



# Game-based Learning Some Research Findings

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Learning Innovation

AN ENTERPRISE IRELAND  
& IDA IRELAND INITIATIVE

# What is Gamified Learning?

- 1. Games are already learning activities**
  - Rules, controls, narrative, strategies, skills ...
- 2. Games aren't reality**
  - Applying new knowledge and skills to the real-world is hard
- 3. Game goals vs. Learning goals**
  - Ideally the same (or at least aligned)

# Game-based Learning Research

## Early Childhood Report



\*

## Language Trap



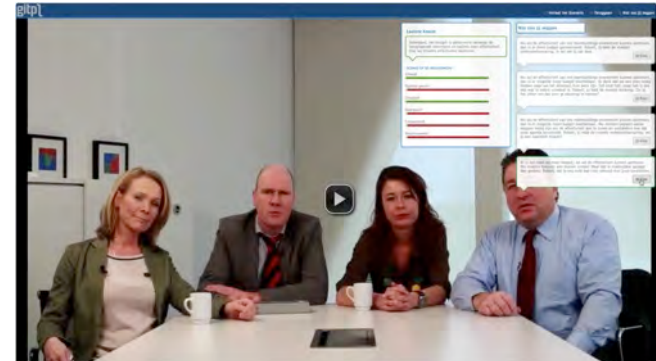
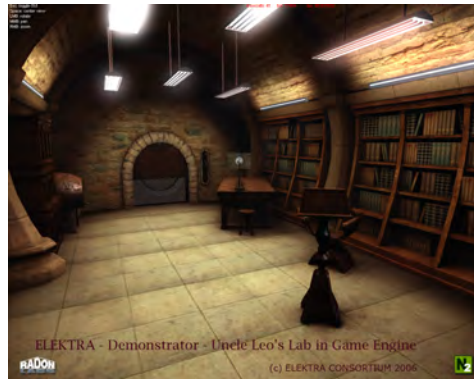
Early Childhood

Schools and Higher Ed.

Corporate Learning/Vocational

**ELEKTRA**

**DEVELOP**

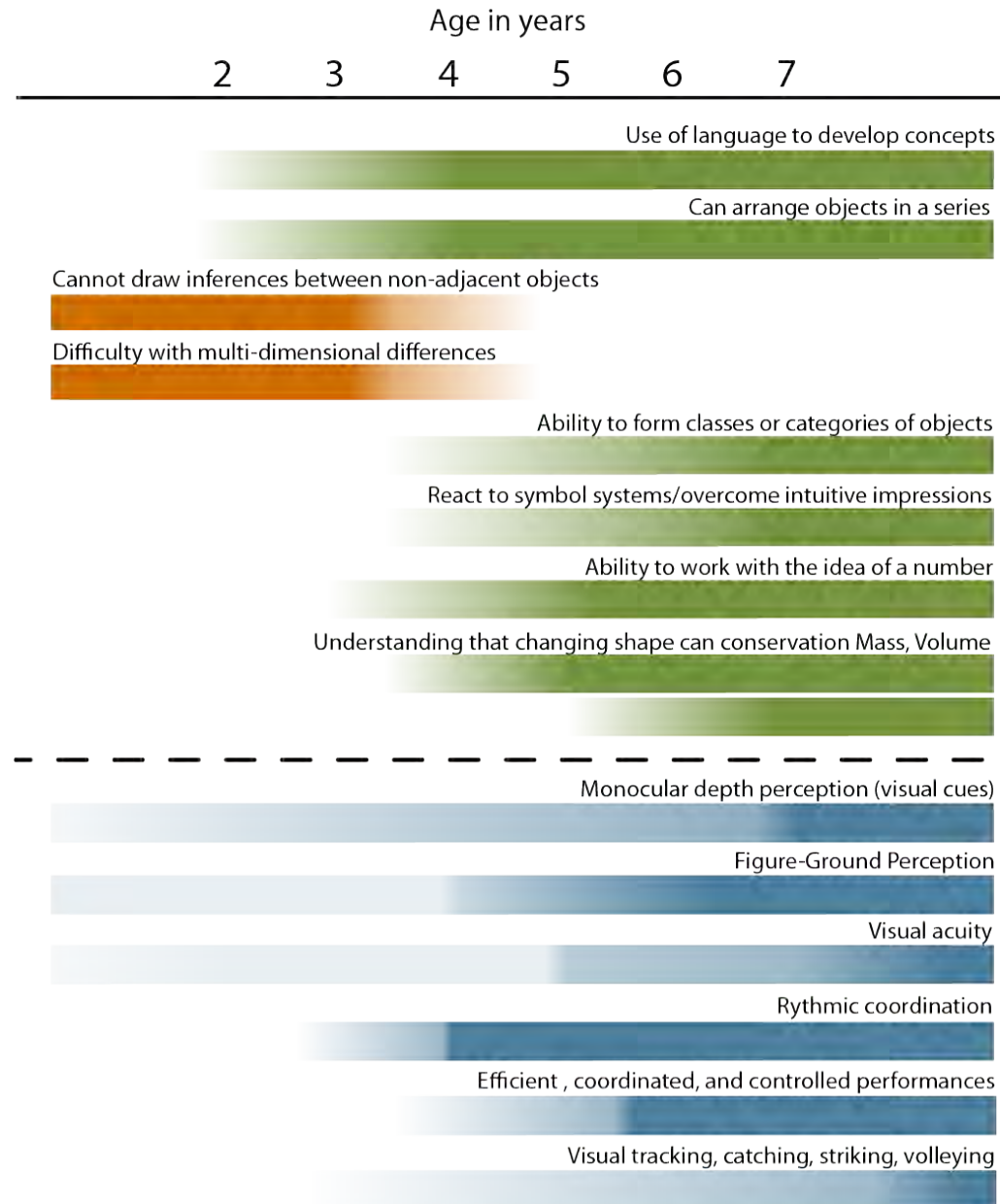


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\* *Count Me To Sheep* by Sesame Workshop

# Game-based Learning for Early Childhood

- Growth in games for tablets and phones
- Saturated & unregulated market
  - Only 1/3 have a rating\*
  - 19k+ educational games\*
  - 55% on free tier\*
  - 7k 'Made for' under 6 years of age\*



\* Apple App Store analysis Nov 2014

# Game-based Learning for Early Childhood

- **Consider the User and the Context**
  - Learning efficacy
  - Developmentally appropriate
  - Ethical concerns
    - Ergonomics
    - Sedentary activities
    - Replacing physical and social activities
    - Advertising

# Game-based Learning for Early Childhood

- Does it have a measurable impact on **performance**?
  - **Yes** (in certain circumstances)\*
  - *Phonological Awareness*
  - *Classifying by theme and taxonomy*
  - *Memorisation strategies (Mnemonics)*
  - *Mathematical Development*

\* Not necessarily better than traditional approaches

# ELEKTRA





- **Physics of Optics**
  - 12-13 year olds
- **Personalised/Adaptive feedback**
  - Characters perceived as more realistic/  
appropriate
- **Stronger benefits for weaker students**
- **Cartoon vs. photorealistic characters**
  - Emotion was the key (facial expression and  
tone of voice)





- **Consider the User and the Context**
  - The goal is part of the game
  - Learning is required to realise the goal
  - Themes suitable for the audience
  - Don't disrupt the game solely for a learning benefit
    - where you do make it reasonable within the game

# Language Trap

Wir planen einen Ausflug. Sie sprechen gut Deutsch. Wo haben Sie es gelernt?

★ Ja! Das müssen wir. ✓

★★ Ja! Irisch ist Pflichtfach. ✓

★ Ja! Es ist obligatorisch. ✓

Ich habe einen Deutschkurs gemacht. 🔊

Wie lange lernen Sie Deutsch? 🔊

★★ Seit einer langen Zeit. 🔊

Warum haben Sie gerade Deutschgewählt? 🔊

★★ Ich bevorzuge andere Sprachen. 🔊

Was? Muss man auch Irisch lernen? 🔊

Show Inventory   Sound:   On   Off   How To Play   ★ 9   Quit

# Language Trap

- **Language Learning**
  - German
- **Participatory design**
  - 16-17 year olds
- **Non-invasive personalisation**
  - Model the user based on their actions as opposed to questioning them
- **Biggest criticism**
  - It was too short!



# Language Trap

- **Consider the User and the Context**
  - Using the language is not the goal of the game
  - The game has goals, the language is needed to achieve them
    - Immersion as the approach to language learning
  - Game design appropriate to the audience
    - Mature themes (mystery, espionage)

# Language Trap

- Does it have a measurable impact on **performance**?
  - Yes, vocabulary improvements (but there's more to it...)
  - Post gaming motivation for the subject
  - Alternative perspectives

The screenshot shows a video player interface. The main video area displays four people in a meeting room. Overlaid on the right side of the video are several interactive panels:

- Laatste Keuze**: A text box containing the text: "Inderdaad, het budget is gehalveerd vanwege de teruglopende inkomsten en twijfels over effectiviteit. Dus we moeten effectiviteit aantonen."
- SCORES OP DE BESLISSINGEN**: A section with five horizontal bars representing scores for different categories: Inhoud, Ruimte geven, Directief, Expressief, and Beschouwend. Each bar has a green segment on the left and a red segment on the right.
- Wat zou jij zeggen**: A series of three text boxes, each with a "Kies" button. The first box contains: "Als wij de effectiviteit van ons teambuildings-evenement kunnen aantonen, dan is er meer budget gereserveerd. Robert, jij hebt de meeste onderzoekservaring, ik wil dat jij dat doet." The second box contains: "Als wij de effectiviteit van ons teambuildings-evenement kunnen aantonen, dan is er mogelijk meer budget beschikbaar. Ik denk dat we een plan nodig hebben waar we het allemaal mee eens zijn. Dat kost tijd, maar het is ook iets wat in ieders voordeel is. Robert, jij hebt de meeste ervaring. Zie jij het zitten om dat voor je rekening te nemen?" The third box contains: "Als wij de effectiviteit van ons teambuildings-evenement kunnen aantonen, dan is er mogelijk meer budget beschikbaar. We moeten bepalen welke stappen nodig zijn om de effectiviteit aan te tonen en vaststellen hoe dat onze agenda beïnvloedt. Robert, jij hebt de meeste onderzoekservaring, wil jij een overzicht maken?"
- A fourth text box at the bottom right contains: "Er is een kans op meer budget, als we de effectiviteit kunnen aantonen. We moeten hiervoor een manier vinden! Maar dat is makkelijker gezegd dan gedaan. Robert, dat is nou echt wat voor iemand met jouw kwaliteiten."



[www.develop-project.eu](http://www.develop-project.eu)

- **Corporate Learning**
  - Career Development & Talent Management
- **Game-based assessment of skills**  
(actually competencies)
- **Use of simulations vs. roleplays/  
interviews**
  - Cost effective, scalable



[www.learnovatecentre.org](http://www.learnovatecentre.org)



- **Consider the User and the Context**
  - Shift away from game worlds
  - Career development as a serious activity
    - Career as Identity

**I am a...**

- Butcher
- Baker
- Candlestick-maker

**VS.**

**I work as a...**

- Butcher
- Baker
- Candlestick-maker





- Does it improve **engagement rates**, and knowledge retention?
  - For Compliance Training, Yes.
  - Can stimulate external discussion
    - Motivation to engage in the topic



# Summary

- **Consider the User and the Context**
  - Importance of UX Design
  - Keep it user-centric
    - Themes
    - Narrative
    - Usability
    - Data Protection & Data Privacy
- **Validate it!**
  - Designed for learning  $\neq$  Learning

# Questions



1<sup>st</sup>-2<sup>nd</sup> September  
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