

# Piloting a serious game to teach aural vocabulary in context to young L2 learners

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### **Early L2 learning**

Move toward an earlier start:

 In Europe (Enever, 2011: all <=9, majority <=7)</li>
 In France (MEN, 2012: moved to 6)

#### Inconclusive results:

- In Europe (Jaekel et al 2017, Muñoz, 2006)
- In France (Hilton et al, 2016)
- Some problems:
  - Lack of continuity (Hilton et al, 2016)
  - Insufficient exposure (France: 54 hours / year)

-> strive for better intake



## **FLT in French schools**



- Primary school teachers' profile:
  - Non-specialist teachers
  - Linguistic insecurity
  - Do not use textbooks (unlike others in Europe, Nordlund, 2016)
  - Often neglect FLT (Manoïlov, 2019)
- Learners' difficulties:
  - Listening improving but still insufficient (Macaire et Ganoac'h, 2019)
  - Need to construct meaning (Audin, 2003)
- Listening before speaking:
  - French official instructions + (Krashen, 1982)



## The role of lexical knowledge



- Lexical knowledge is central to all language skills:
   o 'central component of language processing' (Broersma & Cutler, 2008)
  - Highly correlated with listening and other skills (Stæhr, 2008; Milton, 2010; Noreillie, 2018)
- Dimensions of lexical knowledge (Nation, 2001):
  - Form: spoken form (aural vocabulary)
  - Meaning: form-meaning pairing
  - Function: context (grammatical constructions)
- Memorizing vocabulary:
  - Repetition (Brown et al, 2008)
  - Different voices (Barcroft & Summers, 2005)





## **Digital game-based L2 learning**

Serious games:

 Designed for educational purpose
 Still fun...

#### • Effects:

- Vocabulary (Cobb & Horst, 2011) 10-11 yo
- Meta-analysis (Tsai & Tsai, 2018)
- O Grammar (Kasprowitz & Marsden, 2017) 8-11 yo
- Listening, reading, writing (Suh et al, 2012) 10-11 yo

=> Plonsky & Ziegler (2016 meta-analysis) "need for more research on primary and secondary learners in K–12 contexts" (p.31)



#### **Research questions**



- Simple exposure and recognizing individual words is not enough
- Learners need to be taught to construct meaning by associating the words they hear





#### **The Fluence project**

- Funding: French Ministry of Education (e-FRAN 2016 PIA 3)
- Hypotheses (Meyer, Diard, & Valdois, 2017):
  - Reading fluency, long term predictor of academic success
  - Action video games improve reading underlying processes:
    - ✓ Visual attention span
    - ✓ Attentional shift
- Goals:
  - Create video games supporting these underlying processes
  - Test their effects
- 3 tablet applications:
  - EVAsion: improve rapid processing of (sequences of) letters
  - ELARGIR: improve speed and prosody of reading aloud
  - LUCIOLE (control group): develop listening skills in English FL
- Participants:
  - 722 primary school children CP-CE2 (6 to 9 years)=>37 classrooms





#### **Experimental Design - Fluence**





### **LUCIOLE research constraints**

- Control group constraints:
  - No writing
  - No "action video game "characteristics (Green, Li, & Bavelier 2010, 203):
    - Extraordinary speed
    - High degree of perceptual cognitive and motor load
    - ✓ Unpredictability
    - Emphasis on peripheral processing
- Schedule of training sessions:
  - o 3 x 20-min lessons per week
- $\bigcirc \circ \times 10$  weeks
- x 3 years

### **Luciole gameplay**

5 types of activities

 Visual search
 Multiple-choice questions or single answer questions
 Drag and drop
 The Simon game
 QR Code



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#### **Luciole gameplay**

- Exploratory activities: introduce target language
- Practice stage: use target language





### **Luciole gameplay**

- Narrative embedding:
  - A « spy » narrative
  - Young French child who has to communicate in English
  - Tasks justification to the learner
- Integration of linguistic and cultural skills (MEN, 2015, 2016)

Action-oriented approach:

 Solve different missions to achieve the final task
 Missions become + and + complex







#### **Hypotheses**

- Playing the Luciole game leads to more vocabulary acquisition

  - H1: single words,
    H2: word combinations
  - H3: transfer to production
  - H4: learning mediated by frequency of exposure
- Pretest (Nov.) intervention (Feb.-Apr.) posttest (June): o Reception: 21 MCQ (with pictures) Production: 8 items (pictures)
- 722 participants [679], 35 schools, 52 intact classes o control group: 54h regular English lessons o experimental: 44h English lessons + 10 hours Luciole





#### **Recognition post-test**







#### Listening score from pre to post-test







eng\_post\_score

10

data2\$eng post score

5

100 -

50 -

0

0

count

20

15

## **Voc recognition items - analysis**

\*\* = highly significant difference, p<.001; Evasion (French) vs. Luciole (English) Fluence orange = not used in the game;

<u>underlined</u> = word present only in the narrative

**'common' words** Black 74 vs. 94%\*\* Brown 60 vs. 89\*\* Cat 59 vs. 81% \*\* **Mouse** 33 vs. 35% Three 77 vs. 93%\*\* Six 84 vs. 89

Words belonging to themes/lexical sets taught by all classroom teachers 'rare' wordsRunning 20 vs. 22%Hat23 vs. 52%\*\*Milk37 vs. 41%Happy56 vs. 62%Eyes43 vs. 49%Spy13 vs. 26%\*\*Numbers37 vs. 43Train31 vs. 32%

Words not taught by all classroom teachers 

 Combinations

 The snake is green

 35 vs. 73%\*\*

 Bird is blue
 47 vs. 62%\*\*

 Take 2 shirts
 25 vs. 31%

 Take 5 hats
 21 vs. 45%\*\*

 Red shoes
 21 vs. 49%\*\*

 Yellow shirt
 42 vs. 48%

#### Speaking posttest EVAsion vs Luciole



eng\_post\_CO\_score 10 cluster type data\$tot EVAsion Luciole NA 5-EVAsionLuciole NA cluster type EVA = 1.7 Luciole = 3 Cor CO/P0 = .56 p < .000

Nine 38% vs. 54% \*\* Dancing 2 vs. 3% <u>Keys</u> 2 vs. 1% <u>Truck</u> 1 vs. 1%

#### Adj/det + N combinations

(absence of -s accepted)
3 white dogs 9 vs. 23% \*\*
2 blue eyes 3 vs. 4%
Brown shoes 2 vs. 9% \*\*
Man eating carrot 3 vs. 2%

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- 'Common' words also taught by classroom teachers, and combinations of these words, are much better acquired (aural recognition) with Luciole. (H1 and H2)
- Luciole groups were also able to produce more words (H3)
- Words not present in Luciole, words only used in the narrative (except *spy*) and words taught in later lessons are not better acquired (H4)
- -> importance of systematic training, perhaps especially for struggling learners
- -> importance of frequency of use (regular lessons + ipads)



#### Limitations



• Ecological conditions:

Variation in total teaching time (min 10h, median 20h, and only 1 class with 54h):
EVAsion (F) 20 (9.5) vs.
Luciole (Eng) 27 (13.1)

 No correlation btw time spent playing and posttests, but .25 (p<.000) btw stars earned and posttests

Variation in playtime:
min. 12min, median= mean
6h, max 19h





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### Thank you!



