

# Selecting technologies for use in the language classroom: Examining the added value of multimedia and interactive whiteboards



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# Selection criteria



- Added-value
- Evidence

# Added value

- “we must insist on **‘added value’** – technology should not merely replace current practice for the sake of novelty, but must contribute to it and improve it. This is particularly true given that technology is often expensive, and that adaptation to it is often time-consuming and difficult”

(Bax, 2000, p. 209)

- “one criterion to follow when using technology in the classroom is its ability to contribute something different from non-ICT approaches”

(Bax, 2000, p. 212)



# Outline

- Multimedia
- Interactive whiteboards



# Multimedia: The research

- A systematic review of CALL research published 1991-2010 focusing on primary and secondary learners found:
  - 26 out of 117 studies involved multimedia
  - 16 were published after 2001
    - 8 on vocabulary
    - 3 on reading
    - 2 on grammar
    - 2 on writing
    - 1 on pronunciation

(Macaro et al., 2012)



**CALL  
activity**

**Traditional  
activity**

# Multimedia: The research

- A systematic review of CALL research published 1991-2010 focusing on primary and secondary learners found :
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**CALL  
activities**

# Multimedia: The rationale

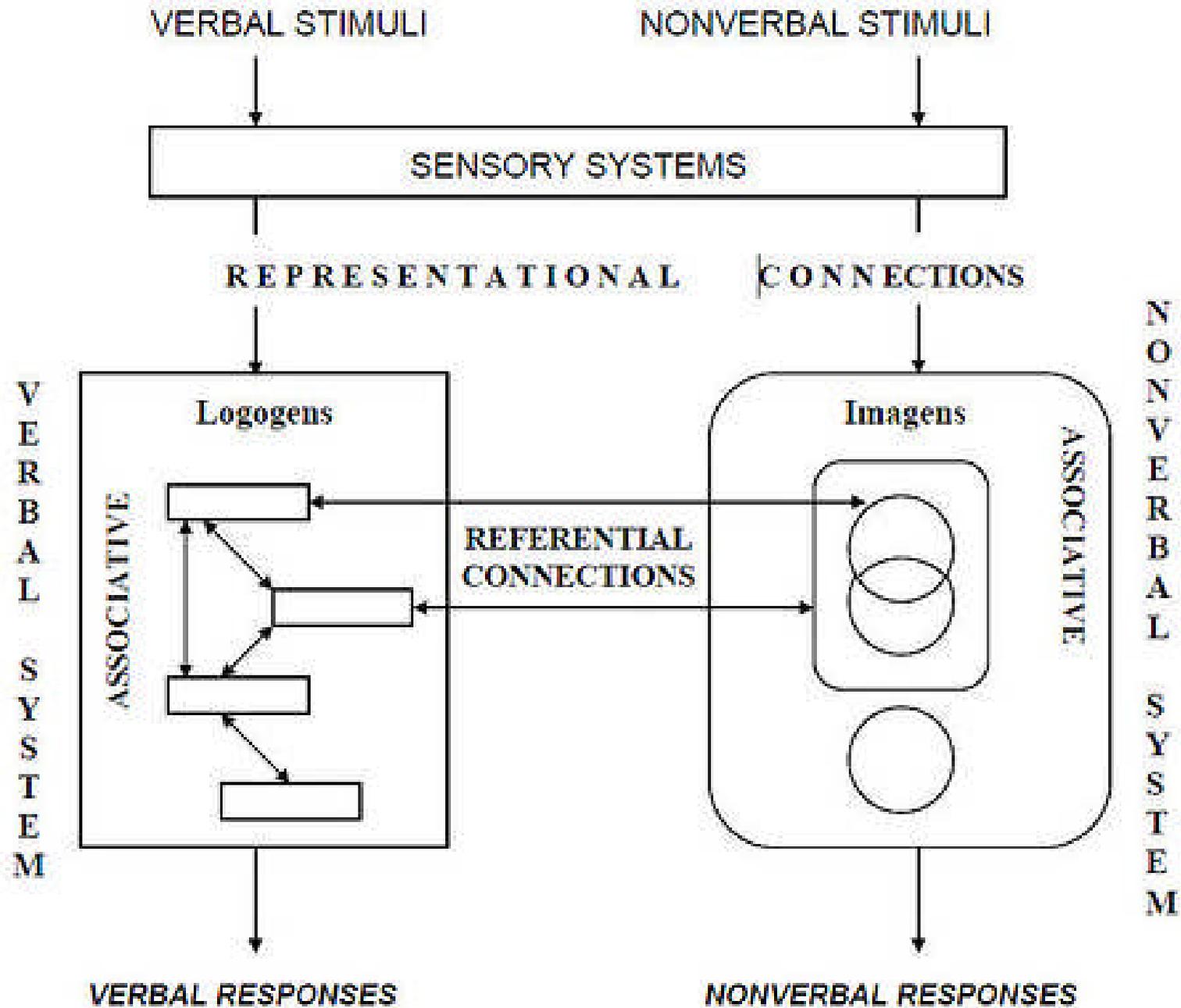
- Multimedia learning theory
  - Dual coding theory
  - Cognitive load theory
  - Constructivist theory

(Mayer & Moreno, 2002)

- Theory of synergy

(Neuman, 1997)

# Dual coding theory

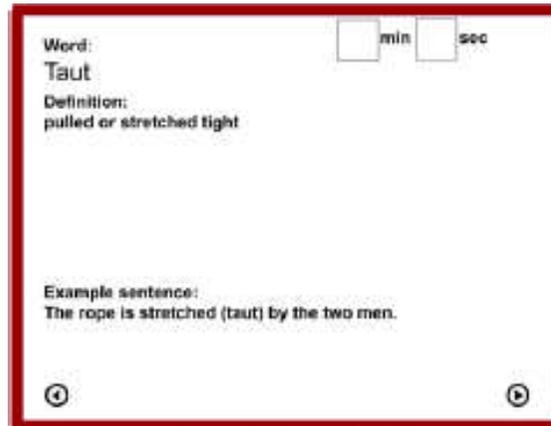


# Multimedia: The evidence

- Kim & Gilman (2008)
  - Examined the effects of the use of different combinations of multimedia for the presentation of vocabulary in a web-based self-instruction program (Korea; Secondary)

Word:  min  sec  
Taut  
Definition:  
pulled or stretched tight

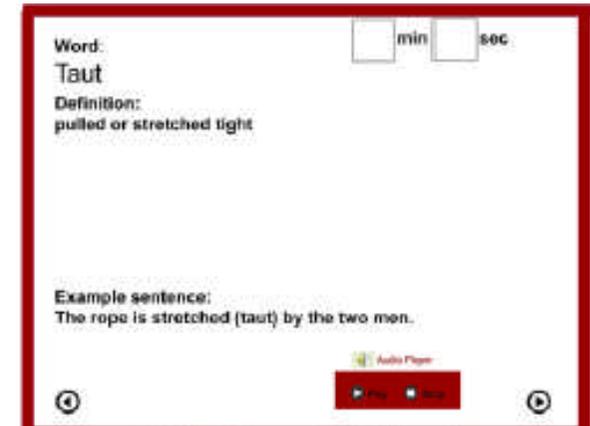
Example sentence:  
The rope is stretched (taut) by the two men.



Group A (visual text)

Word:  min  sec  
Taut  
Definition:  
pulled or stretched tight

Example sentence:  
The rope is stretched (taut) by the two men.

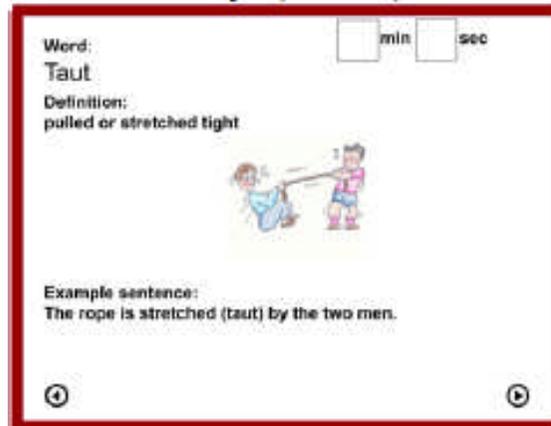


Group B (visual text and added spoken text)

Word:  min  sec  
Taut  
Definition:  
pulled or stretched tight



Example sentence:  
The rope is stretched (taut) by the two men.

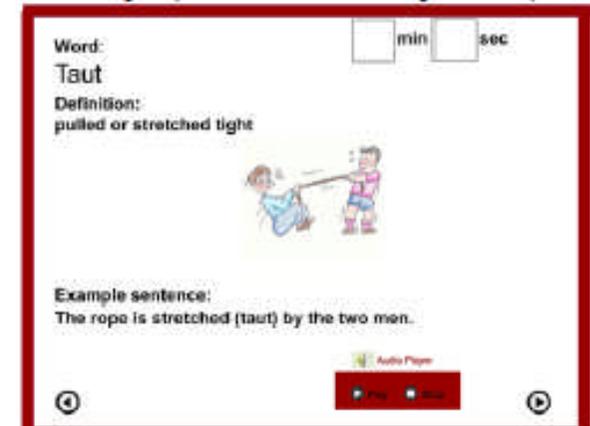


Group C (visual text and added graphics)

Word:  min  sec  
Taut  
Definition:  
pulled or stretched tight



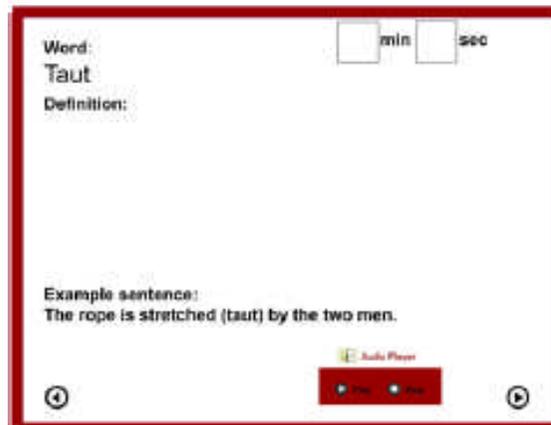
Example sentence:  
The rope is stretched (taut) by the two men.



Group D (visual text, added spoken text, and added graphics)

Word:  min  sec  
Taut  
Definition:

Example sentence:  
The rope is stretched (taut) by the two men.

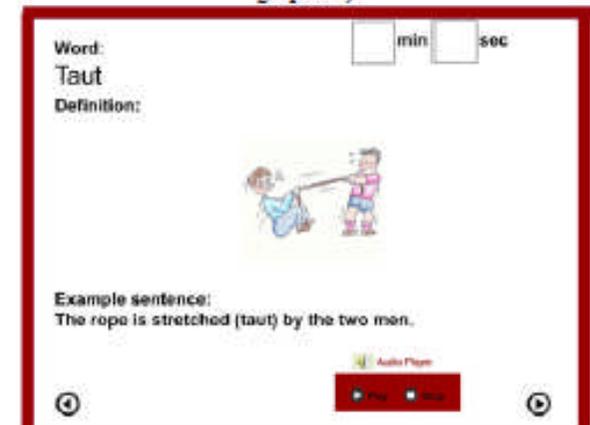


Group E (reduced visual text and added spoken text)

Word:  min  sec  
Taut  
Definition:



Example sentence:  
The rope is stretched (taut) by the two men.



Group F (reduced visual text, added spoken text, and added graphics)

# Multimedia: The evidence

- Kim & Gilman (2008)
  - Examined the effects of the use of different combinations of multimedia for the presentation of vocabulary in a web-based self-instruction program (Korea; Secondary)
- Silverman & Hines (2009)
  - Investigated the impact of multimedia enhanced read aloud on English language learners' vocabulary knowledge (America; Primary)
- Verhallen et al. (2006)
  - Investigated the impact of animated stories on narrative comprehension and vocabulary (Dutch language learners; Primary)

# Multimedia: Conclusion

- Does multimedia add value to language learning?
  - Yes, in tutorial CALL
  - The use of graphics and animation/video promote vocabulary acquisition
  - Multimedia stories have a greater impact on understanding, vocabulary and syntax than oral stories with static images
  - However, “all multimedia messages are not equally effective” (Mayer, 2001, p. 79)
- Principles of multimedia learning
  - Multiple representations principle
  - Contiguity principle
  - Coherence principle
  - Modality principle
  - Redundancy principle

(Mayer & Moreno, 2002)

# IWBs: The research



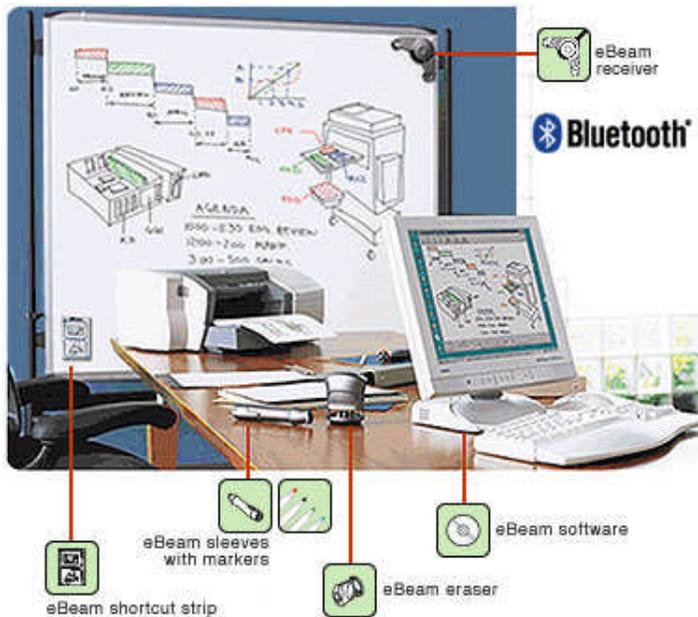
- A systematic review of CALL research published 1991-2010 focusing on primary and secondary learners found:

- 3 out of 117 studies involved interactive whiteboards

(Macaro et al., 2012)



# IWBs: The rationale



- Teaching non-Roman scripts

(Xu & Morley, 2010)

- Teaching integrated skills
- Tools promote attention to linguistic patterns
- Access to authentic materials
- Video conferencing with native speakers

(Gray et al., 2005, 2010)

# IWBs: The evidence

- Langman and Fies (2010)
  - The impact of classroom response systems on English language learners' access to and participation in science classroom discourse (Secondary school)
- Lopez (2010)
  - Can IWBs reduce the achievement gap between English language learners and native speakers on benchmark mathematics and reading tests? (Primary school)
- Matthews-Aydinli & Elaziz (2010)
  - Turkish students' and teachers' attitudes toward the use of IWBs in English as a foreign language classrooms (Primary school, Secondary school, University)

# IWBs: Further evidence

- Yañez & Coyle (2010)
  - Spanish children's perceptions of IWBs (what they liked, how much they used it, when and what for) in an English language immersion classroom (Primary)
- Xu & Morley (2010)
  - Australian students' perceptions of the advantages and disadvantages of interactive whiteboards in Chinese classes (Secondary)

# IWBs: Conclusion

- Do interactive whiteboards add value?

- Rationale

- Teaching non-Roman scripts

(Xu & Morley, 2010)

- Teaching integrated skills
    - Tools promote attention to linguistic patterns
    - Access to authentic materials
    - Video conferencing with native speakers

(Gray et al., 2005, 2010)

- Evidence

- Promotes small group activities over teacher-fronted ones

# Conclusion

- The use of multimedia in tutorial CALL adds value
- It is unclear whether interactive whiteboards add value to language learning
- Added value is as much dependent on the pedagogy as the technology

# Thank You!



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# References

- Bax, S. (2000). Putting technology in it's place: ICT in modern foreign language learning. In Field, K. (ed.). *Issues in modern foreign language teaching*. [Key Text: K 5.MZ FIE]
- Coyle, Y., Yañez, L., & Verdú, M. (2010). The impact of the interactive whiteboard on the teacher and children's language use in an ESL immersion classroom. *System*, 38: 614-625.
- Gray, C., Hagger-Vaughan, L., Pilkington, R., & Tomkins, S.-A. (2005). The pros and cons of interactive whiteboards in relation to the key stage 3 strategy and framework. *Language Learning Journal*, 32: 38-44.
- Gray, C. (2010). Meeting teachers' real needs: New tools in the secondary modern foreign languages classroom. In Thomas, M. & Cutrim Schmid, E. (Eds.), *Interactive Whiteboards for Education: Theory, Research and Practice* (69–85). Information Science Reference, Hershey, NY.
- Kim, D. & D. Gilman (2008). Effects of text, audio, and graphic aids in multimedia instruction for vocabulary learning. *Educational Technology & Society* 11.3, 114-126.

# References (cont.)

- Langman, J. & C. Fies (2010). Classroom response system-mediated science learning with English language learners. *Language and Education* 24.2, 81-99.
- Lopez, O. (2010). The digital learning classroom: Improving English language learners' academic success in mathematics and reading using interactive whiteboard technology. *Computers & Education* 54.4, 901-915.
- Macaro, E., Handley, Z., & Walter, C. (2012). A systematic review of CALL in English as a second language: Focus on primary and secondary education. *Language Teaching*, 45: 1-43
- Matthews-Aydinli, J. & Elaziz, F. (2010). Turkish students' and teachers' attitudes toward the use of interactive whiteboards in EFL classrooms. *Computer Assisted Language Learning*, 23(3): 235-252
- Mayer, R. & Moreno, R. (2002). Aids to computer-based multimedia learning. *Learning and Instruction*, 12, 107-119.
- Neuman, S. (1997). Television as a learning environment: A theory of synergy. In J. Flood, S. Brice Heath, & D. Lapp (Eds.), *Handbook of research on teaching through the communicative and visual arts* (pp. 15–30). New York: Simon & Shuster.

# References (cont.)

- Silverman, R. & S. Hines (2009). The effects of multimedia-enhanced instruction on the vocabulary of English-language learners and non-English-language learners in pre-kindergarten through second grade. *Journal of Educational Psychology* 101.2, 305-314.
- Verhallen, M. J. A. J., A. G. Bus & M. T. de Jong (2006). The promise of multimedia stories for kindergarten children at risk. *Journal of Educational Psychology* 98.2, 410-419.
- Xu, H. L. & Morley, R. (2011). Perceptions of interactive whiteboard pedagogy in the teaching of Chinese language. *Australasian Journal of Educational Technology*, 27(2): 307-325.
- Yañez, L. & Coyle, Y. (2011). Children's perceptions of learning with an interactive whiteboard. *ELT Journal*, 65(4): 446-457.