

35354 Degree Project - Degree in English Studies / 40708 Degree Project -
Master's Degree in Creative and Humanistic Translation

Technological artifacts and foreign language acquisition. How to approach research through a systematic analysis of data. Adapt your dataset for presentation purposes. Final project tentative.

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How to distribute contents

I. Theoretical background

- DCT, flashcards, AR and VR
- Method of loci

II. Methodology

- Research question and objectives
- Systematic literature review

III. Summary of results and conclusion

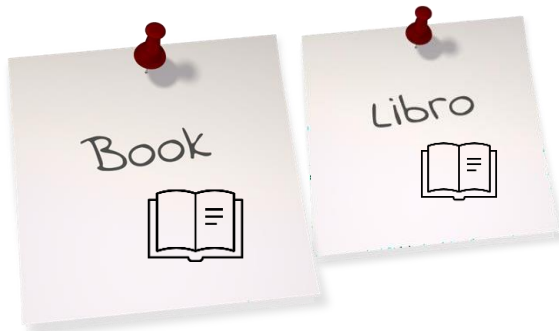
Background: DCT, AR, and VR

Processing information ↑

Dual Coding Theory

A combination of

- Verbal codes: keywords, descriptions, word groups, context etc.
- Visual codes: images, objects, mind maps etc.
- Flashcards:



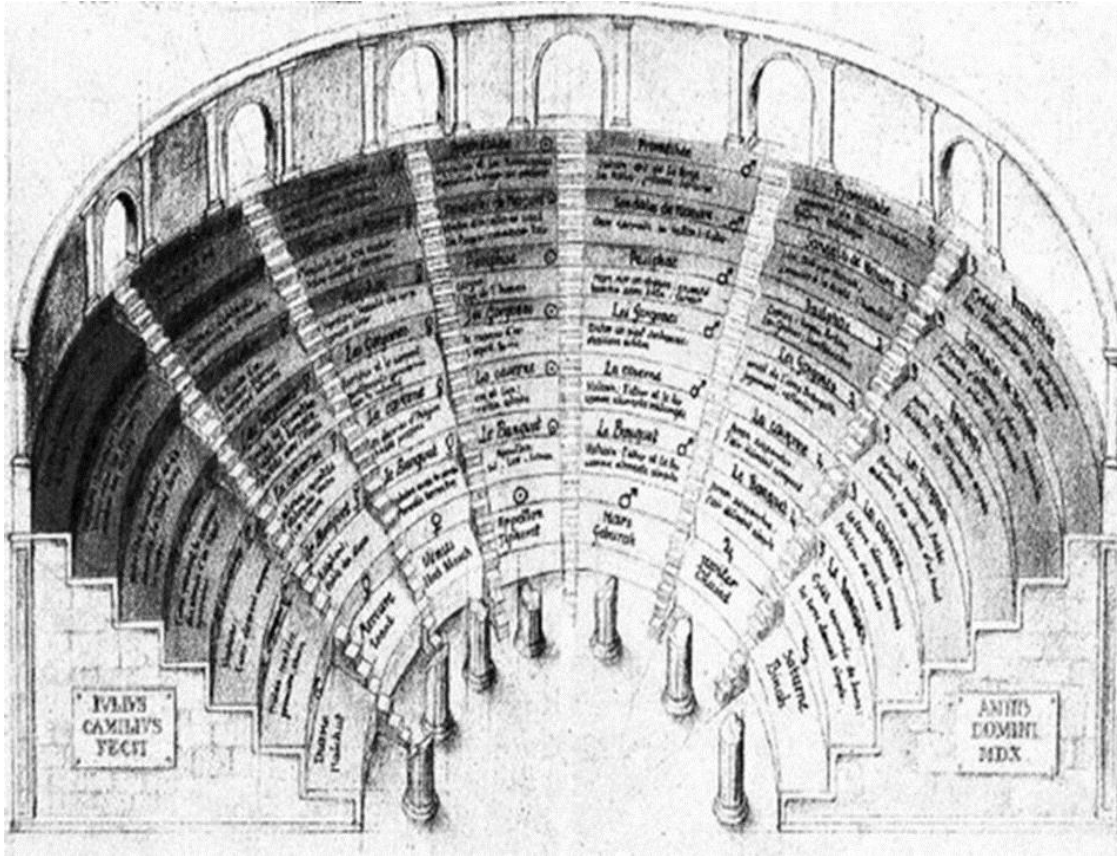
AR adds 3D objects to a real environment (AR flashcards?)



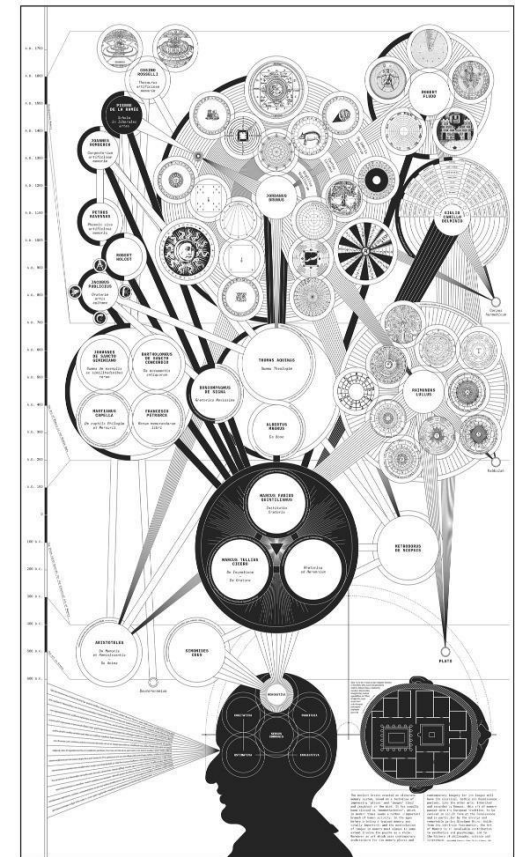
VR completely immerses into a 3D world (VR flashcards?)



Explain your method: loci



Camillo, 1511 AD in Yates, 1966



Franchi, 2013

Systematic review: PRISMA

Identification	Screening	Selection/ Inclusion
Total number of records published until February 8th, 2023 (n=188)	Records (170) removed:	N=19 full-text potentially relevant articles
Records identified from:	N= 44 duplicate records	N=7 excluded after full-text screening (reason: out of RQ scope)
Web of Science:	N=119 out of the RQ scope	N=12 full-text records included in the review
(n = 60)	N=4 excluded as own research	quantitative (n=5), mixed-method (n=5), and qualitative (n=2)
Scopus:	N=17 excluded as a non-empirical category (state-of-the-art)	
(n = 112)		
Semantic Scholar API:		
(n=16)		

RQ: What does the literature say about using AR/VR-enhanced spatial mnemonics/ spatial memory in L2 education from 2013 to 2023?

Search by terms: ("mnemonic*" OR "method of loci" OR "memory palace" OR "loci") AND ("learn" OR "acquisition" OR "train*" OR "recall" OR "retriev*" OR "memoriz*" OR "memoris*") AND ("augmented" OR "virtual" OR "immers*")

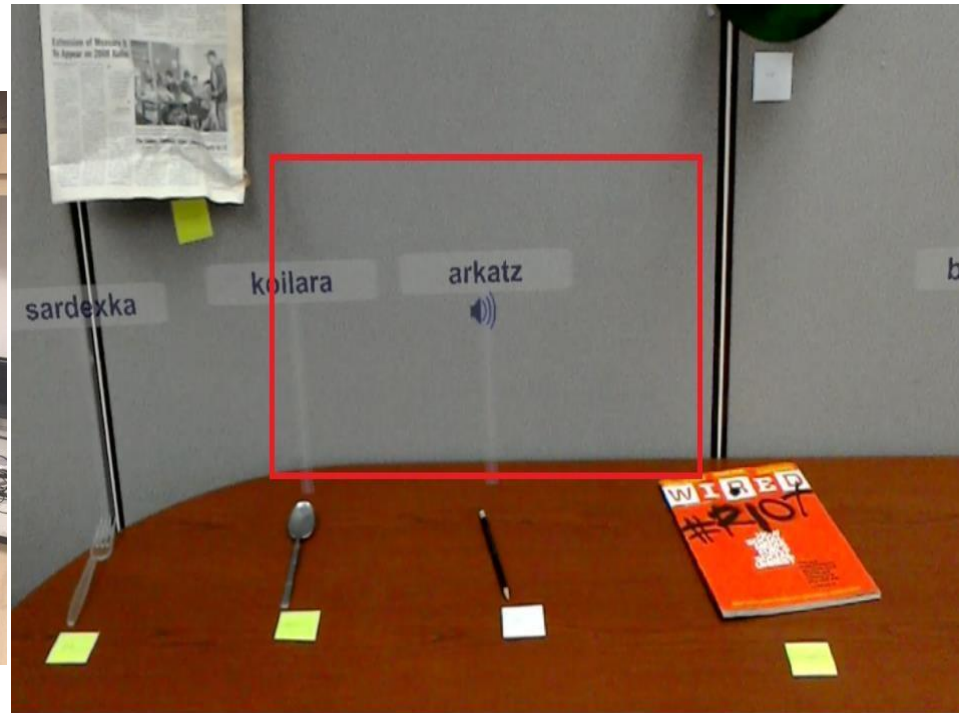
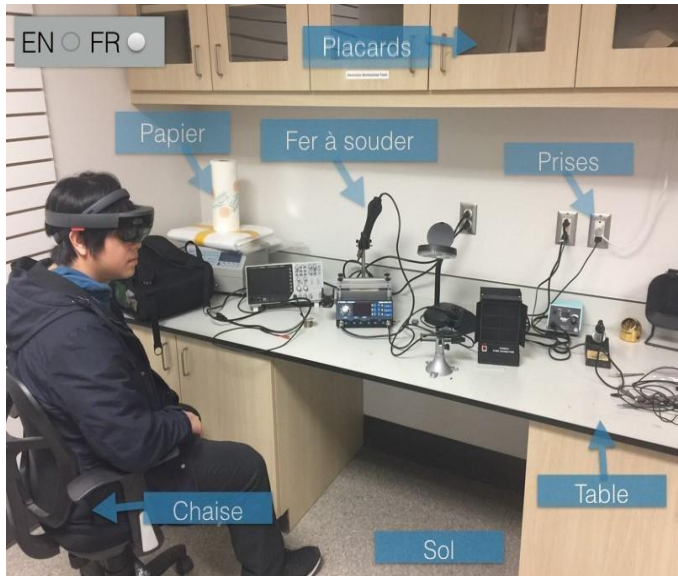
Systematic review

Country of study	L1	L2, sample (maximum N=80) and key findings	Lang. domain	Tech. and methodology	Authors
Hong Kong	Not available	L2 English. Qual findings: game players demonstrated a positive attitude toward learning from an AR vocabulary game	voc. acq.	AR block builder game + spatial component	(Lee et al., 2019)
Taiwan	Mandarin Chinese	L2 English. There was a significant difference between post-test scores with the EG performing better	voc. acq. (idioms)	AR spatialized app. vs non-tech. location-based training	(Chew et al., 2018)
USA	Multiple, but most were proficient in English	L2 Basque. Better recall was registered in the EG compared to traditional flashcards in immediate and delay tests	voc. acq.	HoloLens AR + real-time mapping vs traditional flashcards	(Ibrahim et al., 2018)
Malaysia	Not specified, but most likely Malay	L2 Arabic. "AR tech. is attractive" received the highest score. Students thought that AR flashcards improved their spatial skills	voc. acq.	AR flashcards in and outside classroom	(Zainuddin et al., 2018)

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Ibrahim et al., 2018



AR: An illustrative mockup of a language learner using the Arbis Pictus system

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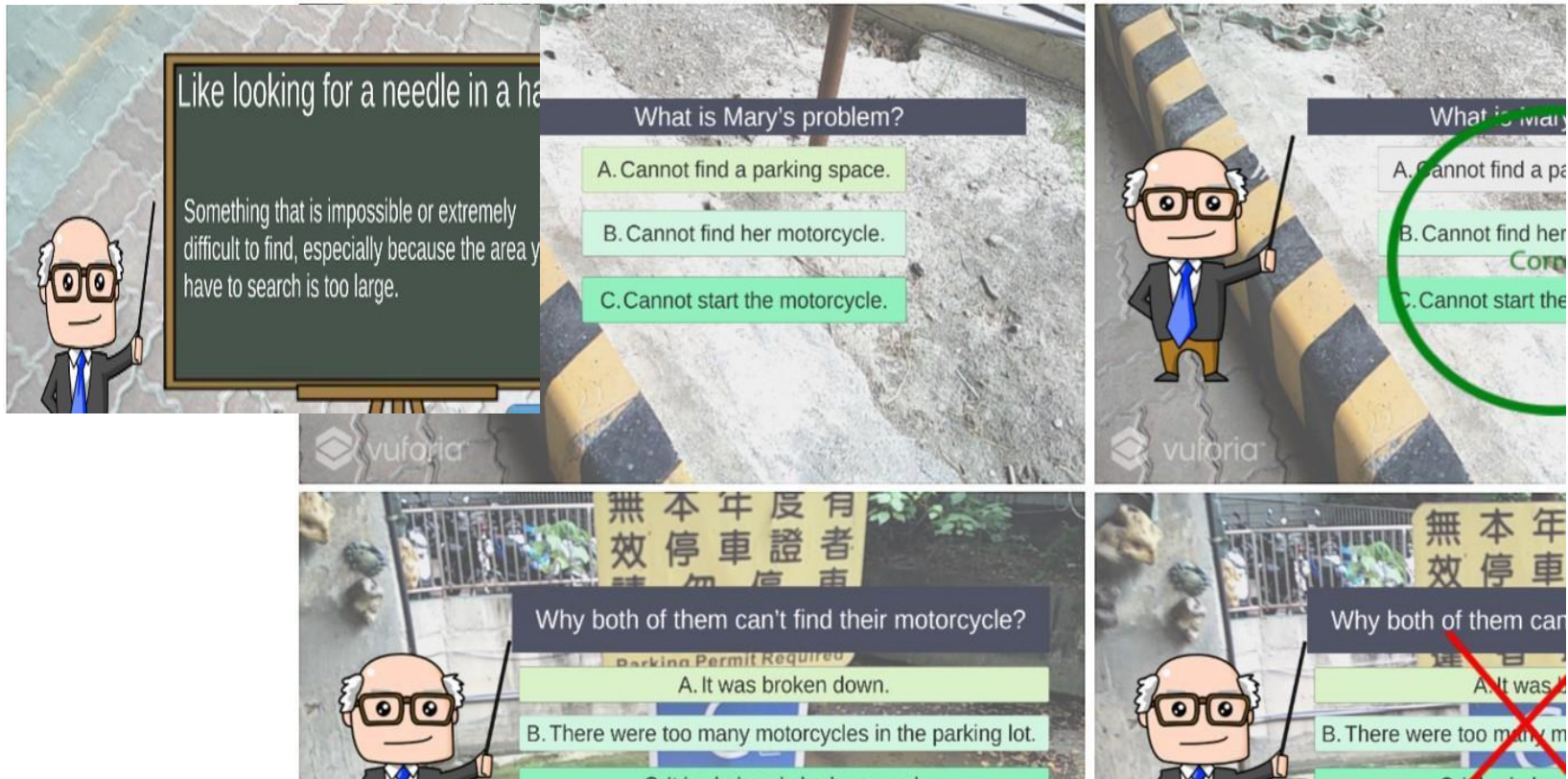


AR: Students scanning the trigger image

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Chew et al., 2018



AR app. Learning location around the campus.
Dialogue of the idiom. Meaning of the idiom +
Scaffolding technique

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Lee et al., 2019



AR game for the word “crocodile” under the vocabulary category

Systematic review

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Saudi Arabia	Arabic	L2 English. Students using the VR game had a higher vocabulary acquisition compared to the CG	voc. acq.	VR game vs a traditional book-based method	(Alfadil, 2020)
Sweden	Swedish	L2 German. The 3D spatial context significantly improved the retention	gram.+ voc. (gender)	MOL-based 3DVR vs printed cards	(Hagström & Winman, 2018)
USA	English	L2 Chinese. The iVR had a higher accuracy compared to words learned by traditional methods	voc. acq.	iVR game vs a traditional list of word pairs	(Legault et al., 2019)

Fuhrman et al., 2021

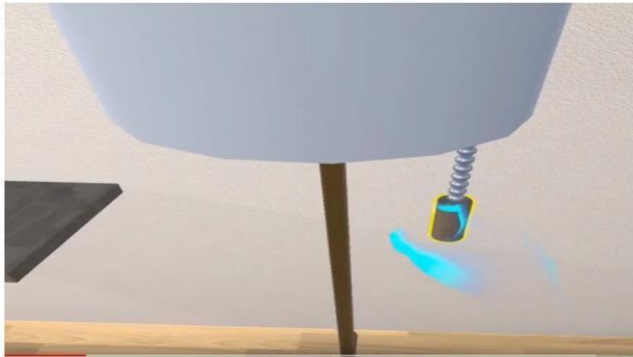


Figure 2A: Lamp

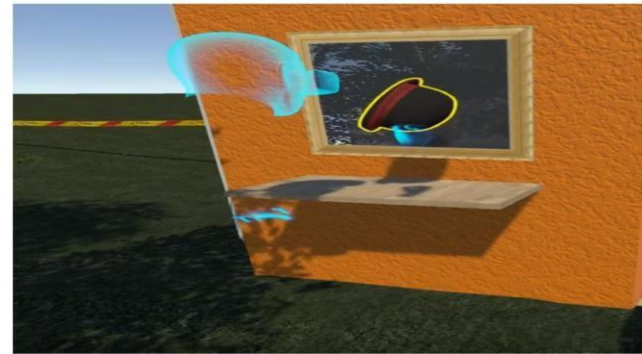


Figure 2B: Hat



Figure 2C: Box



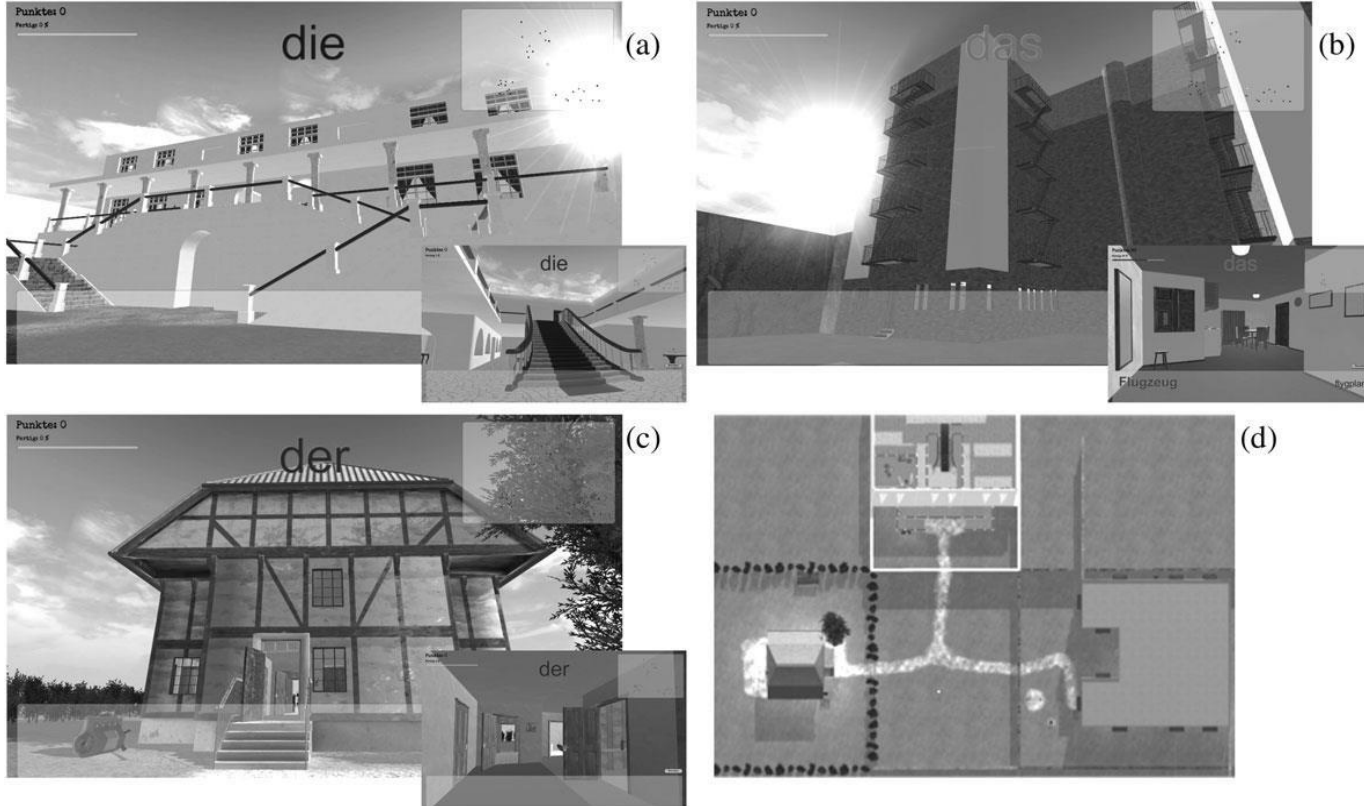
Figure 2D: Book

Manipulation movements with objects in the virtual environment (external viewer point of view)

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Hagström & Winman, 2018

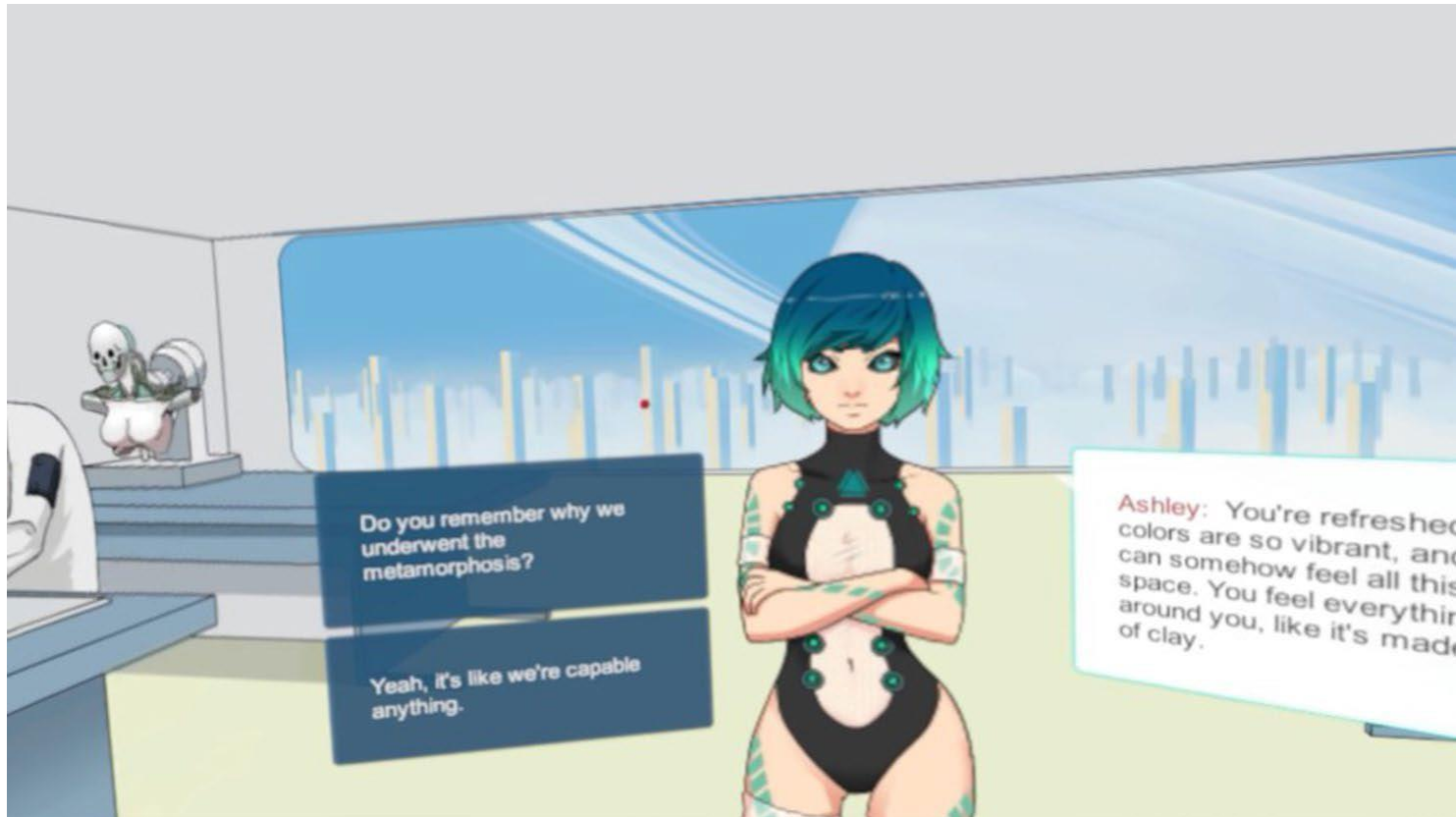


Screenshots of the three virtual environments used: (a) die, (b) das, (c) der, and (d) complete floor map

Systematic review

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Canada	Multiple but proficient in English	L2 French. The VR students showed improvement in retention, and reproduction vs control group. The LiVR group got the highest scores for recognizing the vocabulary	voc. acq.	Highly immersive VR vs Low immersive VR vs 2D screen	(Papin & Kaplan-Rakowski, 2022).
China	Mandarin Chinese	L2 English. The VR group showed higher scores. Students <i>delighted</i> with the virtual features of the game	voc. acq.	VR game vs PC screen game	(Lai & Chen, 2021)
China	Chinese	L2 English. The VR group outperformed the control group in the post-tests. No differences in emotional engagement	voc. acq.	VR vs video-supported learning	(Li et al., 2022)
Cyprus	Greek	L2 Italian. The VR group showed higher engagement, but the results were not significantly different from the control group	voc. acq.	Immersive VR vs a mobile app	(Nicolaidou et al., 2021)

Lai & Chen, 2021

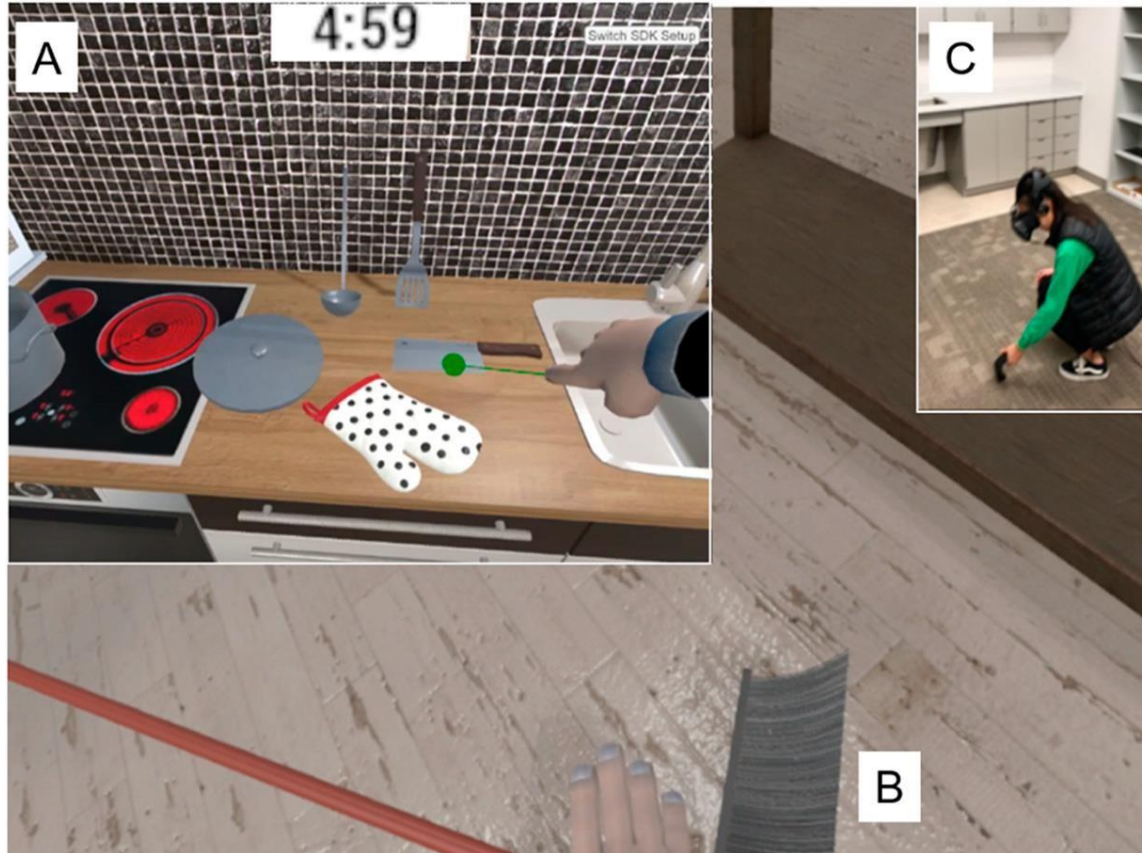


Choosing a response in a Sci-Fi gameplay

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Legault et al., 2019



VR Kitchen interactions. Participants point to any item and hear their corresponding words

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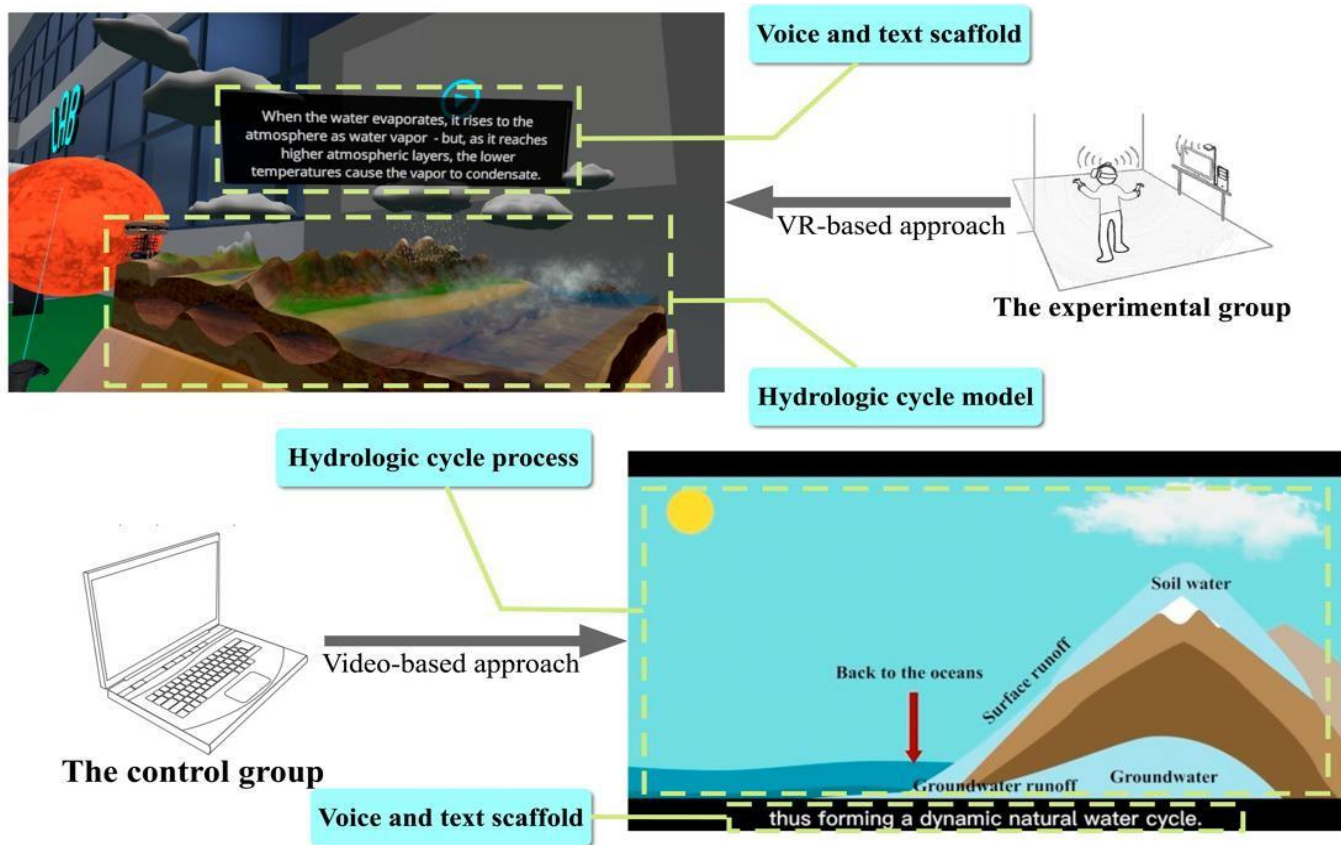


VR game *House of Languages* to facilitate vocabulary acquisition

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Li et al., 2022



The hydrologic cycle in VR resource *Edmersiv* which was adapted to HTC Vive Pro2

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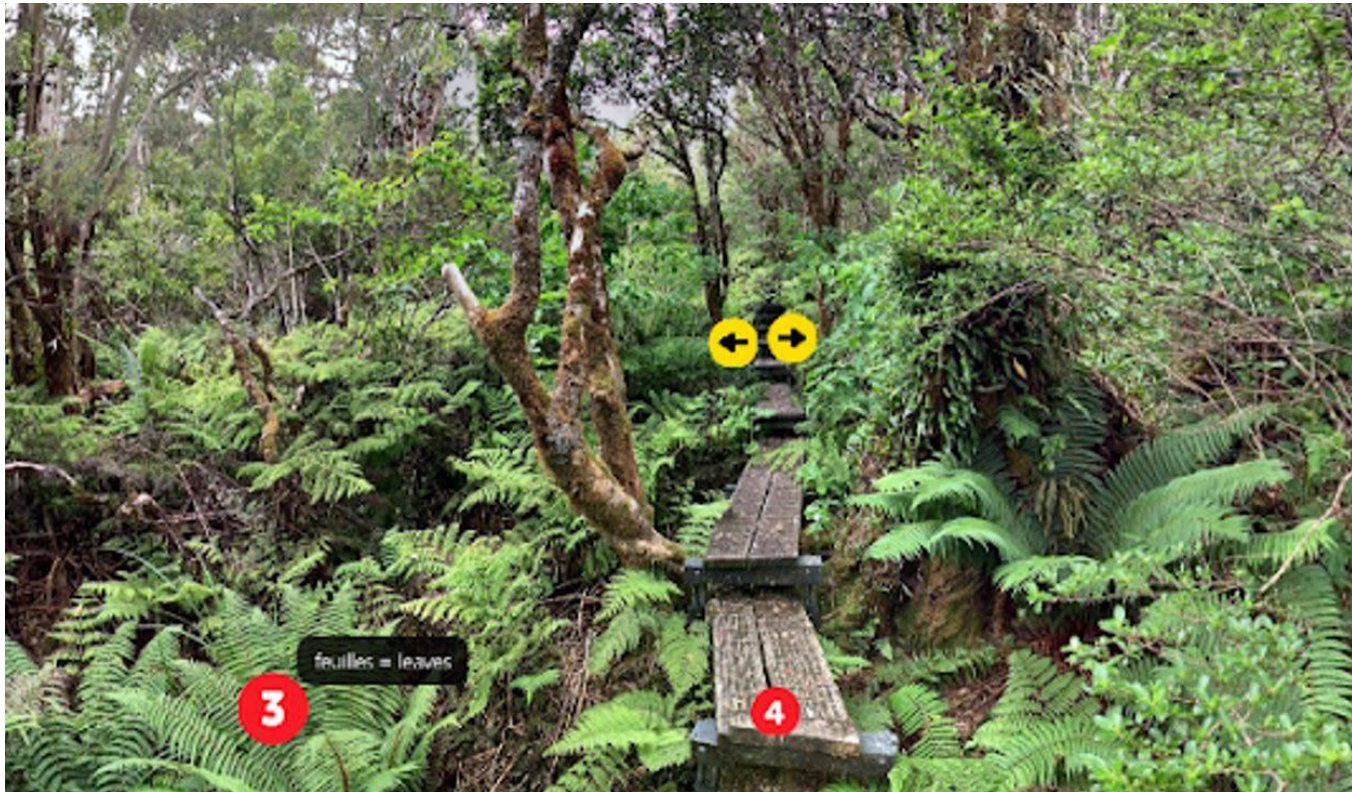


Screenshot of interface in the MondlyVR application

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Papin & Kaplan-Rakowski, 2022



Screenshot of the sample pre-experiment practice. Number 3 displays the target word with its translation

Summary of results and conclusion

Studies found –
vocabulary
memo (R, Wr.,
Sp. and Gen.
Skills – not
eligible)



Few data sets
were found
confirming the
niche for
further
research

Spatial
presence
may enable
cues to
memory



Game-like
experiences
may have
affected
intrinsic
motivation

Combination of
spatial memory
training and
immersive
technologies



Empirical
recall
efficiency in the
context of
gender and **age**
– future work

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Are you ready for your own systematic literature review for the final project? Find the niche, prepare some data, and schedule a tutorial. For questions, please contact me at alexia.larchen@uv.es

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