>17 Feb</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>medium</td>
<td>16 Dec</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>easy</td>
<td>24 Jan</td>
<td>2.67</td>
<td></td>
</tr>
</tbody>
</table>

**Explanation**

The following explanation has been provided relating to this question:

The words "base" and "phase" are NOT an example of a minimal pair as there are TWO differences in these words. The difference is not only between the "b" and "ph" at the beginning of the words, but also the contrast in the pronunciation of "e" and "a" in this example. It may help to say the words out loud to make this distinction clearer.

---

**Answering questions**

**Answer the following question**

The words "base" (spelled) and "phase" (spelled) are completely identical except for their initial sounds, that is, they are both of the same [sound]. Since they are identical words, it follows that [sound] of the speech sounds so they are separate phonemes. A pair like this, which refers to just one single location, is called an eminence pair. Which of the following is NOT an example of a minimal pair?

**Select your answer:**

<table>
<thead>
<tr>
<th>OPTION</th>
<th>ALTERNATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Alive &amp; Active</td>
</tr>
<tr>
<td>B</td>
<td>Thigh &amp; Thy</td>
</tr>
<tr>
<td>C</td>
<td>Bin &amp; Bean</td>
</tr>
<tr>
<td>D</td>
<td>Base &amp; Phase</td>
</tr>
<tr>
<td>E</td>
<td>Zoal &amp; Saol</td>
</tr>
</tbody>
</table>

---

**Topics**

The following topics have been indicated as being relevant to this question:

- Vowels
- Diphthongs
- Monophthongs
- Phonemes

---

**DO NOT AGREE WITH AUTHOR**

The answer does not agree with the answer suggested by the author, but is more responsive and relevant.
People

Students (who've contributed questions) 41
Students (who've answered questions) 41
Total number of questions (includes deleted questions) 141
Total number of answers (to all questions) 2020

Highest Reputation scores

Highest Reputation scores of all students in this course

<table>
<thead>
<tr>
<th>Rank</th>
<th>Total Reputation score (components)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3194 (65q, 811a, 452r)</td>
</tr>
<tr>
<td>2</td>
<td>3006 (39q, 903a, 589r)</td>
</tr>
<tr>
<td>3</td>
<td>2602 (47q, 518a, 294r)</td>
</tr>
<tr>
<td>4</td>
<td>2391 (25q, 533a, 349r)</td>
</tr>
</tbody>
</table>

Badges

As you participate and contribute to PeerWise, you can earn badges.

- **Basic badges** are easy to earn but most of them can only be earned once.
- **Standard badges** are slightly more difficult to earn although some of them can be earned multiple times.
- **Elite badges** are generally more challenging to earn, and some are quite difficult!

Each badge is represented by an icon. The list below shows the badges you have currently earned, and describes what is needed to earn additional badges:

<table>
<thead>
<tr>
<th>Badge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️</td>
<td>&quot;Question author&quot; badge For contributing your first question to PeerWise 39 people</td>
</tr>
<tr>
<td>✔️</td>
<td>&quot;Question answerer&quot; badge For answering your first question on PeerWise 43 people</td>
</tr>
<tr>
<td>✗</td>
<td>&quot;Star-crossed&quot; badge For the first time you either &quot;agree&quot; or &quot;disagree&quot; with a comment 30 people</td>
</tr>
</tbody>
</table>

Badges earned in decreasing order of distinct badges

<table>
<thead>
<tr>
<th>Rank</th>
<th>Student</th>
<th>Identifier</th>
<th>Distinct badges</th>
<th>Total (includes repetition)</th>
<th>Which badges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>jiao</td>
<td>110090604</td>
<td>18</td>
<td>55</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>2</td>
<td>uojtxia</td>
<td>012019229</td>
<td>18</td>
<td>60</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>3</td>
<td>ilmoncello_</td>
<td>012065614</td>
<td>17</td>
<td>70</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>4</td>
<td>karenynkun</td>
<td>012019238</td>
<td>16</td>
<td>49</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>5</td>
<td>valerie</td>
<td>012069913</td>
<td>16</td>
<td>40</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>6</td>
<td>islelapa</td>
<td>012038898</td>
<td>16</td>
<td>38</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>7</td>
<td>ammicnet</td>
<td>012058975</td>
<td>16</td>
<td>34</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>8</td>
<td>hend</td>
<td>01200915</td>
<td>15</td>
<td>36</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>9</td>
<td>ucjtlei</td>
<td>012040216</td>
<td>15</td>
<td>27</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
<tr>
<td>10</td>
<td>uctepe</td>
<td>012079650</td>
<td>14</td>
<td>48</td>
<td>ABCDEFGHIJKLMNOPQRST---</td>
</tr>
</tbody>
</table>
Our use of PeerWise

Challenges
- Integration with existing UCL modules and technology
- Learning curve for staff and students
- First to introduce it fully at UCL

PeerWise
Novel Online Peer-Learning System

Benefits
- Cross-cultural communication
- Culturally diverse group from 42 in to 499 out
- Different learning attitudes towards assignments
- Analytical skills
- First year students
- No prior use in critical evaluation skills
- Synthesising information

The Students
- Two groups:
  - Undergrads (N = 30)
  - Postgrads (N = 30)
- Manipulations:
  - Grouped: 1) randomly 2) mixed ability
  - Across the terms
  - Term 1: UC (Random), PA (mixed)
  - Term 2: UC (mixed), PA (mixed)
- 10% course credit
- "People learn well if they care about what they are learning"
- Six weekly deadlines in groups for questioning individuals for answering
Challenges

PeerWise: Novel Online Peer-Learning System

- Integration with existing UCL modules and technology
- First to introduce it fully at UCL
- Learning curve for staff and students
Benefits

Cross-cultural communication
- Culturally diverse group from Asia to Africa
- Different learning attitudes
- Different aspirations

Analytical Skills
- First year students
- No prior exp. in critical evaluation Skills
- Synthesising information

Technology Use
- Virtual learning platform
- Use of technology to discuss/meet
- Use of feedback to drive further learning and communication.
- Wanted to encourage peer interaction and integration, especially with PG students (lots of non-natives)
Cross-cultural communication

Culturally diverse group from Asia to Africa

Different learning attitudes

Different aspirations
Analytical Skills
First year students
No prior exp. in critical evaluation skills
Synthesising information
Technology Use

Virtual learning platform

use of technology to discuss/meet

use of feedback to drive further learning and communication.

wanted to encourage peer interaction and integration, especially with PG students (lots of non-natives)
The Students

Two groups:
Undergrads (N = 50) and Postgrads (N = 50)

Manipulations:
- Grouped: 1) randomly 2) mixed ability
- Across two terms
- Term 1: UG (Random), PG (Mixed)
- Term 2: UG (Mixed), PG (Mixed)

10% course credit:
"People learn well if they care about what they are learning"

Six weekly deadlines; in groups for Questioning, individuals for Answering
Implementation
Interdisciplinary

Educational Specialists
UCL Centre for the Advancement of Learning and Teaching (CALT)
UCL E-Learning Environments (ELE)

Course leaders

Implementers

UCL TEACHING INNOVATIONS
GRANT SCHEME

Start-up grants to help departments formulate a new Idea
Aligned with UCL's institutional priorities for a successful grant:
Interdisciplinary working
Course leaders
Educational Specialists

UCL Centre for the Advancement of Learning and Teaching (CALT)

UCL E-Learning Environments (ELE)
Implementers
Start-up grants to help departments formulate a new Idea. Aligned with UCL’s institutional priorities for a successful grant: Interdisciplinary working.
The Students

"People learn best by making things and sharing them"
Ultimate Learning
Creating and Teaching

Create
Evaluate
Analyze
Apply
Understand
Remember

Practice by Doing
Teach Others

National Training Laboratories, Bethel, Maine
Looking at the spectrograms below, identify the correct order (from left to right) of the four fricatives (h) spectrograms represent:

Alternatives

<table>
<thead>
<tr>
<th>OPTION</th>
<th>ALTERNATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$\theta f s f$</td>
</tr>
<tr>
<td>B</td>
<td>$f s \theta$</td>
</tr>
<tr>
<td>OPTION</td>
<td>ALTERNATIVE</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>A</td>
<td>1./ʒ/; 2./ɖ/; 3./ɡ/; 4./b/; 5. /v/</td>
</tr>
<tr>
<td>B</td>
<td>1./ʒ/; 2./ɖ/; 3./γ/; 4./B/; 5. /β/</td>
</tr>
<tr>
<td>C</td>
<td>1./ʒ/; 2./ɖ/; 3./γ/; 4./B/; 5. /β/</td>
</tr>
<tr>
<td>D</td>
<td>1./ʒ/; 2./ɖ/; 3./γ/; 4./B/; 5. /ϕ/</td>
</tr>
<tr>
<td>E</td>
<td>1./ð/; 2./ɖ/; 3./γ/; 4./B/; 5. /β/</td>
</tr>
</tbody>
</table>
Provide Detailed Explanations

The answer is B.

Graph 1 is the spectrogram of [ara]. Although we may not have an idea what a spectrogram of trill sounds looks like, we know that there should be a clear gap and burst release in the spectrogram of plosive. Since glottal plosive can only be voiceless, the gap should be "empty" and contain no energy, which is not the case in Graph 1. Below is the spectrogram of [aʔa], and we can see obvious gap and burst release.

Graph 2 is the spectrogram of [aza], which is corresponding to the description of option B. [z] is a voiced sibilant; due to the vibration of vocal fold, the fricative noise tends to be more regular than its voiceless counterpart [s]. The spectrogram of [asa] is attached here for reference and comparison.
Written: 8:17pm, 28 Oct

I think I fell in your trap... One glottal stop looks similar to one of the elements of the trill sound, but obviously there isn't many words with several glottal stops after each other. But yeah you're explanation is excellent, saying that the space inbetween should be empty. I've learned something :) (by: mollymoench [012091129])

Written: 10:04pm, 28 Oct

i cannot tell the difference between h and nasal stop...and i think nasal stop should have blank area in F2, can you explain the formant of h? (by: marcia0201 [012014705])

[h] is a fricative so you can see a lot of noise. Word-initial [h] has noisy F3 plus faint F1 and F2, while [h] between two voiced sounds shows noisy forms in both lower and higher parts. Graph 4 [aha] follows the latter pattern and you can see the irregular noise "everywhere". To see the contrast you can refer to Figure 6.8 of Vowels and Consonants (3rd ed, p.58). The best way to identify a nasal stop is to look for nasal murmur around 200 Hz, and yes, you are right, there should be blank between 200 Hz and around 2500 Hz. The one I provided in the explanation is not quite distinct (I used a uvular one, which is relatively rare), but I think you can still see the horizontal gap. Nasal murmur is regular and you can identify the pattern, which is quite different from the noise in [h]. Hope that helps :)

Add a reply to this comment
Contents
1 Introduction........................................................................................................2
2 Create instructor account ..................................................................................2
3 Create course ......................................................................................................3
4 Add students to a course ....................................................................................4
5 Add instructors/administrators to a course .......................................................6
6 Create questions ................................................................................................8
7 Editing and Deleting questions........................................................................10
8 Answer questions ...............................................................................................11
9 Answered questions ..........................................................................................13
10 Student monitoring ..........................................................................................13
11 Peerwise Forum/Community ............................................................................14
12 Frequently asked questions ............................................................................14
Sample Question 2: Phonetics - Anatomy

A demonstration of a Labelling a Diagram Question

Your question

Please label the articulators D - P on this sagittal section from memory. Labels H - M are all sections of the tongue.
E.g. (A) Nasal Cavity (B) Lips (C) Teeth
Implementing a peer learning tool at UCL

PeerWise

Kevin Tang, Sam Green
PGTAs in the Department of Linguistics
kevin.tang.10@ucl.ac.uk sam.green.10@ucl.ac.uk

http://lecturecast.ucl.ac.uk:8080/ess/echo/presentation/a4dab832-6ee4-4ee2-8683-5a7fcc22d528
Implementation

Our use of PeerWise

How PeerWise works

Challenges

PeerMed!
Monte Carlo Peer Grading

Learning curve for staff and students

Benefits

The Students

Interdisciplinary

The Students

Integration with existing LMS, manage feedback

The Students

PeerWise in practice

Linkages to other activities

Paul Dewey
University of Auckland, NZ

Evaluation

Feedback

Interaction rating

Discussion
Outcomes

- Thoughts from the students:
  - Tasks were meaningful and engaging.
  - felt more comfortable discussing ideas.
  - felt more accountable for their work.

Mixed grouping makes a significant contribution to predicting the final module score.

The stats

A significant correlation between PW score (based on contribution) and the exam scores.

Correlation

Only with the mixed ability group did the change from not significant to significant after randomization.

Model Comparison on Grouping
Outcomes

Thoughts from the Students

- "Some of my peers' questions were challenging."
- "I feel that my knowledge of certain topics increased."
- "We reviewed areas and worked out weak spots as I was unsure of the answers."
- "I wanted to make my answers as interesting and original as possible which meant I read and learnt lots."
- "Getting a clear explanation if you made a mistake."
- "A good exercise to develop critical thinking."

Positive feedback from students on improving understanding and team working.

Active engagement throughout and as a revision tool before exams.
Answering questions written by other students improved my understanding of those topics?
Developing original questions on course topics improved my understanding of those topics?

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree
My group worked well together?

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree
Thoughts from the Students

- "Some of my peers' questions were challenging"
- "Confirmed my knowledge of certain topics"
- "Review areas and work out weak spots as I was unsure of the answers."
- "I wanted to make them as interesting and original as possible which meant I read and learnt lots"
- "Getting a clear explanation if you made a mistake"
- "A good exercise to develop critical thinking."
Constant use:
Not just meeting deadlines
Revision Tool:
Increase usage before exams
1. **Positive** feedback from students on improving understanding and team working.
2. **Active** engagement throughout and as a revision tool before exams
The stats

Correlation

A significant correlation between PW score (based on contribution) and the exam scores.

Only with the mixed ability group [UG changed from not significant to significant after random to mixed]

Model Comparison on Grouping

Mixed grouping makes a significant contribution to predicting the final module score.

Analysis of Variance Table

<table>
<thead>
<tr>
<th>Model</th>
<th>Res.Df</th>
<th>RSS Df</th>
<th>Sum of Sq</th>
<th>F Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>26</td>
<td>21021</td>
<td>1</td>
<td>0.03747 ★</td>
</tr>
<tr>
<td>Model 2</td>
<td>29</td>
<td>2460.3</td>
<td>-1</td>
<td>4.7713</td>
</tr>
</tbody>
</table>

Signif. codes:  ‘★’ 0.05
The stats

Correlation

$r = 0.49$
$p < 0.001^{***}$

A significant correlation between PW score (based on contribution) and the exam scores.

Only with the mixed ability group [UG changed from not significant to significant after random to mixed]

Mixed grouping makes a significant

Analysis of Variance Table

Model 1: Assignment_Mean ~ PW_Score + group
Model 2: Assignment_Mean ~ PW_Score
Only with the mixed ability group [UG changed from not significant to Significant after random to mixed]

Model Comparison on Grouping

Analysis of Variance Table

Model 1: Assignment_Mean ~ PW_Score + group
Model 2: Assignment_Mean ~ PW_Score

<table>
<thead>
<tr>
<th>Res.Df</th>
<th>RSS</th>
<th>Df</th>
<th>Sum of Sq</th>
<th>F</th>
<th>Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2102.1</td>
<td>-1</td>
<td>-358.21</td>
<td>4.7713</td>
<td>0.03747*</td>
</tr>
<tr>
<td>2</td>
<td>2603.3</td>
<td>-1</td>
<td>-358.21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signif. codes: ‘*’ 0.05
Conclusions and the Future

Mixed ability grouping highly beneficial for peer-learning

Students genuinely enjoy learning (when it’s presented in the right way)

Specific implementation important - tailor-made/constrained

Students can meet virtually to work remotely in their groups

Students can work well when unsupervised, and still create good content

Traditionally: Impossible to give individual feedback for every question
- with Peerwise: peers provide this
Current Tech: Monitor students more closely and instantly feed back difficulties to lecturers

Use student generated questions on exams

Extend the use to more modules - suggested by students in feedback - maybe to other universities
Mixed ability grouping highly beneficial for peer-learning

Students genuinely enjoy learning (when it’s presented in the right way)

Specific implementation important - tailor-made/constrained

Students can meet virtually to work remotely in their groups

Students can work well when unsupervised, and still create good content
Traditionally: Impossible to give individual feedback for every question

-with Peerwise: peers provide this

Current Tech: Monitor students more closely and instantly feed back difficulties to lecturers

Use student generated questions on exams

Extend the use to more modules - suggested by students in feedback - maybe to other universities
The Importance of Peer-Learning: A Case Study on PeerWise

Sam Green & Kevin Tang
PhD researchers and Postgraduate Teaching Assistants
Psychology and Language Sciences division
University College London