

From Real-World Contexts to Intelligent Pedagogical Support: Advancing EFL Learning Through MALL and Generative AI

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Language learning in the context (Herrington & Herrington, 2008)



Textbook learning

Unit 9 At the market

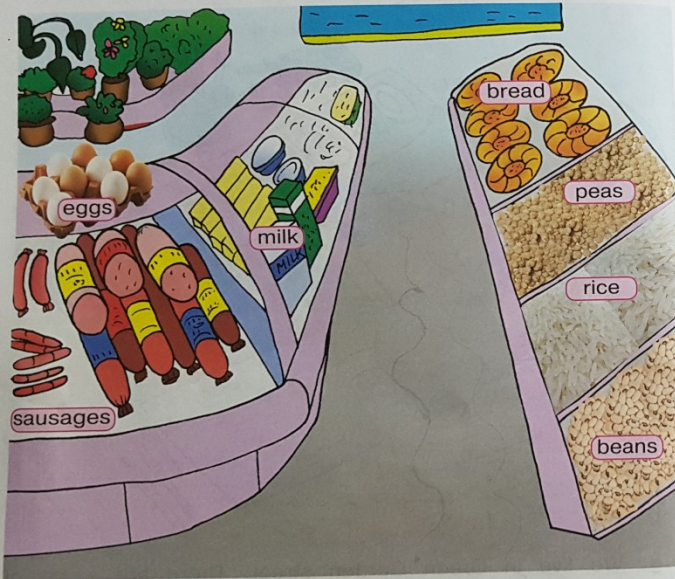
Lesson 1 They look nice.

1 Listen and repeat.

2 Play "Find the fruits and vegetables".

3 Look, listen and repeat.

delicious,
yummy,
yucky



4 Look and make sentences.

Unit 9 At the market

Lesson 2 How much are they?

1a Listen and repeat.

2 Play "Fruit and vegetable rope jump".

3 Play "Shopping game".
e.g. A: Can I help you?

B: I'd like sausages, please.

A: Here you are.

B: Thank you.

4 Look, listen and repeat.



two kilos
of potatoes



a kilo
of tomatoes



500
soums
a kilo



a hundred
soums



two hundred
soums



five hundred
soums

5a Listen and complete
the dialogues.

5b Play "At the market".

A: Can I help you?

B: I'd like plums, please.

A: Sorry, we don't have plums
today.

A: Can I help you?
B: I'd like plums, please.

A: Yes, we have plums.

B: How much are they?

A: 700 soums a kilo.

B: Three kilos, please.

A: Here you are.

B: Thank you.

Learning in the real world



Learning: textbook vs authentic contexts

- Textbook learning
 - abstract
 - disconnected from the real-life
 - decontextualized knowledge
 - not easy to retrieve knowledge in real-life contexts
- Learning in authentic contexts
 - meaningful and relevant
 - reflect the way the knowledge will be used in real life
 - reflect activities that students carry out in the real world

Unfamiliar / familiar context



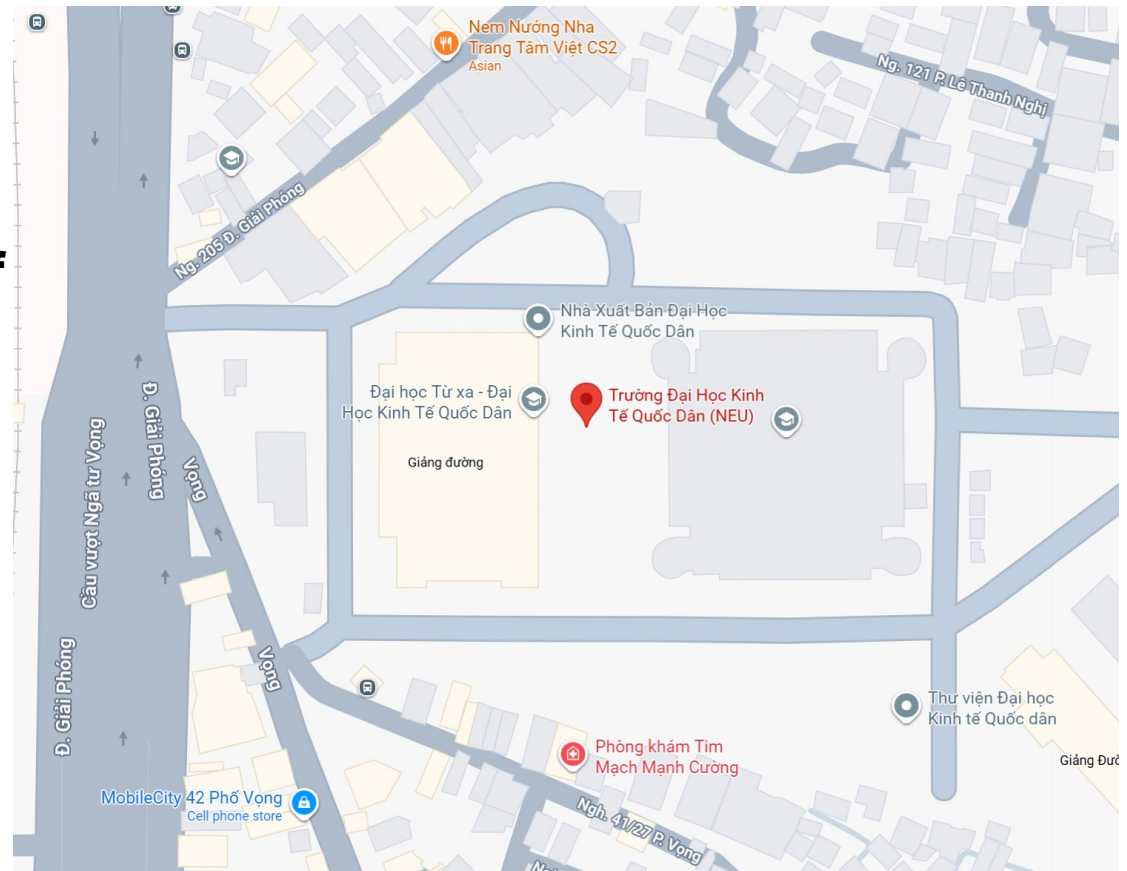
Unfamiliar context

International Conference on Educational Technology and Artificial Intelligence: Educational Transformation in the Age of Artificial Intelligence

National Economics University - College of Technology

207 Giai Phong, Bach Mai, Hanoi

Conference hall: **Hall G, Building A1**



Unfamiliar context

- How to reach the University and hotel?
- How long does it take?
- Where is entrance to the campus?
- How to find the building?
- How long does it take?
- Any shortcuts and shady routes?
- ...

Unfamiliar context



NEU CAMPUS

Dai Co Viet Road

Dai Co Viet Road



The cultural schema theory

- Nishida (1999): we gain knowledge from our surroundings; such knowledge would be organized and stored in our brain as cultural schemata. After we enter the environment many times, these schemata are constantly updated. Finally, information and experiences related to these environments are stored in our brains as background knowledge, thus, we become familiar with the environments.

Familiar context

- Creates advantages in comprehension and application of new knowledge (Skehan, 1998; Shadiey, Hwang, Huang & Liu, 2017; Shadiey, Hwang, Huang & Liu, 2018).
- Helps cognitive processes, e.g. information processing and manage cognitive load (Shadiey, Hwang, Huang & Liu, 2017; Shadiey, Hwang, Huang & Liu, 2018).

Example

- Our experience and existing information about the environments could become good learning inspiration and serve us rich learning ideas
- When we enter such environments, the stored schemata could guide our behavior
- We do not need to spend extra energy to deal with cognitive load from environments, this helps direct attention to more important parts of learning activities

Mobile-assisted language learning

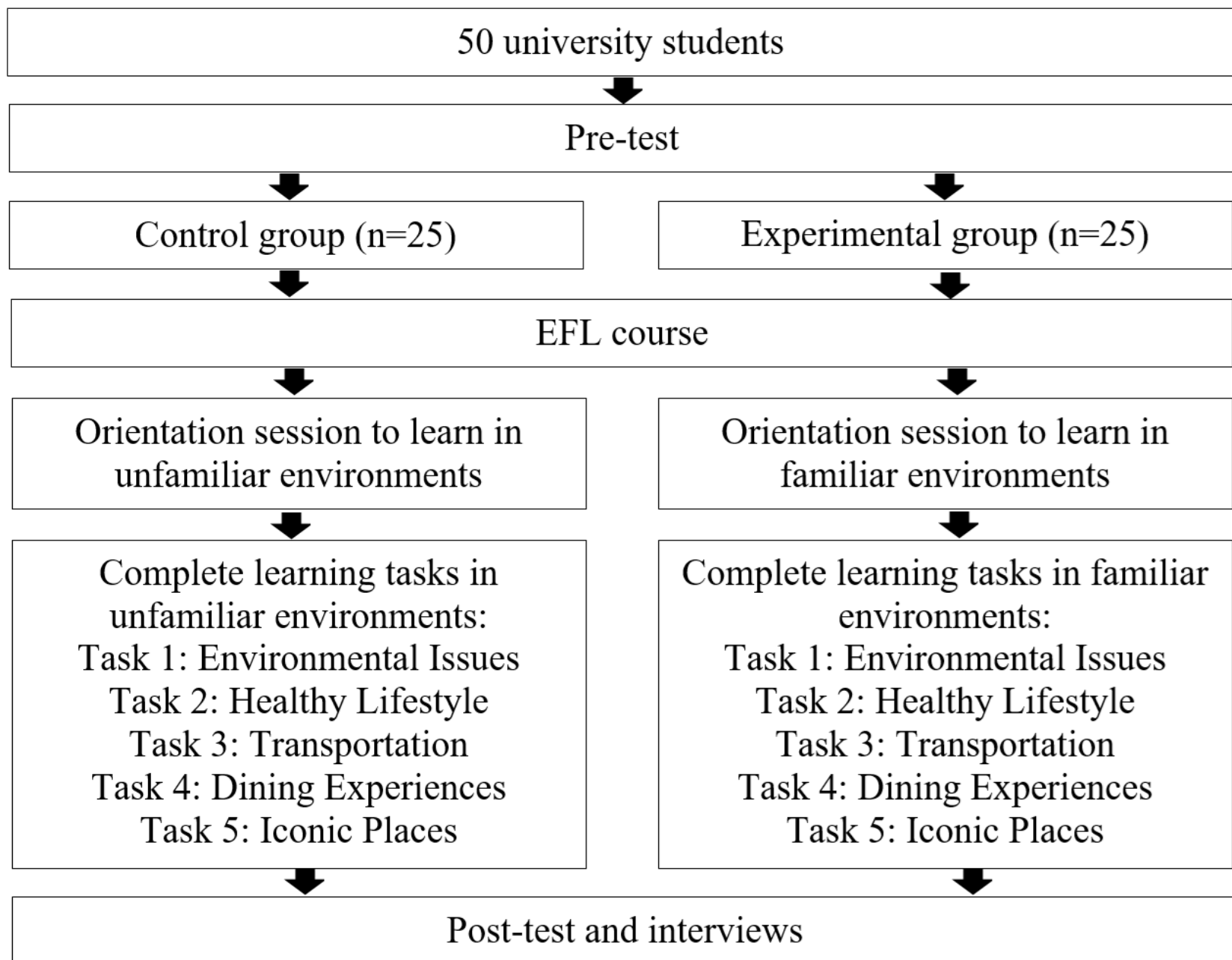
Advantages

- Seamless learning experience
- Learn anywhere, anytime
- Create and share multimodal content
- Access to rich learning resources

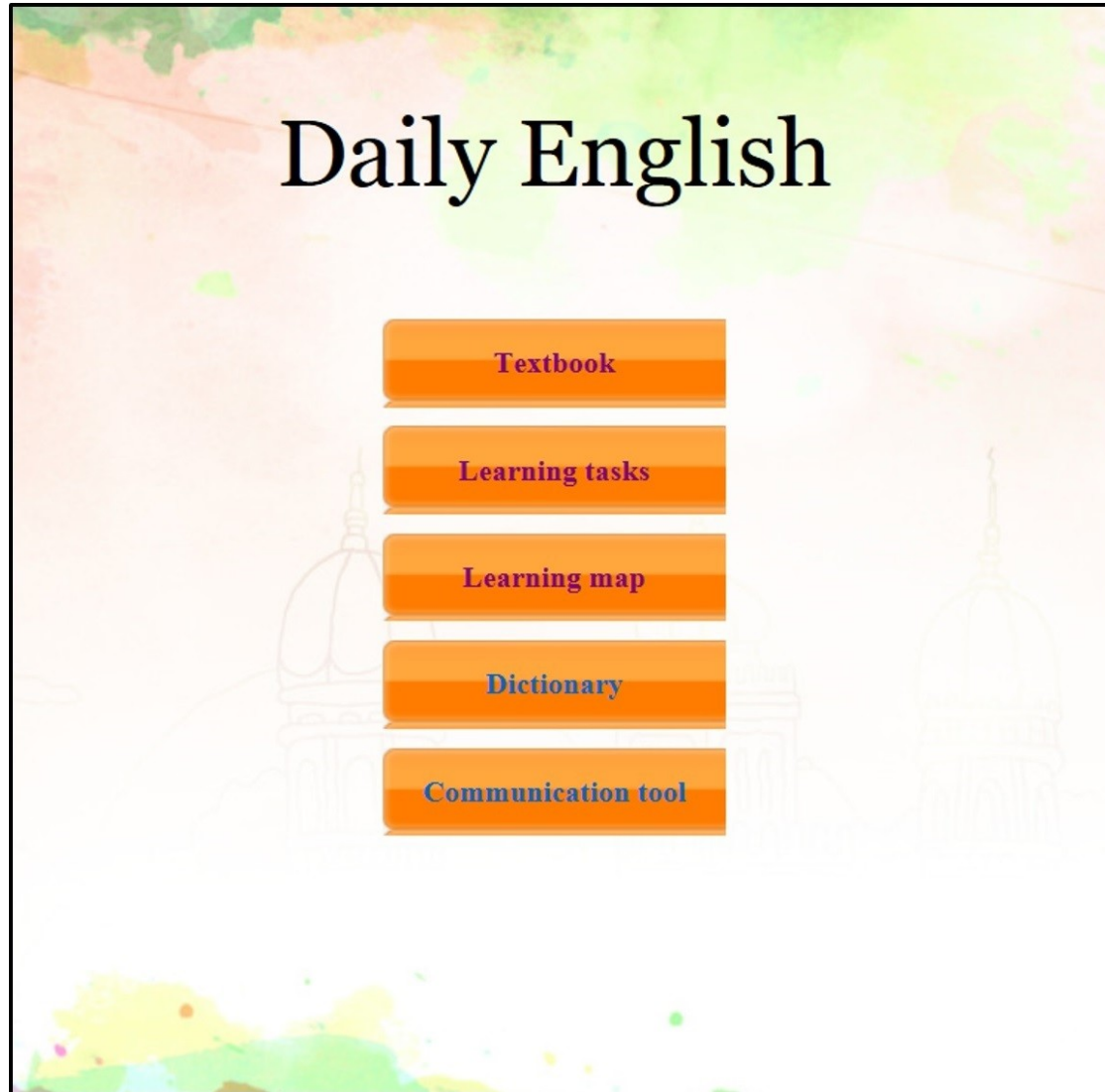


Research focus

Whether post-test EFL writing proficiency and writing task performance differ between the experimental group, which participated in MALL in familiar environments, and the control group, which learned in unfamiliar environments



Learning system



Learning system: learning material and task

Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5

Lesson 1: Doing Housework

Words and Phrases:

messy 凌乱的 dust 除去灰尘
bathroom 卫生间 vacuum 用吸尘器打扫
furniture 家具 scrub 擦洗

Dialogue:

A: The room is so messy and the floor is dusty
B: How can i help out ?
A: Well, i will vacuum while you dust the furniture. ok?
B: sure
A: And the bathroom needs a good scrubbing.
B: I will do it. You can take a break.

Extended text:

Do you like the environment you are living in, for example, your neighborhood? In your daily life, did you notice some changes in the environment you are living in? Have you ever seen some movies or listened to some lectures concerning the relationships between human beings and the environment you are living in? Share the story with us.

Extended vocabulary:

plastic 塑料 trash 垃圾桶
air pollution 空气污染 water pollution 水污染
spitting 随地吐痰 littering 乱扔垃圾

Task 1 Task 2 Task 3 Task 4 Task 5

Task 1: Environmental matters

Please go to a place where you think there are many environmental issues. What are the most serious environmental issues you can find in that place? How to solve them?

Steps to follow:

- Please tell us where you have chosen to go and describe the place in detail.
- Send location of that place using QQ, so that everyone knows where the place is.
- Take pictures of this place to show where it is and send by QQ (at least 2 pictures).
- Please describe the environmental problems here (as many as possible). What is the most serious environmental problem of this place?
- Give evidence. Please support your comments with photos and send by QQ (at least 2 pictures).
- What are the negative impacts of these environmental problems on people or communities around?
- What are your suggestions to improve these environmental problems?

!! Your described problems and their solutions should be original. In addition, please provide as much details as possible for every step of this task. Your details should be very specific, related to the location and context, personal and emotional.

[Example...](#)

Learning system: map



Data collection

- Pre-test & post-test
 - College English Test (18 items / Scores: 100 max)
 - English–Chinese and Chinese–English phrase translation
 - Chinese–English and English–Chinese sentence translation
 - Essay writing
- Tasks
 - amount of writing, content quality, organization, creativity, grammar, and vocabulary (a 5-point scale)
- Interviews
 - 10 randomly selected students from both groups (open-coding)

Results: EFL writing proficiency

Table 1. ANCOVA results for the post-test comparison

Group	<i>M</i>	<i>SD</i>	<i>F</i>	Sig.	η^2
Experimental group	78.71	6.22	4.802	.033	0.093
Control group	74.72	8.05			

Results: Writing performance

Table 2. ANCOVA results for the tasks comparison

Dimension	Group	Task 1		Mean rank	Z-value	Task 2		Mean rank	Z-value	Task 3		Mean rank	Z-value	Task 4		Mean rank	Z-value	Task 5		Mean rank	Z-value
		M	SD			M	SD			M	SD			M	SD			M	SD		
Amount	EG	3.88	.88	31.38	−2.951*	4.48	.51	35.18	−4.893*	4.24	.66	34.24	−4.403*	4.14	.64	33.04	−3.871*	4.16	.75	33.86	−4.190*
	CG	2.96	1.14	19.62		3.00	1.00	15.82		2.96	.93	16.76		3.30	.74	17.96		2.96	.89	17.14	
Content	EG	3.88	.62	32.56	−3.539*	4.04	.35	34.44	−4.533*	4.10	.43	34.62	−4.530*	3.98	.49	31.76	−3.147*	4.10	.35	33.70	−4.221*
	CG	3.14	.67	18.44		3.14	.70	16.56		3.14	.70	16.38		3.48	.53	19.24		3.40	.58	17.30	
Organization	EG	3.84	.49	30.86	−2.671*	3.94	.30	35.30	−5.008*	3.94	.30	35.60	−5.116*	4.00	.29	33.94	−4.388*	3.92	.34	33.80	−4.363*
	CG	3.34	.72	20.14		3.08	.57	15.70		3.16	.45	15.40		3.40	.46	17.06		3.26	.50	17.20	
Creativity	EG	3.66	.45	34.68	−4.547*	3.82	.43	35.48	−4.976*	3.90	.50	35.10	−4.778*	3.90	.39	32.98	−3.799*	3.86	.37	31.64	−3.205*
	CG	2.68	.70	16.32		2.80	.64	15.52		2.98	.53	15.90		3.34	.51	18.02		3.32	.61	19.36	
Grammar	EG	3.86	.49	33.00	−3.801*	3.98	.47	34.26	−4.370*	3.90	.41	34.26	−4.428*	3.98	.44	31.90	−3.339*	4.14	.34	33.68	−4.212*
	CG	3.24	.50	18.00		3.24	.48	16.74		3.24	.46	16.74		3.46	.54	19.10		3.52	.51	17.32	
Vocabulary	EG	3.96	.45	32.50	−3.544*	4.02	.34	34.78	−4.672*	4.02	.3	34.98	−4.753*	4.10	.41	31.76	−3.236*	4.26	.25	35.36	−5.096*
	CG	3.34	.61	18.50		3.32	.48	16.22		3.24	.52	16.02		3.70	.41	19.24		3.56	.46	15.64	

Note. EG = experimental group; CG = control group.* $p < .005$.

Interview data analysis results

Category	Code	Definition	Some extracts with positive and negative opinions derived from interviews
1. Emotional engagement	a. Interest	A student's feeling of wanting to learn something.	<i>Positive:</i> I was really interested in completing a task at the university library because it is a place I am very familiar with. That familiarity sparked my interest and made me excited to learn English there. <i>Negative:</i> I had to complete a language learning task in a cafeteria outside of campus, an environment I was not familiar with. This unfamiliarity significantly dampened my enthusiasm.
	b. Enjoyment	A student's state of taking pleasure in learning.	<i>Positive:</i> Learning English on the sports field was incredibly enjoyable; the familiar and energetic atmosphere made completing my task feel like a fun and refreshing break from traditional study methods. This environment, where I have spent numerous hours before, allowed me to focus more on applying what I have learned. <i>Negative:</i> Trying to learn at a bus stop outside campus was frustrating; the unfamiliar setting, with its distractions and lack of resources, made it impossible to enjoy or focus on my learning tasks.
	c. Relaxation	A student's state of being free from tension and anxiety.	<i>Positive:</i> Completing my English task in the cafeteria near the back gate, a spot I frequently visit to relax, made the learning process feel more relaxed and effortless. The familiarity of the environment eased my anxiety, and knowing where everything was allowed me to efficiently utilize learning resources, contributing positively to my language practice and overall learning outcomes. <i>Negative:</i> Studying in the iconic place near campus, which was unfamiliar and crowded, proved to be counterproductive. The novelty of the environment and the continuous distraction from people and events made it hard to relax or concentrate. This unfamiliarity required additional effort to adapt and find resources, draining the energy that could have been spent on learning, leading to a tense and inefficient efforts from me.

Interview data analysis results

2. Cognitive engagement	a. Confidence	A student's belief that he/she can have faith in learning.	<i>Positive:</i> Learning in the familiar surroundings of the university garden boosted my confidence, as the known environment and accessible resources empowered me to trust in my language learning abilities and take on new challenges without hesitation. <i>Negative:</i> Attempting to complete a task in the unfamiliar environment of a city park left me feeling uncertain and lacking in confidence, primarily because the unfamiliar setting made it difficult to find a quiet spot or any relevant resources, thus shaking my faith in my ability to learn effectively there.
	b. Engagement	A student's ability to engage in an effective learning process.	<i>Positive:</i> In the familiar confines of the campus library, my engagement with the learning tasks was significantly enhanced. Knowing exactly where to find the resources I needed allowed me to focus on completing my task deeper, maintaining a high level of focus and interaction with the material. <i>Negative:</i> At an on-campus diner, which I never visited before, my usual level of engagement plummeted. The unfamiliar setting and the time spent looking for resources, leading to a fragmented and less effective learning sessions.
	c. Perceived content quality	A student perceptions regarding his/her content quality.	<i>Positive:</i> The quality of my created content when studying in my favorite part of the university garden was noticeably higher. The familiarity of the location, coupled with easy access to a wide range of resources, provided a solid foundation for producing good and comprehensive content. <i>Negative:</i> While attempting to complete a task in unfamiliar corner of my university campus, the unfamiliarity with the environment and the lack of my awareness of available resources negatively impacted the quality of my content. The effort required to locate information to think critically led to rushed and less thorough work.
	d. Amount of created content	Amount of content created by a student.	<i>Positive:</i> Studying in familiar environment of our campus, I was able to generate a substantial amount of content. The environment's familiarity facilitated a more productive work and creation of richer content. <i>Negative:</i> In the unfamiliar setting of a campus park, my content creation was markedly lower. The lack of known resources and the need to first familiarize myself with the area consumed valuable time that could have been spent on task completion, resulting in diminished output.

Interview data analysis results

3. Learning environment	a. Resources	Available objects, people, situations, and scenarios in learning sites.	<i>Positive:</i> In the familiar environment, I knew exactly what resources (such as objects, people, situations, and scenarios) were available for completing my task because I was familiar with that setting. Learning in such an environment enabled a rich and informed experience. <i>Negative:</i> In an unfamiliar environment, the lack of familiarity meant I did not know which resources (including objects, people, or specific situations) were at my disposal, or where exactly they could be found. This uncertainty about the surroundings hindered my ability to effectively complete my learning task, significantly impeding the learning process. This was especially important because, in our learning tasks, we were asked to describe different aspects such as environmental issues or healthy lifestyles based on the available resources in the learning environment. The inability to easily access and understand these resources in an unfamiliar setting made fulfilling these task requirements particularly challenging.
	b. Time	Amount of time a student spent on completing a task.	<i>Positive:</i> Completing tasks in a familiar environment saved me a significant amount of time, as my prior knowledge of the setting allowed for quick orientation and immediate commencement of my work. <i>Negative:</i> Navigating the unfamiliar setting consumed much of my study time, as I had to first familiarize myself with the new surroundings before even starting on my learning tasks, delaying my progress.
	c. Opportunity	A set of circumstances that made a student to learn.	<i>Positive:</i> The familiar setting provided ample opportunities for real-world language practice, thanks to the predictable scenarios and interactions I was already accustomed to, enhancing my learning effectiveness. <i>Negative:</i> The new environment offered limited opportunities for practical language application, with unfamiliar scenarios and a lack of interactive situations slowing down my learning experience.
	d. MALL	Easy to use	Utilizing mobile technology felt seamlessly integrated into my study routine, with easy access to Wi-Fi and comfortable spaces for completing a task, making the technology incredibly useful. In addition, MALL tool was easy to use.

Interview data analysis results

Useful	I really appreciated the mobile learning system for its comprehensive functionality; it offered a wealth of learning materials, clear instructions, and engaging tasks that made studying more effective.
Flexibility and Accessibility	The mobile learning system really changed how I learn languages. It let me study whenever and wherever I wanted, making my learning much easier and more flexible.
Multimedia content	The system's ability to assist in creating multimedia learning content was outstanding. I could easily take pictures, describe them, and thus enrich my learning experience with real-world context.
Online dictionary	The online dictionary feature was invaluable; whenever I struggled with difficult words or spelling, it was my go-to resource for quick clarification.
Map	Using the learning map to locate and engage with content created by my peers not only made learning more interactive but also provided crucial context for understanding the material better.
Sharing	I valued the opportunity to share created content with peers. Reviewing shared content from fellow learners sparked new ideas and insights, encouraging reflection and identifying areas for improvement.
Communication	The communication tool within the system fostered a supportive learning community; I could ask for help or offer assistance to others, making the learning experience feel collaborative and inclusive.

Summary of the study

- Students learning in familiar environments demonstrated significantly higher EFL writing proficiency on the post-test and performed better on writing tasks than those in unfamiliar environments
- Benefits of familiar environments:
 - Emotional and cognitive engagement and learning environment
- Classroom learning vs learning in authentic contexts outside of school
 - the complexity of the learning process which imposes a greater learning burden on students
- Mobile learning system
 - is user-friendly and beneficial for learning of students in both groups

Implementation of GenAI Tools

- Emergence of GenAI Tools
- Availability
- Capacity for various subject domains, including EFL
- Can be used for
 - Answer generation
 - Text completion
 - Translation and summarization
 - Rapid content production

From GenAI Tools to Pedagogical Agents

- Dialogic learning companions
 - Guide learners through questions
 - Scaffold reflection and revision
 - Support sustained interaction
 - Encourage critical thinking
 - Facilitate collaborative meaning-making

Why PAs for learning?

- Use ChatGPT

Passive learning

Reduced reflection

Surface-level interaction

Pedagogical agents (PAs)

- 1 Scaffold learning processes
- 2 Encourage reflection and iteration
- 3 Support motivation
- 4 Facilitate dialogic learning
- 5 Personalize interaction
- 6 Provide structured learning guidance

What GenAI-Powered PAs Can Offer Learners



The pedagogical value is not simply better output.

It is better participation in planning, drafting, revising, and reflecting.

How to create PAs

ChatGPT Plus

- New chat
- Search chats
- Codex
- More

GPTs

- Reflection
- Storyline 3 based video 3
- Storyline 2 based video 2
- Storyline 1 based video1
- Cultural picture description
- Script for digital human
- Script creation for self-intr...
- digital human evaluation
- Text evaluation agent for vi...
- Text evaluation agent for pi...
- Picture evaluation agent
- Feedback for teacher
- Introduce cultural picture
- Explore GPTs

Explore GPTs

GPTs

Discover and create custom versions of ChatGPT that combine instructions, extra knowledge, and any combination of skills.

Search GPTs

Top Picks Research & Analysis Productivity Lifestyle DALL-E Programming Education Writing

Featured

Curated top picks from this week



Video AI by invideo

4.0 ★ - AI video maker GPT (Supercharged with Sora 2) - generate engaging videos with...
By invideo.io



Expedia

Bring your trip plans to life – get there, stay there, find things to see and do.
By expedia.com



Canva

Effortlessly design anything: presentations, logos, social media posts and more.
By community builder

My GPTs

+ Create

Second step

First step

Pedagogical agents in authentic contexts contexts

- A pedagogical agent can act as an intelligent learning companion by providing:
 - Prior knowledge activation and task preparation
 - Context-sensitive guidance
 - Background knowledge, vocabulary, and language support
 - Writing prompts and idea generation
 - Immediate feedback and personalized scaffolding
 - Reflection, revision, and adaptive learning recommendations

Pedagogical agents in authentic contexts: before/during/after visiting

Stage	Role of the GenAI Pedagogical Agent	Main Goal
Before visiting	Prepare, activate prior knowledge, build vocabulary, set observation goals	Readiness and confidence
During visiting	Guide observation, provide contextual support, scaffold writing, answer questions	Context-aware learning
After visiting	Facilitate reflection, provide feedback, support revision, recommend follow-up learning	Consolidation and deeper learning

Our suggestions for the teaching and research community

- Designing MALL activities that extend across both classroom settings and real-world environments
- Learning activities in familiar contexts in which students are able to learn new concepts and apply newly learned knowledge to the real world
- Strategies that allow students to become acquainted with new contexts beforehand should be developed

Limitations and future research directions

- A small sample size
- The short duration of the learning activities
- Develop more advanced functions of our mobile system (e.g. generative AI):
 - to inspire ideas, create multimodal content, monitor performance in real time and provide instant corrective feedback
 - to help learners adapt to unfamiliar learning environments

Q&A



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