

# Mejorando la Enseñanza, Aprendizaje y Evaluación

## ¿Podemos hacerlo bien a la primera?

Dai Hounsell

•

University of Edinburgh

# ¿Qué funciona mejor?

Síntesis de "más de 800 metanálisis, incluidos alrededor de 250 millones de estudiantes, más de 50 000 estudios, alrededor de 150 000 tamaños de efecto, desde la primera infancia hasta la educación de adultos, en la búsqueda de lo que funciona mejor". (*Hattie, 2009*)

Table 3: Ranking of effects relevant to higher education

Rank	Domain	Influence	d
1	Student	Self-report grades	
3	Teaching	Providing formative evaluation to lecturers	1.44
8	Teacher	Teacher clarity	.90
9	Teaching	Reciprocal teaching	.75
10	Teaching	Feedback	.74
12	Teaching	Spaced vs. Mass Practice	.73
13	Teaching	Meta-cognitive strategies	.71
17	Curricula	Creativity Programs	.69
18	Teaching	Self-verbalisation/Self-questioning	.65
19	Teacher	Professional development	.64
20	Teaching	Problem solving teaching	.62
21	Teacher	Not Labelling students	.61
24	Teaching	Cooperative vs. individualistic learning	.61
25	Teaching	Study skills	.59
29	Teaching	Mastery learning	.59
30	Teaching	Worked examples	.58
34	Teaching	Goals - difficulty	.57
36	Teaching	Peer tutoring	.56
37	Teaching	Cooperative vs. competitive learning	.55
48	School	Small group learning	.54
49	Student	Concentration/Persistence/ Engagement	.49
56	Teacher	Quality of Teaching	.44

## Conclusiones de Hattie:

1. 'Casi todo funciona'
2. 'Lo que funciona en los colegios, también funciona en las universidades'.

# ¿Qué funciona mejor?

IES : WWC What Works Clearinghouse MENU Search Export Print

**WWC REVIEW OF THIS STUDY**

The effects of student coaching in college: An evaluation of a randomized experiment in student mentoring (Working Paper No. 16881).  
Bettinger, E. P., & Baker, R. (2011). Retrieved from: <http://www.nber.org/papers/w16881>. Retrieved from: <https://eric.ed.gov/?id=ED517379>

**RANDOMIZED CONTROLLED TRIAL EXAMINING 3,527 STUDENTS, GRADE PS**

**Review Details** Findings Sample Characteristics Additional Sources

**Reviewed:** August 2012

**For:** **Single Study Review (552 KB)** (findings for InsideTrack® Coaching)

**Using:** **Single Study Review Review Protocol 2.0**  
 **Review Standards 2.1**

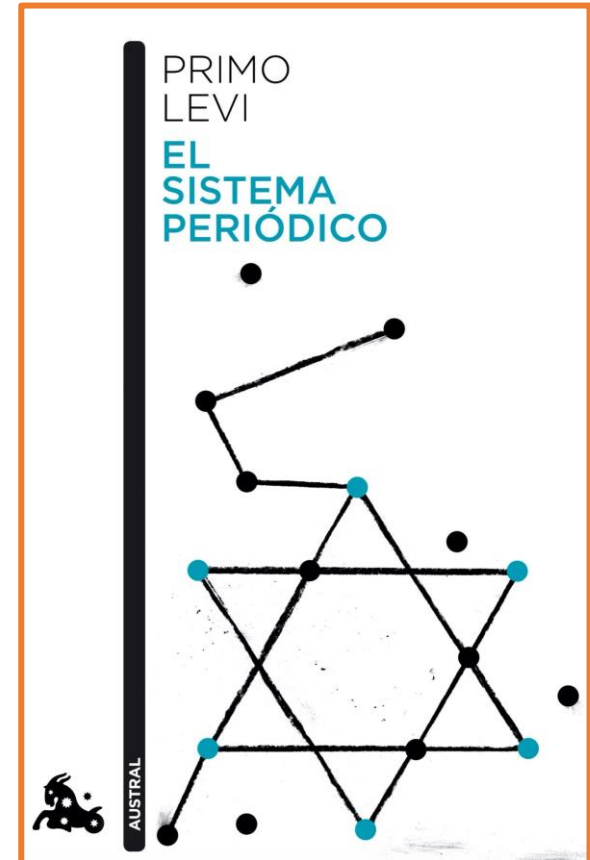
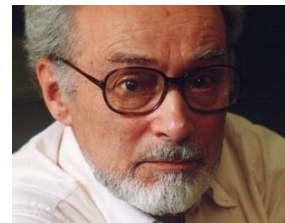
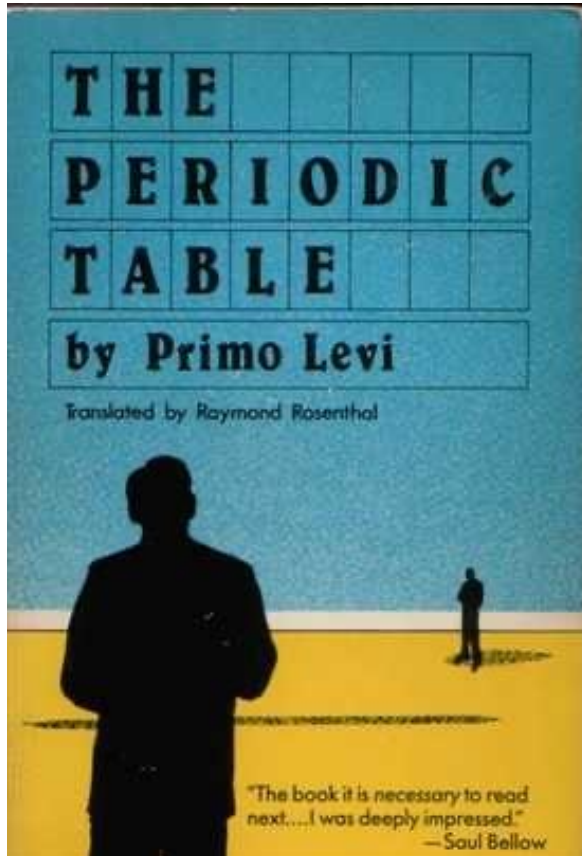
**Rating:** Meets WWC standards without reservations

**TIER 1 STRONG** AT LEAST ONE FINDING SHOWS STRONG EVIDENCE OF EFFECTIVENESS

Meets WWC standards without reservations. **Strong evidence for this intervention.** **Consistent with the full body of**

# EL PROBLEMA DE LO CASI IGUAL

*lo casi-igual*



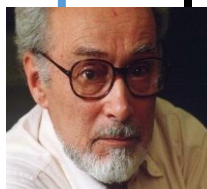
## THE PROBLEM OF THE ALMOST-THE-SAME

"Que conviene desconfiar de lo casi-igual, [...] de lo prácticamente idéntico, del poco más o menos, del <<o sea>>, de todos los sucedáneos y de todos los remiendos.

Las diferencias pueden ser pequeñas, pero llevan a consecuencias radicalmente distintas, como el cambio de agujas en el rumbo de un tren.

El oficio del químico consiste en gran parte en defenderse de estas diferencias, en conocerlas de cerca, en prever las consecuencias. Y no sólo el oficio de químico."

Primo Levi. 'Potasio'. *El Sistema Periodico*. Ediciones Península. p. 69 (2021).



"One must distrust the almost-the-same [...] the practically identical, the approximate, the or-even, all surrogates and all patchwork.

The differences can be small, but they can lead to radically different consequences, like a railroad's switch points.

The chemist's trade consists in good part in being aware of these differences, knowing them close-up, and foreseeing their effects. And not only the chemist's trade."

Primo Levi. 'Potassium'. *The Periodic Table*. Penguin. (1975). pp.50-51

# LA GRAN DIVERSIDAD DE LAS PRÁCTICAS DE ENSEÑANZA-APRENDIZAJE UNIVERSITARIAS

**ESTERHAZY (2019) SOBRE RETROALIMENTACIÓN A ESTUDIANTES UNIVERSITARIOS** "[...] Incluso los pequeños ajustes, como el cambio de ubicación o el momento de una actividad del curso, pueden tener implicaciones de gran alcance para las formas en que los estudiantes pueden interactuar con la información de retroalimentación que reciben.

Si la retroalimentación tiene un impacto en el aprendizaje de los estudiantes, por lo tanto, depende de la delicada red de relaciones que caracterizan nuestros diseños de cursos, el dominio de conocimiento más amplio y las interacciones en las que participamos día a día.."

# LA GRAN DIVERSIDAD DE LAS PRÁCTICAS DE ENSEÑANZA-APRENDIZAJE UNIVERSITARIAS

"La investigación sobre el aprendizaje apunta cada vez más a la necesidad de comprender los fenómenos en su contexto, de reconocer que las situaciones difieren y son específicas, y que los problemas específicos necesitan respuestas particulares".(Haggis, 2006, p. 20)

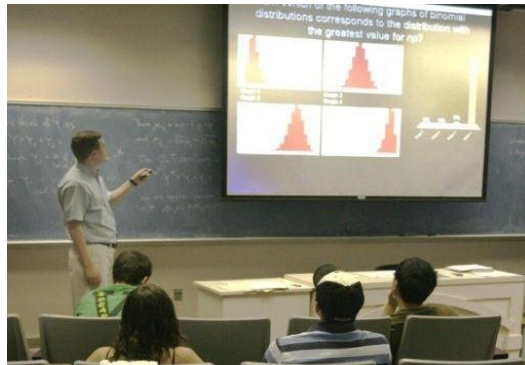
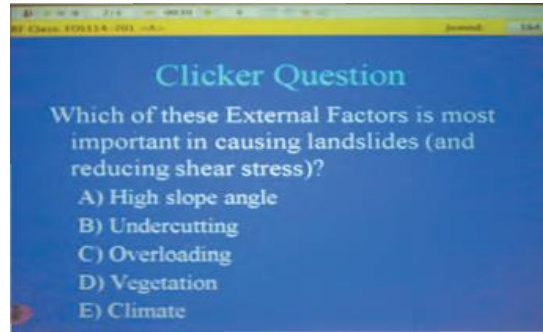
"La enseñanza tiene lugar dentro de contextos departamentales e institucionales particulares, cada uno con su propia cultura particular, patrones de práctica, regulaciones y limitaciones de recursos.

Por más ingeniosos que sean los ejemplos específicos de 'buenas prácticas', deben adaptarse y ajustarse a las necesidades de contextos particulares si se van a utilizar". (Bucklow & Clark, 2003, p. 70)

## **UN EJEMPLO DE MEJORA**

**Engagement interactivo y aprendizaje  
entre pares en clases STEM grandes**





LO QUE HE APRENDIDO  
La brecha a llenar

Preguntas en clicker de orden superior



Tiempo de pensamiento



Respuestas individuales en clicker



Respuestas recopiladas en pantalla



Grupos de pares consultan y razonan



Respuestas clicker grupales



Respuestas grupales recopiladas en pantalla



Revisión de toda la clase dirigida por el docente



UN EJEMPLO DE  
MEJORA  
Engagement interactivo

- ❑ el establecimiento de preguntas + clickers crea '**momentos de retroalimentación**' que pueden interactuar constructivamente con
- ❑ las respuestas de toda la clase hacen visible al docente la calidad de la comprensión de los alumnos — *Inicialmente & y luego tras la interacción de pares*
- ❑ Las discusiones entre pares permiten a los estudiantes, a través de la interacción, sacar a la superficie, cuestionar y recalibrar su comprensión



UN EJEMPLO DE  
MEJORA  
Engagement interactivo

"Al hacer visibles sus ideas, los estudiantes permitieron que otros se conectaran con estas ideas, construyeran sobre ellas, las criticaran y argumentaran a favor o en contra de ellas, [...] permitiendo el desarrollo de múltiples perspectivas.

El razonamiento de los estudiantes fue visible para todos en el grupo [...] en sus justificaciones de sus propios reclamos o de sus pares.

Pidieron aclaraciones o abordaron conceptos que no estaban claros". [Ludvigsen et al. 2020](#)



UN EJEMPLO DE  
MEJORA  
Engagement interactivo



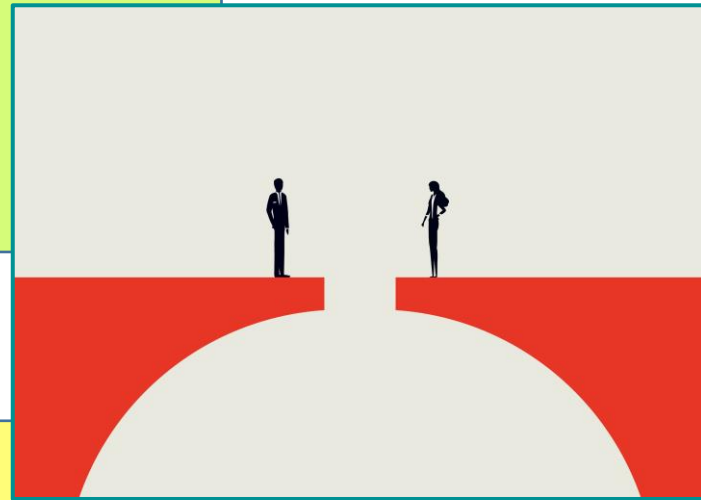
- Buena evidencia del impacto positivo en la comprensión conceptual, el compromiso y la autorregulación de los estudiantes
- *Freeman et al. 2014; Chien et al., 2016; van Alten et al. 2019; Egelandstad & Krumsvik, 2020*
- Amplia adopción en STEM (Ciencia, Tecnología, Ingeniería, Matemáticas) asignaturas
- *e.g. Stains et al. 2018*
  - ❑ Dos quintas partes de las grandes clases de STEM observadas en 25 universidades de EE. UU.
  - ❑ Hicieron uso de métodos interactivos con el potencial de intercambio de comentarios más de una cuarta parte de las clases incorporaron estos enfoques centrados en el estudiante en gran parte del tiempo de clase

## **¿LO QUE HE APRENDIDO DE LAS MEJORAS?**

- 1. la brecha a cerrar**
- 2. de 'información privilegiada'**
- 3. aprendiendo colaborativamente**

LO QUE HE APRENDIDO  
La brecha a cerrar

¿Cuál es la brecha entre  
dónde estás y  
dónde quieres  
estar?



... ¿Y cómo podrías tratar de  
cerrar esa brecha?

**LO QUE HE APRENDIDO**  
La brecha a cerrar

Preguntas en clicker de orden superior



Tiempo de pensamiento



Respuestas individuales en clicker



Respuestas recopiladas en pantalla



Grupos de pares consultan y razonan



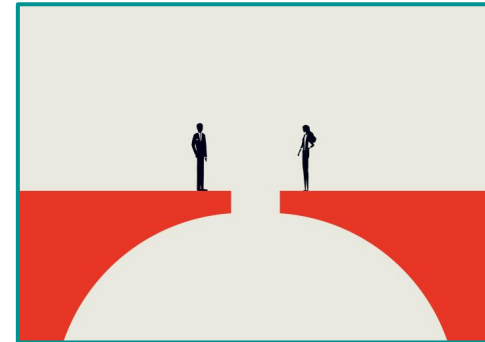
Respuestas clicker grupales



Respuestas grupales recopiladas en pantalla



Revisión de toda la clase dirigida por el docente





LO QUE HE APRENDIDO  
La brecha a cerrar



mentalidades . .  
y metamorfosis

la necesidad poco  
reconocida de  
practicar habilidades  
desconocidas



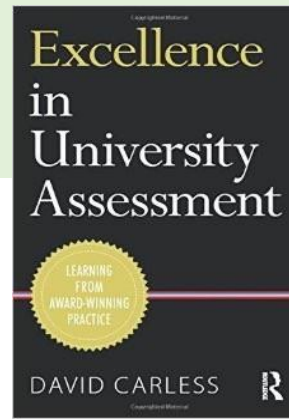
mentalidades . .  
y metamorfosis

la necesidad poco  
reconocida de  
practicar habilidades  
desconocidas

"La evaluación innovadora prospera más en el contexto de una atmósfera positiva que fomenta la asunción de riesgos facilitada por las relaciones de confianza entre las diferentes partes interesadas: la dirección, el personal y los estudiantes.

Un factor facilitador [fue] la disposición de los docentes a asumir riesgos y la confianza que recibieron de los compañeros ya nivel institucional. Los estudiantes invariablemente respondieron positivamente. . . tenían fe en sus maestros".

*Carless (2015)  
p. 238*





**¿QUÉ HE APRENDIDO  
SOBRE LA MEJORA?**

**2. Perspectivas de  
'información privilegiada'**

LO QUE HE APRENDIDO  
La brecha a cerrar

## Does peer assessment promote student learning? A meta-analysis

Hongli Li<sup>a</sup> , Yao Xiong<sup>b</sup>, Charles Vincent Hunter<sup>c</sup> , Xiuyan Guo<sup>d</sup> and Rurik Tywoniw<sup>a</sup> 

<sup>a</sup>Georgia State University, Atlanta, GA, USA; <sup>b</sup>Imbellus, Los Angeles, CA, USA; <sup>c</sup>AdvancED/Measured Progress, Alpharetta, GA, USA; <sup>d</sup>Emory & Henry College, Emory, VA, USA

### ABSTRACT

In recent years, there has been an increasing use of peer assessment in classrooms and other learning settings. Despite the prevailing view that peer assessment has a positive effect on learning across empirical studies, the evidence is mixed. In this meta-analysis, we synthesised

### KEYWORDS

Peer assessment; effect; student learning; meta-analysis

## Method

### Selecting studies

The criteria used to select studies for inclusion in our meta-analysis are as follows. First, eligible studies must have an experimental or quasi-experimental design with a control group and an experimental group. We did not consider any single-group studies. Second, only studies with at

## ***EL VALOR DE IR MÁS ALLÁ DE LA LITERATURA DE INVESTIGACIÓN CONVENCIONAL***

Finalmente, está la cuestión de la generalización. No tenemos evidencia de hasta qué punto los resultados de nuestro estudio son válidos para otras habilidades, otras disciplinas y otros tipos de educación.

Estudiamos los diseños de evaluación por pares en un plan de estudios en el que la escritura tiene un lugar importante: se espera que los estudiantes de historia escriban mucho en sus futuras profesiones. Esto también significa que los resultados de este estudio no pueden generalizarse para otros planes de estudios, como física o prácticas profesionales.(van den Berg 2006)

LO QUE HE APRENDIDO  
La brecha a cerrar

<https://peerwise.cs.auckland.ac.nz>


<https://cwsei.ubc.ca/home>

THE UNIVERSITY OF BRITISH COLUMBIA

CARL WIEMAN SCIENCE EDUCATION INITIATIVE

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Note: We have migrated to this new web space as of Dec 2020. If you have questions or trouble finding something, please contact Warren Code ([warcode@science.ubc.ca](mailto:warcode@science.ubc.ca)).




## Carl Wieman Science Education Initiative

An \$11M initiative from 2007-2017 that transformed undergraduate science education at UBC and beyond with an evidence-driven, department-based approach to improving teaching and learning.

The Carl Wieman Science Education Initiative (CWSEI) has dramatically improved undergraduate science education through its participating UBC Science faculty members adopting evidence-based, interactive teaching methods. Over 200 course projects were undertaken, leading to substantial improvements in over 100 courses, reaching over 16,000 UBC undergraduates each year (about three-quarters of student enrolment in the Faculty of Science). A key aspect of the model for change was the embedding of Science Teaching and Learning Fellows in departments to support a four-step, scientific approach to teaching:

- Establish what students should learn
- Scientifically measure what students are actually learning
- Adapt instructional methods and curriculum and incorporate effective use of technology and pedagogical research to achieve desired learning outcomes
- Disseminate and adopt what works



The main activity in the CWSEI concluded in 2017. Since then, efforts have been focused on further summary publications, as well as some final projects in departments. Administration for the CWSEI has been housed with Skylight (UBC's Science Centre for Learning and Teaching) since 2014 for the initiative's final stages.

Read on the CWSEI and CSEI (former) Initiative at University of Colorado Boulder, Monash University, Queen's University, University of Toronto, York University, and the University of British Columbia.

PeerWise


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PeerWise supports students in the creation, sharing, evaluation and discussion of assessment questions.




**What is PeerWise?**

Students use PeerWise to create and to pose their understanding of course related assessment questions, and to answer and discuss questions created by their peers.




**Any subject**

PeerWise is used in a wide range of subjects, including Anthropology, Biology, Chemistry, Computer Science, Physics, Population Health, Pharmacology, Medicine, and many more...



**Free and easy to use**

PeerWise is intuitive and very easy to use. Students are presented with a simple, intuitive interface and instructors can easily view student content and monitor participation.



**Find out more**

Want to get started? View student and instructor guides, watch screenshots of PeerWise in action, and hear what students and instructors think in the information about PeerWise section.

**Prof. Garath Denyer**  
Professor of Biomedical Education  
University of Sydney, Australia

"Peerwise has catalyzed a surge of engagement around my subject. It has provided an outlet for so many different learning approaches: the creative, the critical, the cautious, the exploratory and the inquisitive. The best rated questions are generally better than what I would get from my academic colleagues. They are related to the syllabus, tested, relevant and, above all, they have explorations. We have seen engagement with Peerwise give a strong uplift in marks to all grades of student, and helps them develop presentation, articulation and the skills of critical reflection."

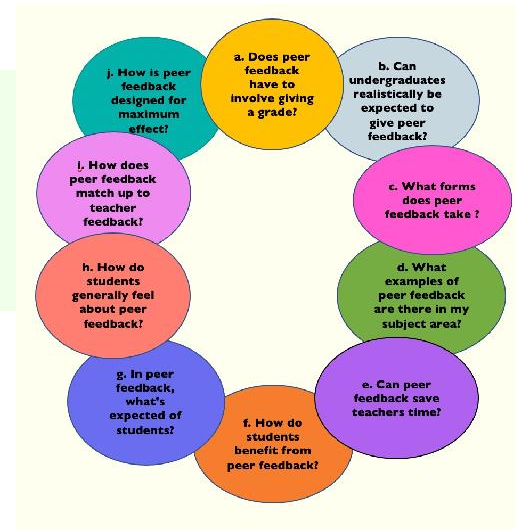
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Professor of Physics  
University of British Columbia, Canada

"As well as using PeerWise with my own students in Physics, in my role as Dean of Learning and Teaching I am able to promote effective tools such as PeerWise to foster the aims of our learning and teaching enhancement strategy. All too often such strategies have great visions and are swayed by the same students' staff at the meeting wondering 'that's very nice, but what can I actually do with my students to deliver that?'. PeerWise represents an effective, easy to use tool that instructors can readily appreciate the educational benefits of using."

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La Trobe University, Australia

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# KIT DE HERRAMIENTAS DE RETROALIMENTACIÓN DE LOS PARES



Appendix – CASE EXAMPLES, by subject area

### FACULTY OF HEALTH & SOCIAL SCIENCES

#### Business School

Accounting, Finance & Economics; Leadership, Strategy & Organizational Behaviour

Taylor, S. et al. (2015). Enhanced student learning in accounting utilizing peer review practices: a learning community approach to assessment. *Higher Education Research* 10.1080/0729360.2015.1024625

Reports on a four-phase, cross-institution project to embed peer-review classes in Australia. A cost-effective web-based approach evolved which combined strategies with the broader aim of encouraging students to take greater responsibility for their learning. The project significantly improved student ratings for the peer-review process and in general. See also: Taylor, S. & Ryan, M. (2016). Teaching peer review reflective processes. *Higher Education*. Switzerland: Springer, pp. 111-126. DOI: 10.1007/978-94-007-5444-4\_7

Malan, M. & Stegmann, N. (2018). Accounting students' experiences of peer review. *African Journal of Accounting Research*, 32(2-3), pp. 205-224. DOI: 10.1080/10236198.2018.1511111

Reports on a peer assessment initiative with second-year accounting students. The initiative was designed to encourage students to self-regulate their learning and to provide them with feedback. The peer review questionnaire survey revealed that students regarded the value of peer review as being significant at the same time as enhancing their understanding of the assessment process.

#### Faculty of Health & Social Sciences

##### Psychology & Public Health

DIO, Building competency in the novice allied health professional through peer coaching. *Journal of Allied Health*, 44(1), pp. 1-6. DOI: 10.1080/10478688.2015.1039925

Peer coaching can be used to support professional development in the allied health sciences such as physiotherapy. Being on one's own on a placement can be stressful. Through asking questions and engaging with others, peer confidence as novices' journey towards competence.

J. A journey towards sustainable feedback. *Assessment & Evaluation in Higher Education* 43.2, pp. 1-14. DOI: 10.1080/02602938.2017.1332154

Reports on a project of nurturing students' skills in self-evaluation, peer feedback was introduced into two first-year units in public health in Queensland. Experiences showed that while the students were willing to engage in the process and opportunity to provide and receive feedback, the quality and extent of the peer feedback fell short of staff expectations. Four authors concluded that a longer-term perspective was called for, with greater emphasis placed on developing feedback that connected students with peers and educators.

S. & Seenan, C. (2016) Developing 21st century graduate attributes: incorporating novel teaching strategies in a public health curriculum. *European Journal of Physiotherapy*, 18(3), pp. 194-199. DOI: 10.1080/21679169.2016.1181205

Group interview with physiotherapy students at Glasgow Caledonian University to discuss an initiative involving peer review. The initiative was designed to encourage students to self-regulate their learning and to provide them with feedback. The peer review questionnaire survey revealed that students regarded the value of peer review as being significant at the same time as enhancing their understanding of the assessment process.

[dai.hounsell@ed.ac.uk](mailto:dai.hounsell@ed.ac.uk)

LOQUE HE APRENDIDO  
La brecha a cerrar

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Closing the assessment loop


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Case study 2 – Personalised feedback at scale

Personalised feedback at scale: Moderating audio feedback in first-year psychology

OLT FFL Case study #2 - Personalised feedback at scale - Summary



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Promoting, discussing and celebrating teaching at The University of Edinburgh



Critical thinking skill:  
Challenges faced by  
international students in  
finance degrees


"I know a first when I see  
one!": Developing  
transparent marking  
descriptors with the help  
of students


Shaping the future  
curriculum with students


Assessing Presentations in Common Core Courses  
CASE EXAMPLES FROM HKU

Where indicated below, the website version of these case examples provides access to supplementary materials in the following forms:  
Ⓞ = rubric Ⓞ = guidelines

ORAL PRESENTATIONS - individual

 **China's Modernisation in the East Asian context (CCCH 9006)**  
Assessment for this course includes a tutorial presentation (30%) on topics assigned by the teacher, while grading of tutorial participation includes fellow-students' questioning of presenters and engagement in ensuing discussions. In their first class, students receive guidance in the form of examples of presentations at different grade levels.  
① Dr Victor Teo, School of Modern Languages and Cultures victorteo@hku.hk  
<http://commoncore.hku.hk/ccch9006/>

 **Blood, beliefs, biology (CCST 9024)**  
Assessment for this course includes a group presentation (20%) based on a field trip. Working in groups of 8-10, students choose a topic from the list provided and prepare a 10-minute presentation followed by 3-minute Q&A. Evaluation is by teachers (15%) and student peers (5%) using specially adapted rubrics Ⓞ designed to foster continuous improvement in problem-solving and communication skills. Audience members can get bonus points for their questions.  
① Prof L.C. Chan, Department of Pathology chanlc@pathology.hku.hk  
<http://commoncore.hku.hk/ccst9024/>

 **Criminal Organisations, Clandestine Globalisation and the Illicit World Economy (CCCH 9027)**  
In this course, group presentations plus handout (25%) are linked to research essays (35%). Each member of a presenting group is expected to speak (7-8 minute) and to

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## Learning About Teaching Physics Podcasts

by Michael Fuchs and Stephanie Chasteen

posted July 9, 2012 and revised July 10, 2022

### Tags

active learning, physics education research, lecture, learning styles, clickers, Peer Instruction, CAE Think-Pair-Share,



### Preparing Students to Learn from Lecture: Creating a "Time for Telling"

If interactive classrooms are the best way for students to learn, then is it bad to tell things to students? Not necessarily. In this podcast, we hear from researchers and instructors how we might prepare students to learn effectively from lecture.

Thanks to Daniel Schwartz of Stanford University, Doug Bonn and Jessica Lamb of the University of British Columbia, and Corinne Manogue of Oregon State University.

Show/Hide Notes and Cited Studies

Length: 21:00 Size: 17.3Mb Date: July 9, 2012 [DOWNLOAD](#) [PLAY](#)



### Visual, verbal, or auditory? The truth behind the myth behind the truth of learning styles.

Are you a visual learner or an auditory learner? I bet you can tell me which you think you are. But does it matter? In this podcast, we discuss the research on individual learning styles, and how science learning resources

**¿QUÉ HE APRENDIDO  
SOBRE LA MEJORA?**

### **3. Aprendizaje colaborativo**



"With teachers, authentic and enduring learning requires collaboration. When teachers collaborate, they can work together in ways that scaffold and support each other's learning, and in ways that supplement each other's knowledge . . .

There are difficult intellectual and professional challenges that are nearly impossible to accomplish alone but are readily addressed in the company of others."

Shulman, L. (2004). Professional development: learning from experience'.  
In: Shulman. L. The Wisdom of Practice. San Francisco: Jossey-Bass. p. 515.

LOQUE HE APRENDIDO  
Aprendizaje  
colaborativo

<https://peerwise.cs.auckland.ac.nz>

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PeerWise on Twitter (November 2022)



**@lindsayhutter4**  
Lindsay Hutter

Nothing boosts a students confidence more than answering PeerWise questions correctly  
12 Oct via web



**@Alice\_Boiish**  
Alice

Love Peerwise, best form of in-course-assessment EVER  
25 Nov via web



**@MRyanBLS**  
Michael Ryan

Peerwise went down a storm today. Thanks to Kristy Turner for the tip. Once the class heard about leaderboards it went viral!  
20 Nov via web



**@FraGrey**  
Francesca Tonini

addicted to earning badges on peerwise. [#thiscantbegood](#) [#sundaynight](#) [#helpline](#)  
25 Nov via web



**@DDurnford**  
Dion Durnford

The more I explore [@peerwise](#), the more I like it. Should be a nice addition to first year bio.  
27 Aug via web



**@jayherself**  
Jay Herself

Reading through my students PeerWise questions. I appreciate their efforts to make them not only correct, but very amusing.  
9 Aug via web



**@NiallRGallagher**  
Niall Gallagher

[@CBS\\_Lecturer](#) The (inadvertent) spaced repetition of similar questions really does help to reinforce understanding; found Peerwise great!  
10 May via web



**@americanocookie**  
yongie

Why suddenly I am addicted to PeerWise....? O.o  
7 Jan via web



**@jsalsman**  
James Salsman

RT [@junecohen](#): TEDPrize winner 's talk: [ted.com/talks/sugata\\_mitra](https://www.ted.com/talks/sugata_mitra) // what he's asking for already exists; it's called PeerWise  
27 Feb via web



**@lucytwitcher**  
Lucy

PeerWise: who knew Chemistry revision could be so fun!  
[@EsherChemistry](#)  
10 Apr via web



**@johnkerr001**  
John Kerr

Unbelievable presentation by 4th year medicine student on use of peerwise. Best presentation of the day [#gu2013itc](#)  
19 Apr via web



**@marylynnyoung**  
Mary Lynn Young

RT [@simonpbates](#): Speaking in Faculty of Ed. today on some of the amazing work students have done with [#peerwise educ.ubc.ca/james-bond-internet-memes](#)  
28 Mar via web



**@Alfie\_Butt**  
Alfie Butt

Just earned some more badges on Peerwise [#LikeABoss](#)



**@CrashCall**  
Craig MacLean

Spent AGES tonight on Peerwise creating and answering



**@Biochem\_Thumser**  
Biochemistry Thumser

[#BMS2035](#) Some excellent new questions posted on



**@mamarobertson4**  
Laura Robertson

Snow day so I'm importing qs for our [#amstuds](#) taking the

LOQUE HE APRENDIDO

Aprendizaje  
colaborativo

<https://cwsei.ubc.ca>

UBC THE UNIVERSITY OF BRITISH COLUMBIA

CARL WIEMAN SCIENCE EDUCATION INITIATIVE

HOME ABOUT OUTCOMES RESOURCES

## Related Efforts

One of the successes of the SEI model is that it has inspired many other similar initiatives teaching and learning through department-based change.

### Parallel initiative at the University of Colorado Boulder

The University of Colorado Science Education Initiative (CU-SEI) [www.colorado.edu/sei](http://www.colorado.edu/sei)  
The CU-SEI was also directed by Carl Wieman and involved efforts to improve undergraduate science education in the departments of Biochemistry, Geological Sciences, Integrative Physiology, Molecular, Cellular & Developmental Biology, and Physics. UBC and CU efforts to improve science education on university campuses.

**PhET** [phet.colorado.edu](http://phet.colorado.edu)  
Fun, interactive, research-based simulations of physical phenomena from the Physics Education Technology project at the University of Colorado Boulder.

### Other efforts at UBC

**Skylight: Science Centre for Learning and Teaching** [skylight.science.ubc.ca](http://skylight.science.ubc.ca)  
Skylight, UBC's Science Centre for Learning and Teaching, is a research- and support-focused unit engaged in advancing the Administration of the CWSEI shifted to Skylight in 2014.

**SEI Course Materials System** [sei.ubc.ca](http://sei.ubc.ca)  
The Science Education Initiative Course Materials System is a repository for University of British Columbia (UBC) and the University of Colorado (CU) materials, as well as notes on the purpose and design of the courses and the use and effectiveness of the materials. The system is developed by departments participating in the Science Education Initiatives at UBC and CU, and is intended to be an open resource for all science educators.

**CTLT: The Centre for Teaching, Learning and Technology** [cctl.ubc.ca](http://cctl.ubc.ca)

**ISoTL: The Institute for the Scholarship of Teaching and Learning** [isotl.cctl.ubc.ca](http://isotl.cctl.ubc.ca)

### Initiatives at other institutions inspired by the SEI

The SEI Handbook includes summaries of similar initiatives that have the goal of improving teaching and learning by hiring discipline specialists. Included are:

- Brown University's AAU Undergraduate STEM Education Initiative Project: Changing the Culture of Introductory Science
- Cornell University's Active Learning Initiative
- Imperial College London's Learning and Teaching Strategy
- The University of Hawaii's Geoscience Course Transformation Project
- The University of Kansas' Course Transformation Initiative

### Other groups or initiatives of interest

- Colorado Physics Education Technology (PhET) Interactive Simulations
- TRansforming Education, Stimulating Teaching and Learning Excellence (TRESTLE): A multi-institution, NSF-funded project to develop an expertise model at other research universities to explore use of the model in several contexts. Several of the case studies

Carl Wieman

# IMPROVING HOW UNIVERSITIES TEACH SCIENCE

Lessons from the  
Science Education  
Initiative

Harvard University Press 2017

<https://www.hup.harvard.edu/catalog.php?isbn=9780674972070>

## Teaching Matters blog

Promoting, discussing and celebrating teaching at The University of Edinburgh



THE UNIVERSITY  
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5 Things



### Category: Student engagement



18TH OCTOBER 2022

Community building with the IMPS Sports Day



4TH OCTOBER 2022

APEX6: Student-led learning in the Andes



13TH SEPTEMBER 2022

Welcome to the Sept-Oct Hot Topic: Student Partnership Agreement 2022



30TH AUGUST 2022

A quiet, unnoticed form of gentle solidarity



23RD AUGUST 2022

Shelf indulgence: A book club project bringing students and professionals together



8TH AUGUST 2022

Critical thinking skill: Challenges faced by international students in finance degrees



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**Entonces . . .**

**¿Podemos hacerlo  
bien a la primera?**

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