Profiling and Understanding EFL University Students' Purposes for Using ChatGPT: A Latent Profile Analysis

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- The Education University of Hong Kong

Presentation Overview

1. Introduction
2. Literature Review
3. Research Questions
4. Methodology
5. Results
6. Discussion
7. Implications
8. Conclusion

Introduction(1)

ChatGPT in EFL – Promises and Pitfalls

- ChatGPT's advanced features – such as text generation, translation, grammar assistance – that hold significant potential for EFL learning
- Effective integration relies on learners' acceptance:
  → They must perceive it as useful, user-friendly, and valuable for continuous use.
- **However, most existing studies:**
  - Adopt a variable-centered approach, focusing on isolated factors such as usefulness
  - Assume uniform usage patterns across all learners
  - Consequently, these studies tend to overlook important differences in learners' goals, strategies, and engagement behaviors.

Introduction(2)

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The Need for a Learner-Centered Approach

- **Analytical Approach:**
  → Person-centered methodology: *Latent Profile Analysis (LPA)*
- **Theoretical Framework:**
  → *Technology Acceptance Model (TAM)*, including:
    - Perceived usefulness
    - Perceived ease of use
    - Intention for continued use
- **Research Objectives:**
  → Identify distinct profiles of ChatGPT use among learners
  → Examine the influence of gender, academic discipline, and self-efficacy
  → Compare technology acceptance across identified learner profiles

Literature Review

ChatGPT Use in English Learning

- Applications include: translation, grammar correction, brainstorming, summarizing, and vocabulary development
- Also used for generating **genre-specific sample texts**

- **Usage patterns vary significantly** among learners

Technology Acceptance Model (TAM)

- Perceived Usefulness (PU)
- Perceived Ease of Use (PEU)
- Intention to Continue Using (ICU)

Learner Variables

- Gender
- Academic discipline
- English self-efficacy

Han et al.(2023); Venkatesh & Bala(2008)

Research Questions

LEFT

1. Learner Profiles

LEFT

What distinct learner profiles emerge based on their purposes for using ChatGPT?

2. Influencing Factors

LEFT

Do gender, academic discipline, and English self-efficacy affect these profiles?

3. Perceptual Differences

LEFT

Do perceived usefulness, ease of use, and intention to continue using ChatGPT differ across profiles?

Methodology(1)

Participants

- 400 Korean university EFL learners
- Age range: 20-25 years
- Diverse academic backgrounds (e.g., Humanities, Social Sciences, Natural Sciences, Engineering)

Instruments

TAM (Technology Acceptance Model) scales:

- Perceived Usefulness (PU)
- Perceived Ease of Use (PEU)
- Intention to Continue Using (ICU)

English Self-Efficacy Scale:

- Focused on reading and writing skills

Purpose of Using ChatGPT(6 factors):

- Obtaining sample texts
- Practicing and preparing for tests
- Writing support and feedback
- Vocabulary learning
- Grammar correction
- Translation

Methodology(2)

Procedure

Data collection:

- Conducted via electronically survey (Google Forms)
- Duration: approximately 3 months

Participant recruitment:

- Through LMS (Learning Management System) and Korean online communities (e.g., Naver Café)

Ethical considerations:

- IRB approval obtained
- Informed consent collected online

Data Analysis

Exploratory Factor Analysis (EFA):

- To extract 6 purpose factors

Chi-square tests:

- To examine the effects of gender, academic discipline, and English self-efficacy

One-way ANOVA:

- To compare perceived usefulness, ease of use, and intention to continue using ChatGPT across profiles

Latent Profile Analysis (LPA):

- To identify 5 learner profiles

Software tools used:

- SPSS, Jamovi, R (tidyLPA)

Results(1)

Descriptive Statistics of Purposes of Using ChatGPT

- Learners mainly used ChatGPT for:
  - **Translating** (KOR–ENG)
  - **Vocabulary enhancement**
  - **Improving writing fluency**
- Less frequently used for:
  - **Test preparation**
  - **Creating study plans**
- Key Finding
  - ChatGPT is predominantly used for refining language output, rather than for strategic or goal-oriented learning tasks.

Descriptive Statistics for the Purposes of Using ChatGPT

Items to measure purposes of using ChatGPT	*Mean*	*SD*
Factor 1. Obtaining samples	2.22	.96
Obtaining sample structures for various writing genres	2.25	1.05
Obtaining sample texts in specific genres	2.20	1.01
Factor2. Practicing and preparing tests	1.91	.86
Requesting explanations for test answers	1.97	1.03
Generating English test items (e.g., grammar, TOEIC, TOEFL etc)	1.97	1.00
Getting suggestions for English Study Plans	1.79	.95
Factor3. Writing and evaluating English texts	2.77	.75
Summarizing English texts	2.60	1.03
Brainstorming ideas for writing	2.63	.99
Getting feedback on writing	2.76	.99
Making English sentences sound more natural	3.06	.89
Factor4. Learning English vocabulary and expressions	3.05	.68
Finding synonyms or antonyms	2.93	.87
Exploring alternative expressions	3.05	.82
Seeking the meanings of English vocabulary	3.17	.82
Factor5. Learning and polishing grammar	2.92	.79
Correcting grammatical errors in writing	3.07	.86
Getting explanations about grammar rules	2.77	.92
Factor6. Translating	3.17	.72
Translating from Korean to English	3.25	.82
Translating from English to Korean	3.08	.81

Results(2)

Results of the Profile Analysis on the Purpose of Using ChatGPT

Model Fit by Number of Profiles

Model	LogLik	AIC	BIC	SABIC	Entropy	Min	Max	BLRT	*p*
2	-2637.18	5312.36	5388.20	5327.91	0.84	47%	53%	374.04	0.01
3	-2581.59	5215.18	5318.96	5236.46	0.85	8%	52%	111.19	0.01
4	-2567.92	5201.84	5333.56	5228.85	0.93	6%	46%	27.34	0.01
5	-2509.24	5098.48	5258.14	5131.21	0.83	6%	30%	117.36	0.01
6	-2437.57	4969.14	5156.74	5007.60	0.86	6%	26%	143.34	0.01
7	-2403.31	4914.63	5130.17	4958.82	0.88	3%	22%	68.51	0.01
8	-2383.74	4889.49	5132.97	4939.41	0.87	3%	22%	39.14	0.01

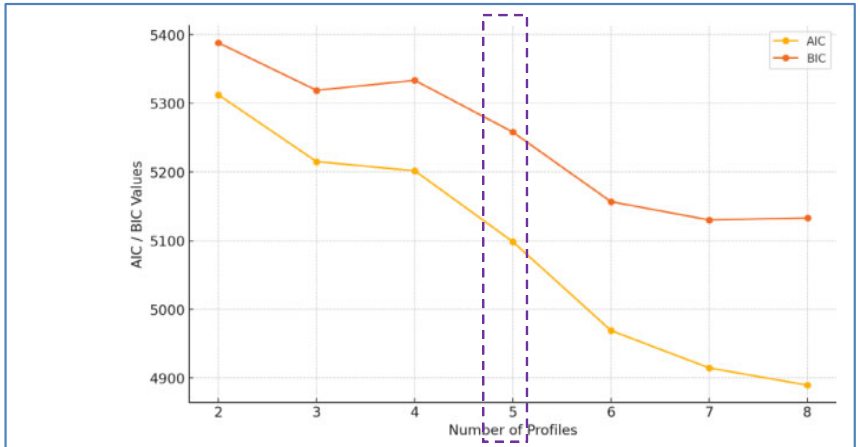

Figure 1. Reduction in AIC/BIC by Different Numbers of Profiles

Model Fit Indicators

- **Best-fit model:** 5-profile solution
- **Model selection criteria:**
  - Entropy > 0.8
  - Significant BLRT
  - Each profile > 5% of the sample

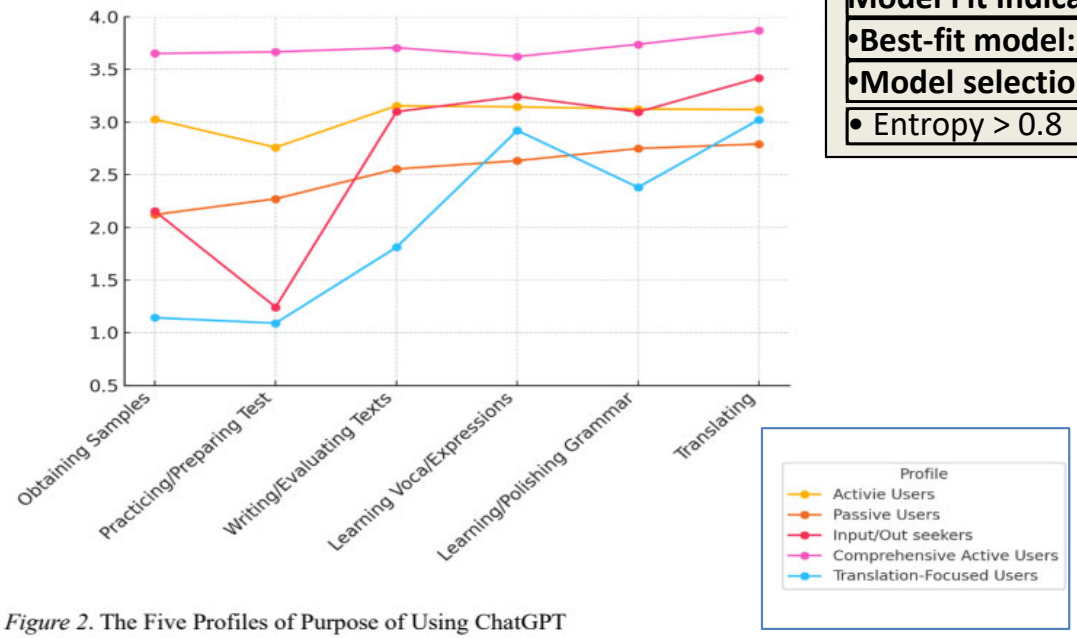

Figure 2. The Five Profiles of Purpose of Using ChatGPT

Five learner profiles were identified based on ChatGPT usage purposes:

Profile	%	Characteristics
1. Active Users	23.0%	High use across most purposes, except test preparation
2. Passive Users	20.5%	Low use across all purposes
3. Input/Output Seekers	29.8%	Frequent use for writing, grammar, translation; less content generation
4. Comprehensive Active	5.8%	Highest use across all categories
5. Translation-Focused	21.0%	Primarily use for translation and vocabulary

Results(3)

Profile Differences by Gender

- **No statistically significant differences** in profile membership by gender
  $\chi^2(4) = .93$, ***p* = .928**
- **Interpretation:**

- Gender is **not a meaningful differentiator(factor)** in ChatGPT usage profiles among EFL learners.

Table 4

Results of Chi-square Test for Gender Differences by Profile

	Active Users	Passive Users	Input/Output Seekers	Comprehensive Active Users	Translation Focused Users	Total	χ^2	*V*
Male	50 (12.5)	43 (10.8)	68 (17.0)	13 (3.3)	43 (10.8)	217 (54.3)		
Female	42 (10.5)	39 (9.8)	51 (12.8)	10 (2.5)	41 (10.3)	183 (45.7)	.87 (4)	.047
Total	92 (23.0)	82 (20.5)	119 (29.8)	23 (5.8)	84 (21.0)	400 (100)		

Note. The numbers in parentheses represent percentages.

Results(4)

Profile Differences by Academic Discipline

- Significant differences across profiles
  $\chi^2(16) = 64.86$, ***p* < .001**, ***Cramer's V* = .40** (→ strong association)
- **Interpretation:**
  Academic discipline is a meaningful factor in distinguishing ChatGPT usage profiles among EFL learners.

Table 5

Results of Chi-square Test for Academic Discipline Differences by Profile

	Active Users	Passive Users	Input/Output Seekers	Comprehensive Active Users	Translation Focused Users	χ^2	*V*
Humanities	13 (3.3)	7 (1.8)	35 (8.8)	6 (1.5)	22 (5.5)		
Social Sciences	15 (3.8)	16 (4.0)	39 (9.8)	2 (0.5)	20 (5.0)		
Natural Sciences	5 (1.5)	6 (1.5)	9 (2.3)	0 (0.0)	16 (4.0)	64.86*** (16)	.40
Engineering	36 (9.0)	29 (7.2)	28 (7.0)	9 (2.3)	16 (4.0)		
Others	23 (5.8)	24 (6.0)	8 (2.0)	6 (1.5)	10 (2.5)		
Total	92 (23.0)	82 (20.5)	119 (29.8)	23 (5.8)	84 (21.0)		

Note. The numbers in parentheses represent percentages; *** $p < .001$

Results(5)

Profile Differences by English Self-Efficacy

- English self-efficacy significantly influenced profile membership
- $\chi^2(4) = 41.60$, **p < .001**, **Cramer's V = .42** (→ strong association)
- **Interpretation:**

English self-efficacy is a **strong predictor** of ChatGPT **usage profiles** among EFL learners.

Self-Efficacy Level	Tendency
High	Input/Output Seekers ↑, Passive ↓
Low	Passive ↑, Input/Output Seekers ↓

Table 6

Results of Chi-square Test for Self-Efficacy Differences by Profile

	Active Users	Passive Users	Input/Output Seekers	Comprehensive Active Users	Translation Focused Users	Total	χ^2	V
Low Group	19 (8.1)	42 (17.9)	22 (9.4)	4 (1.7)	30 (12.8)	117 (50.0)		
High Group	26 (11.1)	9 (3.8)	52 (22.2)	12 (5.1)	18 (7.7)	117 (50.0)	41.60*** (4)	.42
Total	45 (19.2)	51 (21.8)	74 (31.6)	16 (6.8)	48 (20.5)	234 (100.0)		

Note. The numbers in parentheses represent percentages; *** $p < .001$

Results(6)

TAM Factors and Definitions

Factor	Definition	Highest Profile	Lowest Profile
PU	Perceived Usefulness: How helpful ChatGPT is for learning	Comprehensive Active Users	Passive Users
PEU	Perceived Ease of Use: How easy it is to use ChatGPT	Comprehensive Active Users	Passive Users
ICU	Intention to Continue: Willingness to keep using ChatGPT	Input/Output Seekers & Comprehensive Active Users	Passive Users

Key Findings (ANOVA Results)

- All results significant at **p < .001**
- effect sizes ($\eta^2 \approx .08$)
- **Interpretation:**

Learners with more active and engaged usage profiles perceive ChatGPT as **more useful**, **easier to use**, and are **more willing** to continue using it compared to passive users.

Discussion (1)

Learner Profiles & Influencing Factors

- **Five distinct usage profiles**

  → Reflect diverse learning goals & behavioral patterns (Stojanov *et al.*, 2024)

- **Academic background plays a key role**

  → Humanities and Social Sciences majors use ChatGPT more frequently for writing related tasks (Hwang *et al.*, 2020)

- **English self-efficacy positively associated with active use**

  → Higher levels of self-efficacy are associated with greater engagement with ChatGPT (Bin-Nashwan *et al.*, 2023; Bouzar *et al.*, 2024; Zhang *et al.*, 2024)

- **Gender shows no significant influence on profile membership**

  (Sallam *et al.*, 2024; Acosta-Enriquez *et al.*, 2024)

Discussion (2)

Technology Acceptance & Pedagogical Implications

- **Active users** demonstrate higher levels of:
  - Perceived Usefulness (PU)
  - Perceived Ease of Use (PEU)
  - Intention to Continue Using (ICU)

→ These findings align with the **Technology Acceptance Model (TAM)**

(Venkatesh & Bala, 2008; Venkatesh & Davis, 2000)

- **Pedagogical Implications**
  - Adapt instruction to different learner profiles
  - Provide scaffolding for **passive users** and those with **low self-efficacy**
  - Implement **discipline-specific ChatGPT training**
  - Design activities that foster **positive user experiences**

(Lo, 2023; Sarikas, 2023)

Implications(1)

1. Profile-Based Instruction

- Design instruction tailored to distinct learner profiles
- Example:
  - **Comprehensive Active and I/O Seekers** → autonomous, open-ended tasks
  - **Passive Users** → structured guidance and scaffolding

2. Discipline-Specific ChatGPT Training

- Align ChatGPT use with the academic demands of each discipline
- Integrate training into English for Academic Purposes(**EAP) curricula**
- Provide examples relevant to learners' fields of study

Implications(2)

3. Support for Learners with Low Self-Efficacy

- Offer targeted supports:
  - Peer feedback
  - Hands-on workshops
  - Low-stakes practice activities
- Foster resilience and encourage self-directed learning strategies

4. Incorporate TAM Principles into Pedagogy

- Emphasize the usefulness of ChatGPT through clear learning outcomes
- Foster ease of use by encouraging exploratory and low-pressure interactions (Venkatesh & Bala, 2008)
- Promote continued use intention by showcasing successful examples

Conclusion

- Identified **five learner profiles** based on ChatGPT usage.
- **Academic discipline** & **self-efficacy** strongly influenced profiles.
- **Active users** rated ChatGPT as more useful, easier, and worth continuing.
- Results support the **Technology Acceptance Model (TAM)** in EFL.

- Highlights a **learner-centered approach** to AI integration.
- Calls for **differentiated instruction** by learner type.
- Recommends **TAM-based strategies** for underengaged or low-efficacy learners.

"Understanding how diverse learners interact with AI tools like ChatGPT allows us to design more effective, equitable, and engaging EFL learning environments."

Thank you & Q-A Session

Thank you for your time and attention.

We welcome any questions or comments regarding our study.

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