

“Technology, Knowledge and Learning”

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Auditorio ORT Pocitos
6 de setiembre de 2011

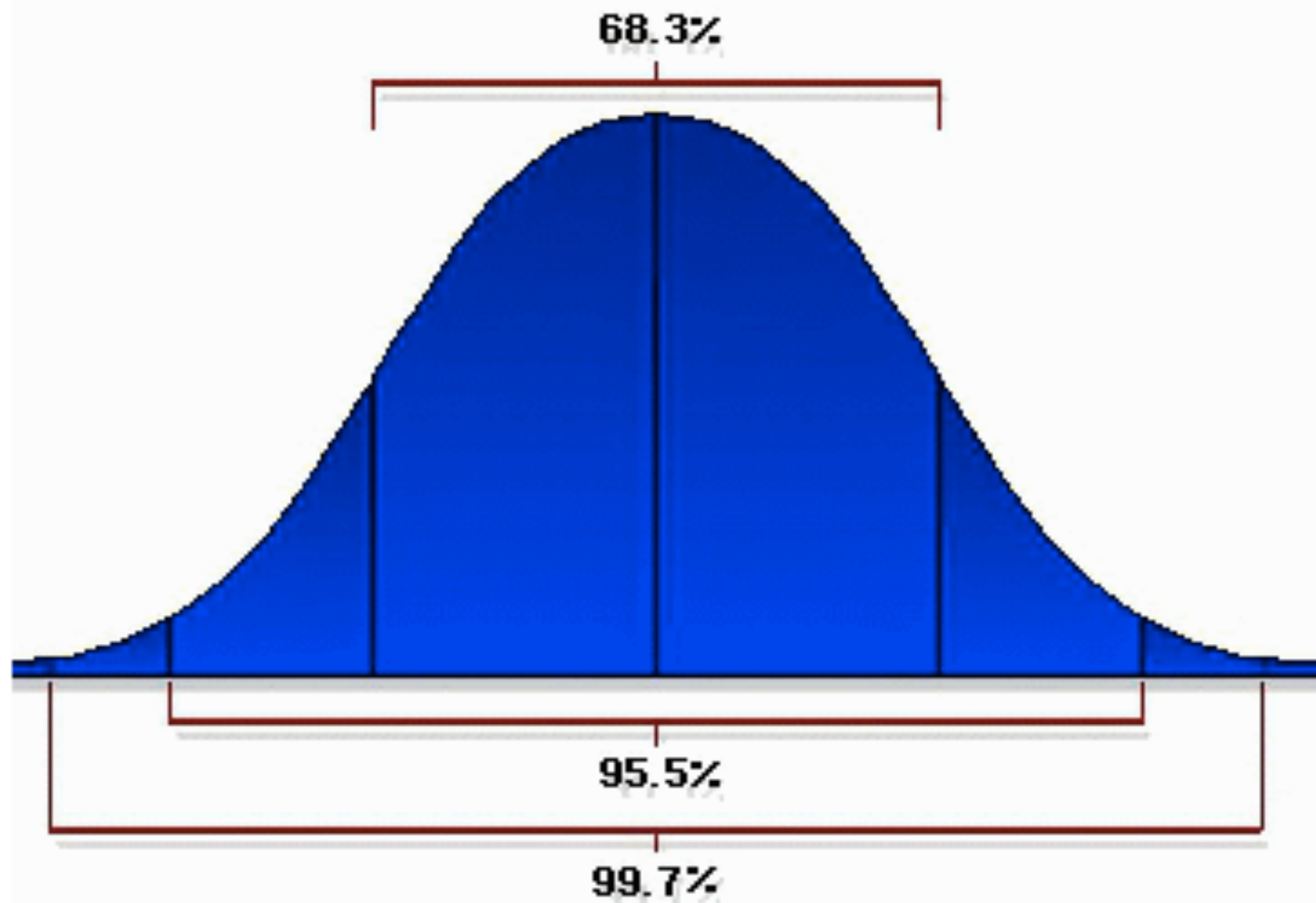
Tecnología, conocimiento y aprendizaje

Prof. Richard Noss

London Knowledge Lab | IOE | University of London



“Estábamos viendo cosas que eran movimientos de 25 desvíos estándar, **varios días consecutivos**” dijo el director financiero de GS en 2007





El tiempo estimado de espera para este evento, 25 desvíos estándar, es **$6 * 10^{124}$ vidas del universo**

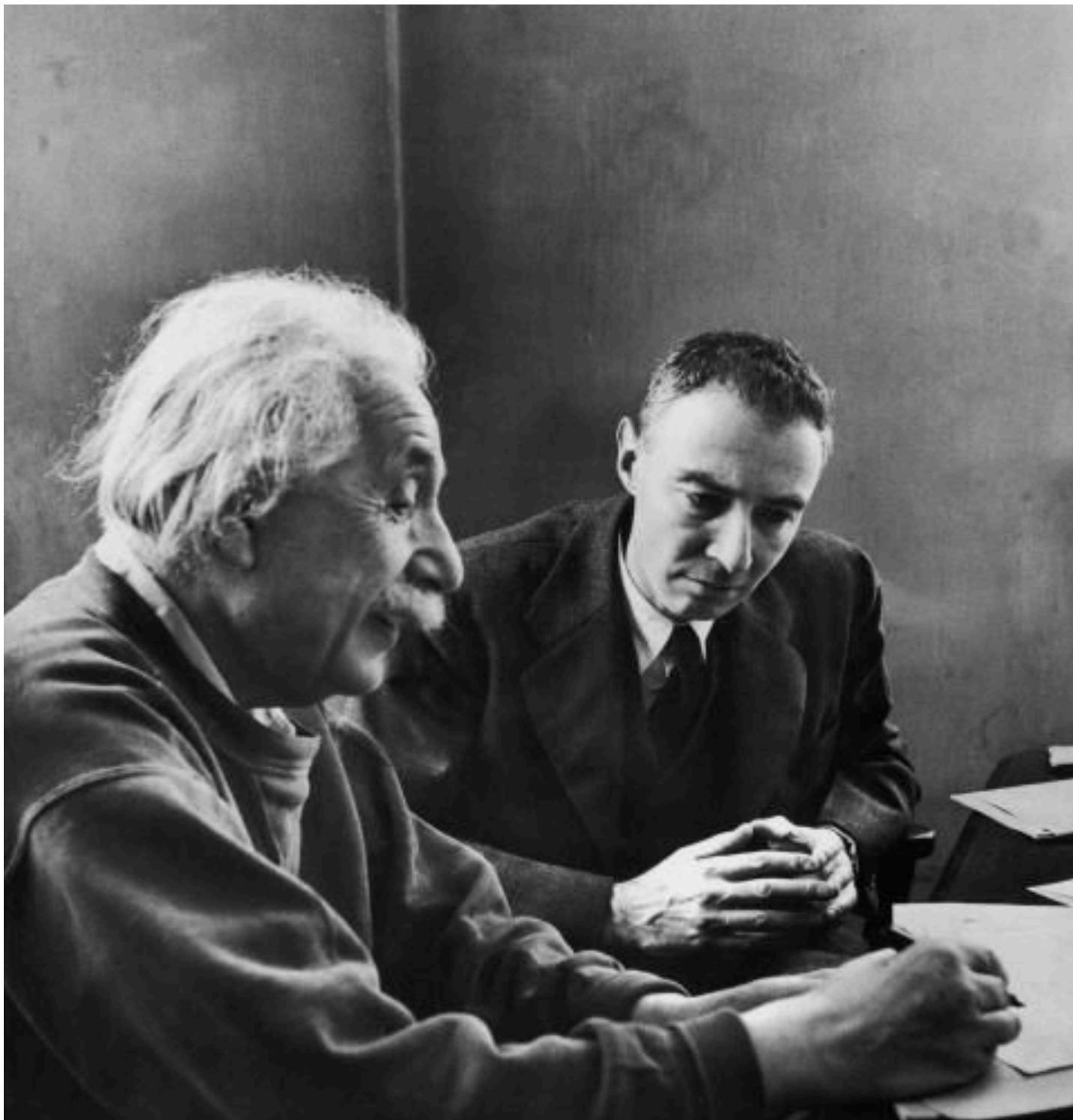
Cambiando la cultura del aprendizaje

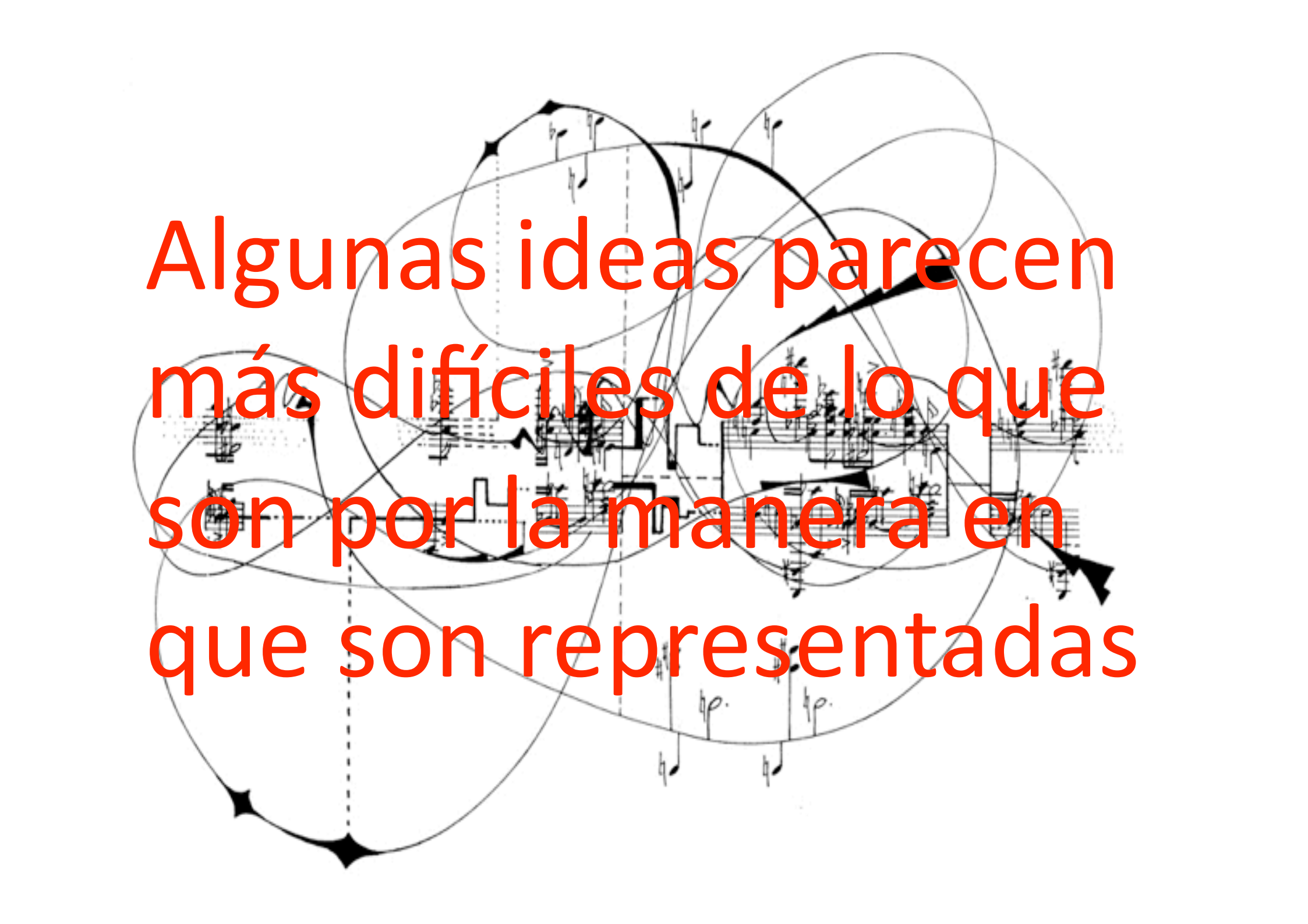
- Cómo
- Dónde
- Cuándo
- Quién

... y qué

10%







Algunas ideas parecen
más difíciles de lo que
son por la manera en
que son representadas



Let us consider a Taylor expansion of $\psi(\mathbf{v}^*)$ around \mathbf{v}' . Thanks to (23), we get

$$\begin{aligned} \psi(\mathbf{v}^*) &= \psi(\mathbf{v}') + \gamma a(|\mathbf{x} - \mathbf{y}|) \nabla \psi(\mathbf{v}') \cdot (\mathbf{q} \cdot \mathbf{n}) \mathbf{n} + \\ &\frac{1}{2} \gamma^2 a(|\mathbf{x} - \mathbf{y}|)^2 \sum_{i,j} \frac{\partial^2 \psi(\mathbf{v}')}{\partial v'_i \partial v'_j} (\mathbf{q} \cdot \mathbf{n})^2 \mathbf{n}_i \mathbf{n}_j + \dots \end{aligned} \quad (24)$$

If the interactions are nearly elastic, so that $\gamma \ll 1$, we can truncate the expansion (24) after the first-order term. Inserting (24) into (21) gives

$$\begin{aligned} \langle \psi, \bar{Q}_P(f, f) \rangle &\approx \frac{1}{\epsilon} \int_{\mathbb{R}^3} \int_{\mathbb{R}^3} \int_{\mathbb{R}^3} B(|\mathbf{x} - \mathbf{y}|) (\psi(\mathbf{v}') - \psi(\mathbf{v})) \\ &+ \gamma \nabla \psi(\mathbf{v}') \cdot a(|\mathbf{x} - \mathbf{y}|) (\mathbf{q} \cdot \mathbf{n}) \mathbf{n} f(\mathbf{x}, \mathbf{v}) f(\mathbf{y}, \mathbf{w}) d\mathbf{v} d\mathbf{w} d\mathbf{y} \\ &= \langle \psi, \mathcal{Q}_P(f, f) \rangle + \gamma \langle \psi, \mathcal{I}(f, f) \rangle. \end{aligned} \quad (25)$$

It is a simple matter to recognize that in (25) $\mathcal{Q}_P(f, f)$ is a Povzner collision operator of the type (5), since the post-interaction velocity v' in (25) is obtained from the pre-interaction velocities (v, w) through the elastic interaction (21).

Edit Delete Button Slider Switch Chooser Monitor Plot Output Text

setup go

population 200

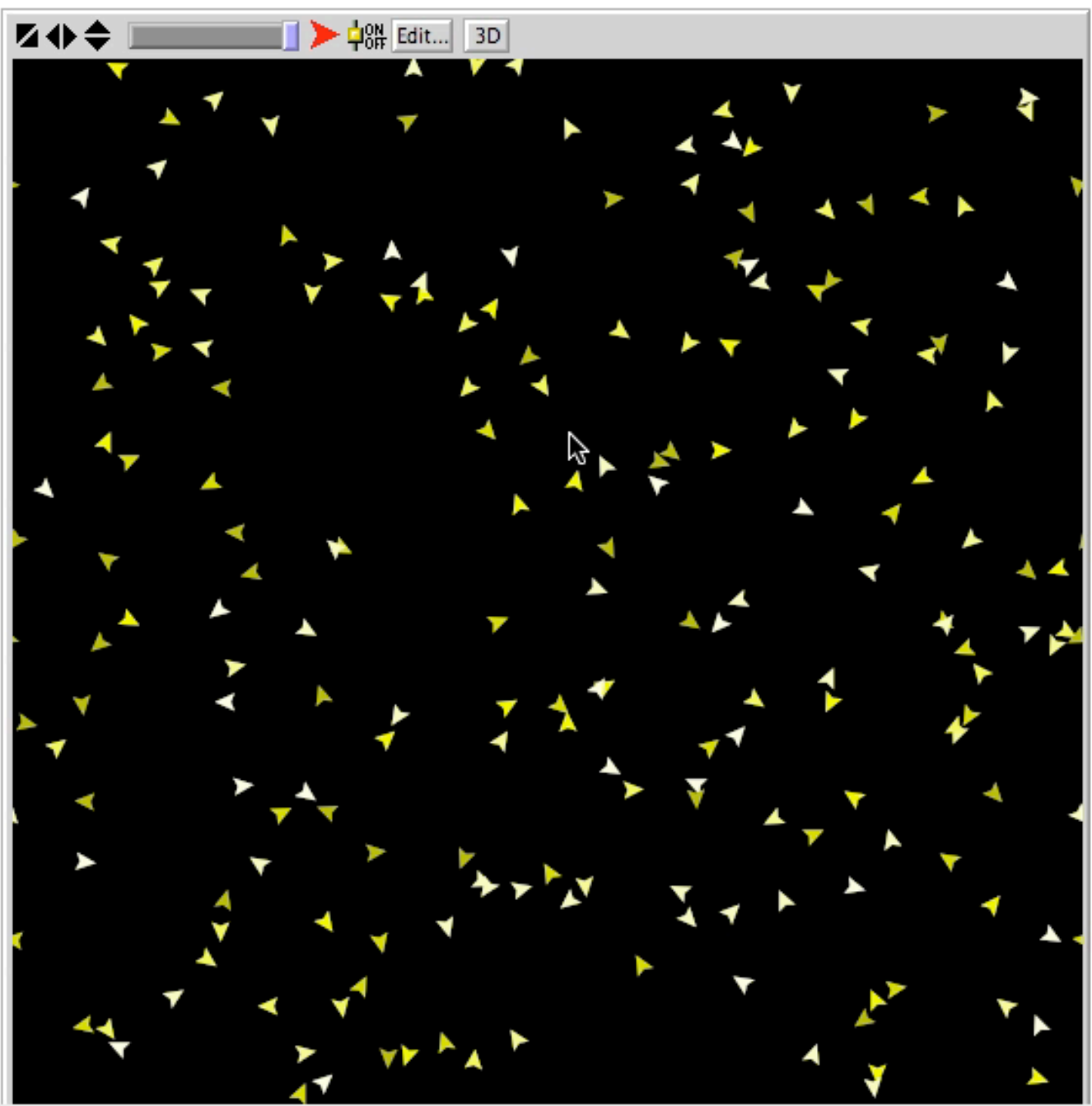
vision 5.0 patches

minimum-separation 1.00 patches

max-align-turn 5.00 degrees

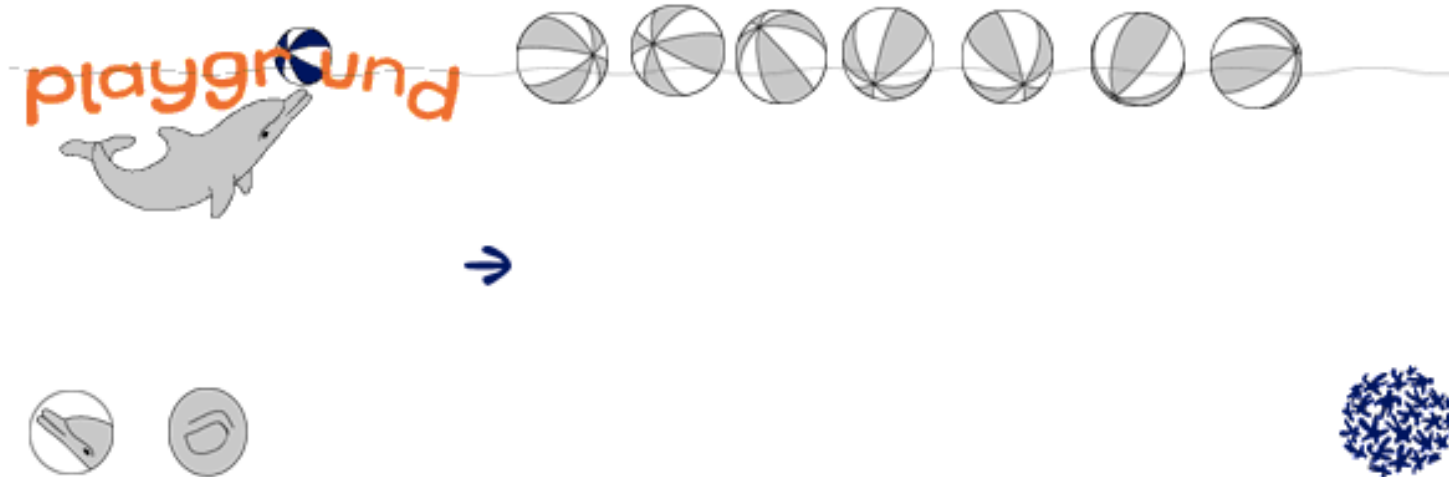
max-cohere-turn 3.00 degrees

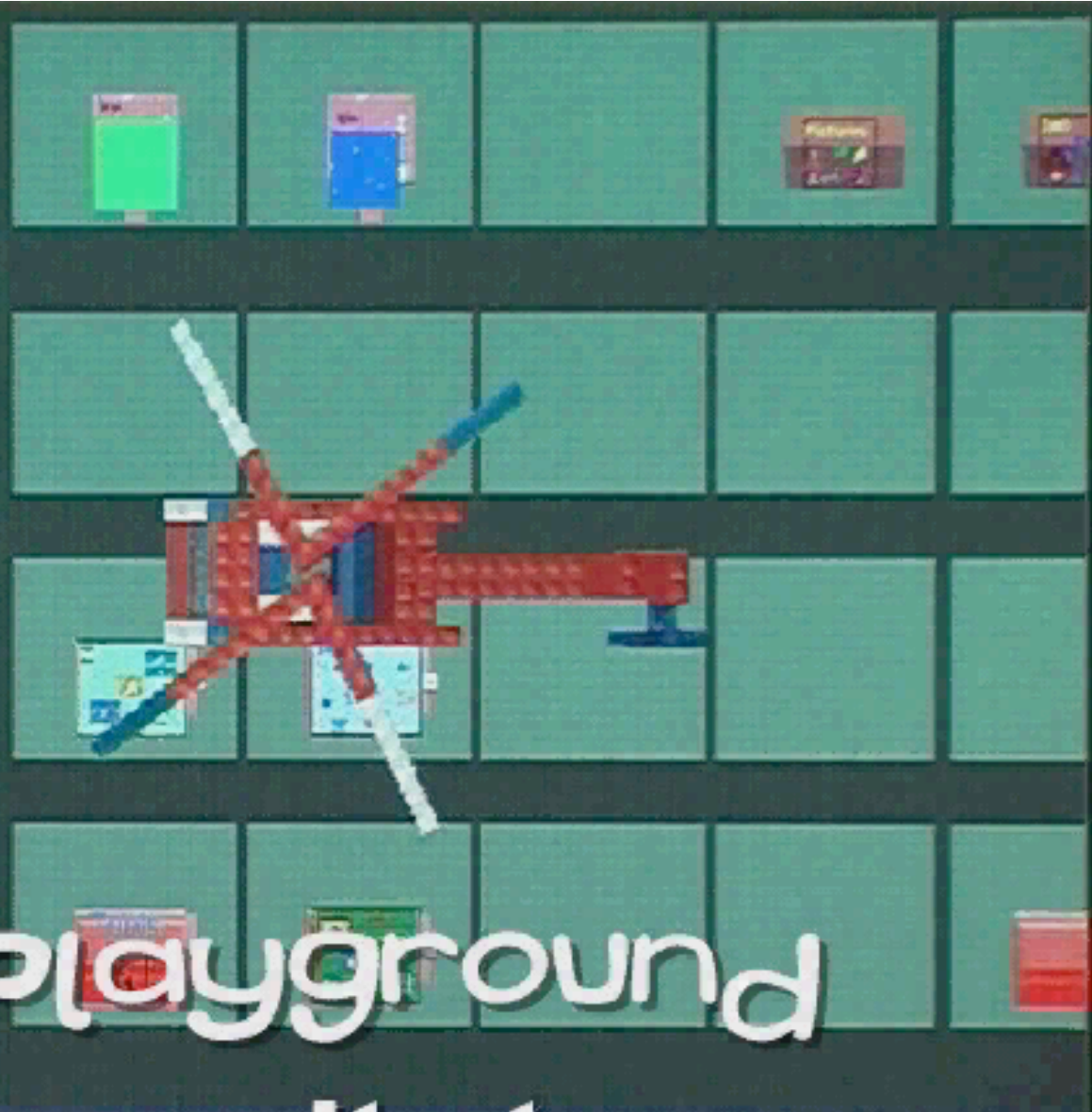
max-separate-turn 1.50 degrees



Jugando con las reglas

The **playground** project is building computer environments for 4-8 year-olds to play, design and create games. A playground is a place to play **with** rules not just play **by** them. We aim to harness children's playfulness, creative potential and exploratory spirit, allowing them to enter into abstract and formal ways of thinking.





playground
- a city tour

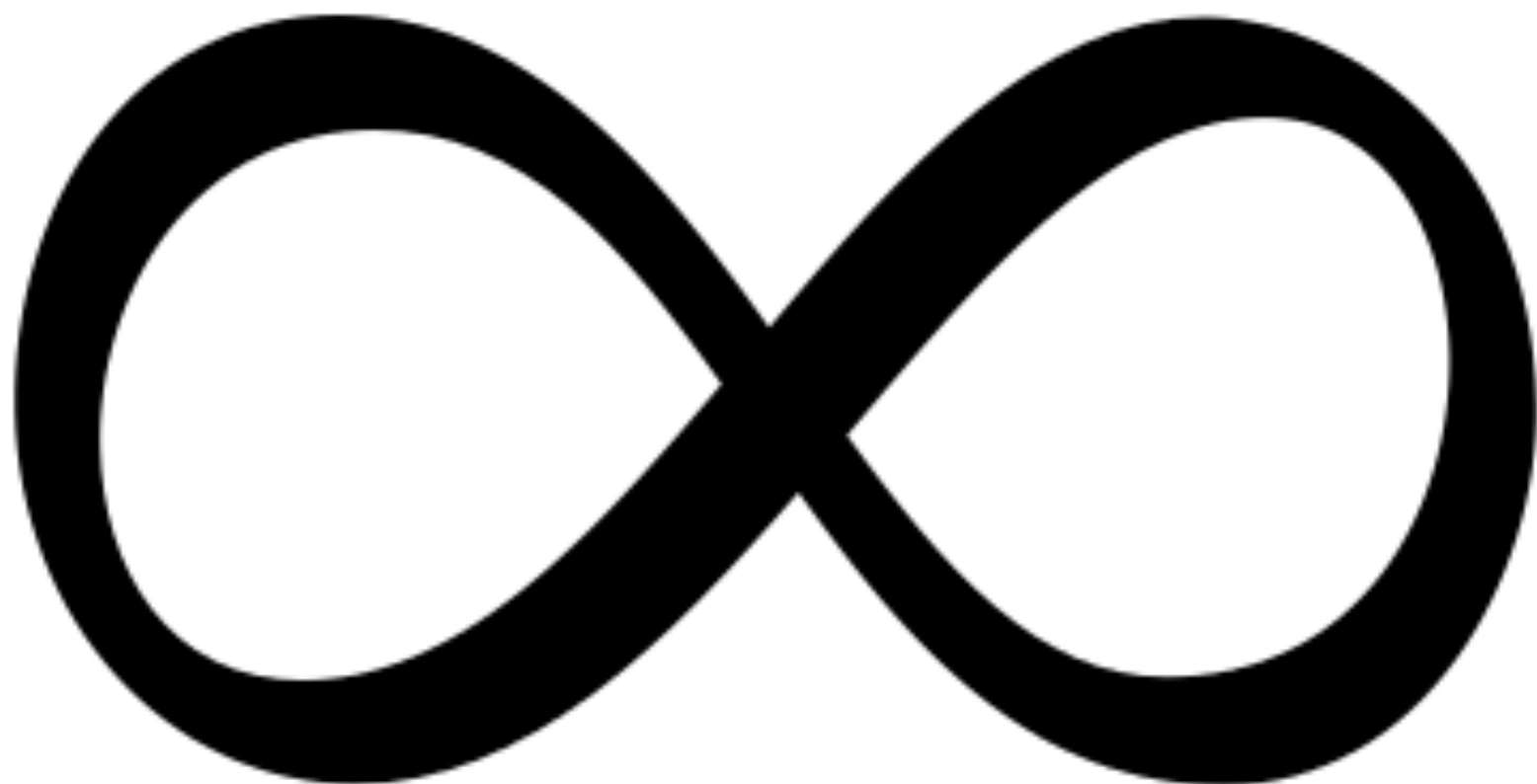
Background theory

Our approach is based on constructing and sharing models. A crucial element of knowledge required by most, if not all, people, is precisely this appreciation of underlying models. A version of mathematics that emphasizes structures has the potential to help students understand the computational systems that are increasingly critical in today's society, because computer systems are mathematical models – computer software is built out of variables and relationships. WebLabs starts from the assumption that constructing and sharing models is a powerful way to learn.

Mathematical and scientific ideas

WebLabs consists of five main topics: Infinity, Sequences, Collisions, Lunar Lander, and Models, Systems and Randomness.

- In Infinity, students explore the cardinality of infinite sets, and explore the relationships between different infinite sets.
- Sequences activities are centred around constructing and analysing number sequences, with a special focus on the Fibonacci sequence and explorations of sequences that converge and diverge.
- Students build models of objects colliding in 1-dimension in the Collisions topic, iteratively testing against reality and refining their models to cover more cases of collision.
- In Lunar Lander, students control the motion of virtual objects, record data and plot the resulting position-time and velocity-time graphs, investigating acceleration and the relationships between different representations of motion.
- The Models, Systems and Randomness topic is focused on building computational models that represent and explore various real-world phenomena, including investigation of the concept of randomness, how it can be understood and used.



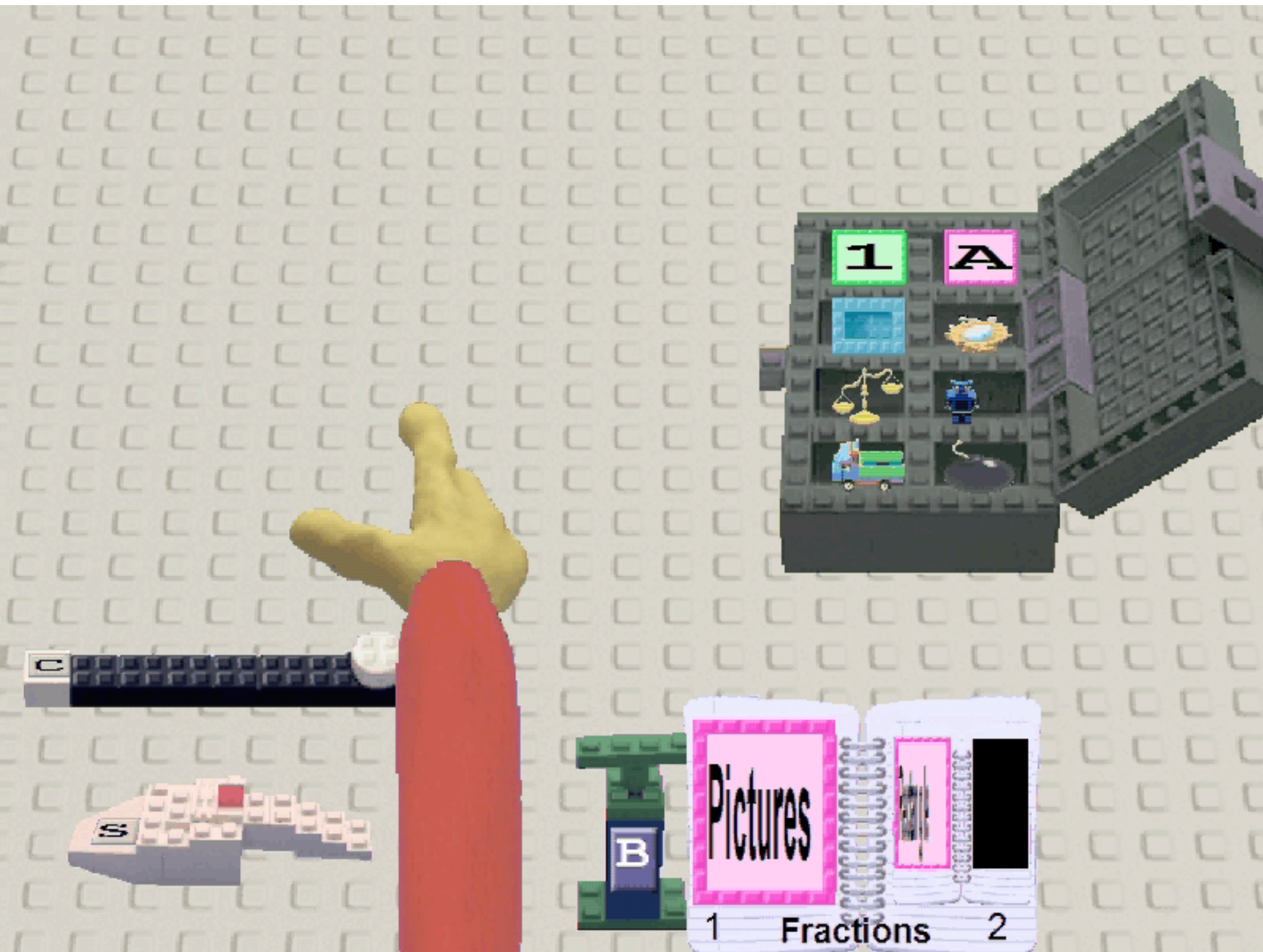


Nasko & Ivan, 12



Rita, 14









Institute of Education & Birkbeck College
University of London

<http://www.migen.org>



The Problem

Algebra is not a good way to learn algebra!

Solve $S = \frac{rL - a}{r - 1}$, for r ; for a ; for L .

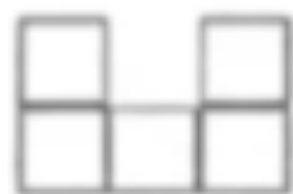
Solve $\frac{1}{R} = \frac{1}{S} + \frac{1}{T}$ for R ; then solve it for S .

Simplify: $x(6x)^7$ Solve: $5x(x+7)=0$

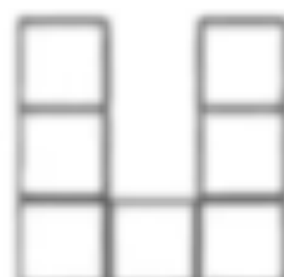
Two medians are drawn in a triangle, intersecting in the centroid. What can be said about the areas of the two shaded triangles, whose vertices consist of one vertex of the triangle, the midpoint of a side, and the centroid?



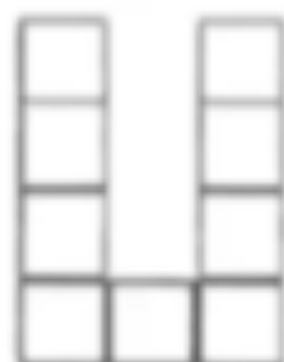
Draw the next 2 diagrams in this sequence:



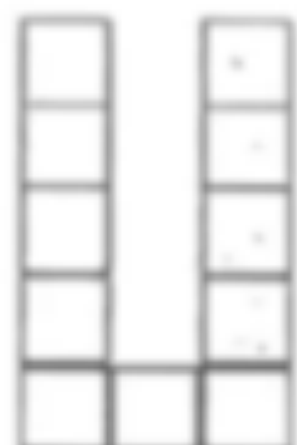
1



2

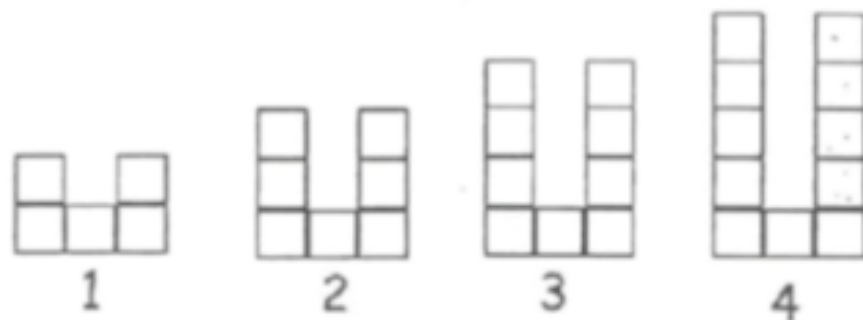


3



4

Draw the next 2 diagrams in this sequence:



- a) Write down the number of squares in each term $5, 7, 9, 11$ ✓
- b) How many squares are needed for the 10th term? $50 \times$
- c) How many squares are needed for the 50th term? $250 \times$

eXpresser



a new kind of algebra
as a bridge to
algebraic generalisation

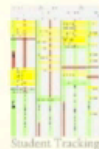


eGeneraliser
& intelligent support

MiGen



teacher assistance
tools



Student Tracking

Grouping Tool



activity & task
design tool



Nuevas culturas en computadoras



Pero en educación...



View In iTunes

\$4.99

Category: Education

Updated: Jan 31, 2011

Current Version: 1.5

1.5

Size: 3.9 MB

Languages: English, Dutch, French, German, Japanese, Portuguese

Seller: Paul Schmitt

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Rated 4+

Requirements: Compatible with iPad. Requires iOS 3.2 or later

Customer Ratings

Current Version:

★★★★ 16 Ratings

All Versions:

★★★★ 195 Ratings

More iPad Apps by palaware



SoccerMate (score and track

Description

This is the best integer practice app or program I have found in 34 years of teaching math. – Tim Seiber, Math Teacher

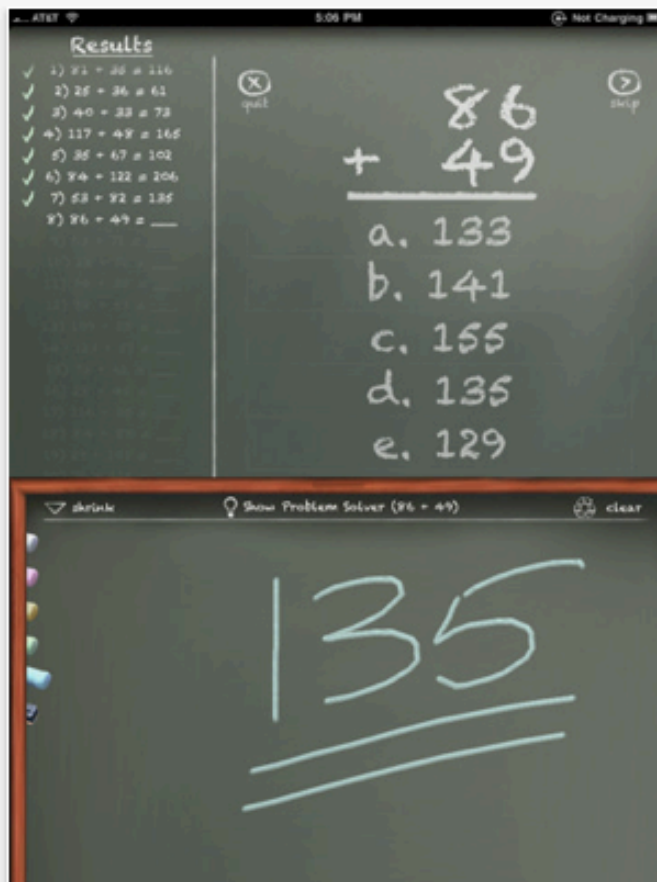
[palaware Web Site](#) ▶ [MathBoard Support](#) ▶

[...More](#)

What's New in Version 1.5

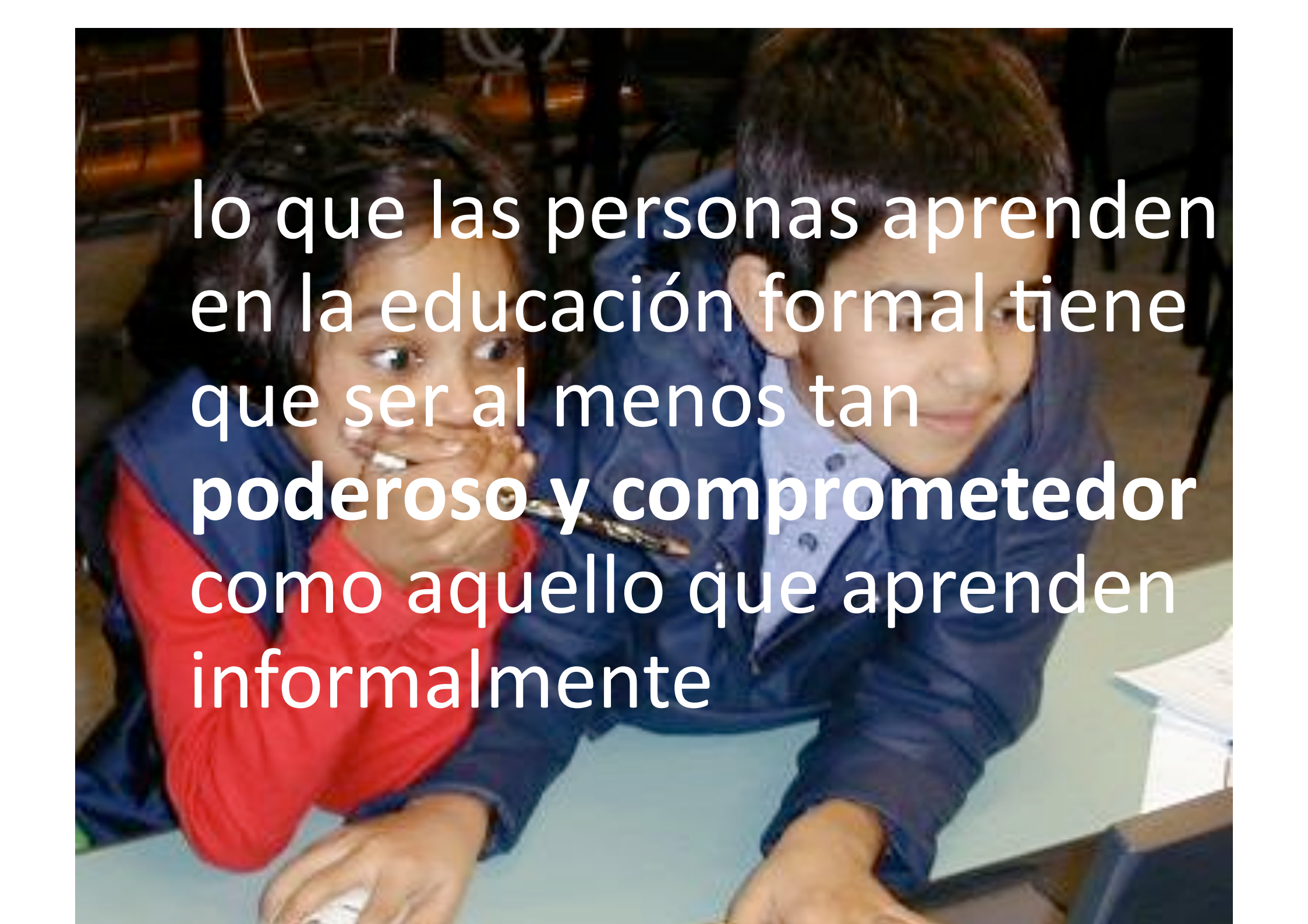
- Added landscape support.
- Added support for left handed students.

iPad Screenshots





300,000,000



lo que las personas aprenden
en la educación formal tiene
que ser al menos tan
poderoso y comprometedor
como aquello que aprenden
informalmente