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**EDITED BY  
SIU-TSEN SHEN  
STEPHEN D. PRIOR**

**MADE**  
**2023**

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### Editors-in-Chief

Prof. Siu-Tsen Shen

Department of Multimedia Design

National Formosa University

Email: [madejournal@gmail.com](mailto:madejournal@gmail.com)

Tel: +886 5 6315878

Prof. Stephen D. Prior

Faculty of Engineering and Physical Sciences

Engineering Centre of Excellence

University of Southampton

Email: [madejournal@gmail.com](mailto:madejournal@gmail.com)

Tel: +44 23 8059 8366

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# International Journal of Multimedia Art, Design and Education

**Prof. Siu-Tsen Shen**

Editor-in-Chief

A warm welcome to the fifth edition of the International Journal of Multimedia Art, Design and Education (MADE), an open-access resource dedicated to publishing high quality, peer-reviewed research papers in all areas of design research.

The continuing invasion of the Ukraine by Russian forces has focussed the world's attention on the subject of global tension and war fatigue is beginning to set in. Several countries have expressed a desire to stop funding the war.<sup>[1]</sup>

War fatigue is not new and happens in all protracted campaigns such as WW1, WW2, the Korean War, Vietnam, Afghanistan, etc.

The 'winners' in this respect are the defence contractors and suppliers of weapons. As it is in their interest financially for wars to last as long as possible. This is big business, and national interests are at stake. It is of interest to note that the top 100 defence contractors collectively amounted to an arms revenue of just under US\$600 Bn in 2022.<sup>[2]</sup>

There is a strong ethical debate about the design of weapon systems. Is it ethical to be involved in the design of more efficient weapons that kill?

The revolution in Artificial Intelligence (AI) will no doubt impact this area, with the advent of autonomous robotics systems without an operator. The question will then be posed as to who is responsible for the actions of the robot? Is it the manufacturer, the purchaser or the operator? This will become further unclear when the era of full autonomy is upon us in the next few years.

Our Editorial Board consists of leading design researchers and practitioners from all over the world, all of whom have proved willing to contribute their valuable time to the development of this new journal. To reach the widest possible audience, the journal will be published both online and in print. The online version will be open access, freely available for anyone, anywhere to download, read, distribute, and use, with proper attribution of authorship, for any non-commercial purpose. A printed version of the journal will also be available at cost.

The journal aims to provide an international forum for exchange of ideas and findings from researchers across different cultures, by encouraging research on the impact of cultural factors on design theory and practice. The journal also seeks to promote the transfer of knowledge between professionals in academia and industry. To help make our vision a reality, we invite you to submit your best work to the MADE Journal and to encourage your colleagues to do the same.

In these turbulent times, we all have a responsibility to use design tools to boost economic growth and provide opportunities to the younger generation. These are our future leaders, and together we can overcome the current challenges of post-Covid-19, recession and geo-political tensions in the world.

### **Cenpqy ngf i go gpw'**

The fifth issue of MADE was only possible due to the hard work of the three contributors. Each of the contributors went through an extensive revision/review

process, which resulted in works of excellent quality. The reviewers in the various disciplines spent countless hours on top of their already busy schedules to ensure the works included are of the highest quality. The MADE executive committee not only had the goal of creating this journal, but also served a large role in determining the initial format and general guidelines for the journal. They had online meetings to discuss deadlines, submission, and their careful consideration helped the editorial board avoid a number of pitfalls we could have encountered with this issue. They were also charged with the difficult task of selecting the cover design from an impressive set of submissions. I also need to acknowledge the work of Assisting managing editor, Zhi-Xing Dai, who spent hours discussing policies, formatting, and any other number of other details about the journal with me.

**Tgigt gpegu'**

- [1] 'War fatigue' may cause West to lose interest in Ukraine support (10 March 2022), Aljezeera News. Available from: <https://www.aljazeera.com/news/2022/6/10/ukraine-fears-a-long-war-might-cause-west-to-lose-interest>
- [2] The SIPRI Top 100 arms-producing and military services companies in the world, 2022 (Dec 2022), SIPRI Arms Industry Database. Available from: <https://www.sipri.org/visualizations/2023/sipri-top-100-arms-producing-and-military-services-companies-world-2022>



Prof. Siu-Tsen Shen

Jan 2023

# 摘要

Two-Year-Weekend-Program College Students' Attitudes Toward English Children's Poem Writing (ECPW) in an English Children's Literature Class

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Research on the Usability of Mobile Shopping Application Interface Design

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<sup>1</sup> Department of Applied Foreign Languages, National Formosa University, Professor

\* [chinwang@nfu.edu.tw](mailto:chinwang@nfu.edu.tw)

<sup>2</sup> Department of Applied Foreign Languages, National Formosa University, Assistant Professor

<sup>3</sup> Department of Applied Foreign Languages, National Formosa University, Graduate Student

<sup>4</sup> Department of Leisure & Recreation, National Formosa University, Associate Professor

### Cdutcev'

The study aimed to explore 41 two-year-weekend-program AFL (Applied Foreign Languages) college students' attitudes toward an English Children's Poem Writing (ECPW) activity. The main research question was: What was the two-year-weekend-program AFL college students' perception of the ECPW in terms of children's poetry acquisition, creativity stimulation and imagination development respectively? The sources of data included (a) the students' responses to a 6-point-scaled course evaluation questionnaire along with a box for free comments and suggestions, and (b) their mid-term exam reflection papers with their English children's poems. The results of the present study showed that all the two-year-weekend-program college students tended to agree that the ECPW helped them to learn about children's poetry (M=5.20) and develop their creativity (M=5.35) and imagination (M=5.40), which were supported by the collected qualitative data. Interested teachers may consider incorporating such an ECPW into their own classes to make them more thought-provoking and creative. Interested researchers may consider replicating this study or conduct advanced research pertaining to the impact of the ECPW in various teaching contexts. In this paper, selected students' quotations and English children's poems were shown for the purposes of sharing, discussion, and evidence.

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**Keywords'** Children's poetry, Creativity, English Children's Poem Writing (ECPW), Imagination.

**Relevance to Design Practice** – This research can help promote the benefits of English Language education in terms of creativity and imagination.

### bf cXi W]cb'

司徒/Seetoo (2015) pointed out the fact that in Taiwan, college instructors tended to devote more and more time and energy to their research studies and publications than before, so

that they missed helping their students increase their problem-solving ability and develop their critical thinking, especially creativity and imagination. What is worse, in Taiwan the teaching and learning of Chinese Mandarin

poetry has been less emphasized in the field of Chinese learning and teaching than before, not to mention English poetry (Gordon, 2008). Even so, the researcher-instructor tried to implement critical-thinking course activities into his courses, because the role of teachers and pedagogical contexts is a vital influence upon students' learning and their critical thinking which includes the development of creativity (Henriksen et al., 2016) and the stimulation of imagination.

There were four reasons for the instructor to design an English Children Poem Writing (ECPW) activity for two-year weekend-program Applied Foreign Languages (AFL) college students in his English Children's Literature course. Firstly, the researcher-instructor was a lover of reading and even creating English and Chinese poems at times, which, more or less, echoes the statement that instructors with skills, concerns, acceptance and interest in their students and their thinking could encourage their students to develop their creativity (Tighe et al., 2003) and imagination (Wang et al., 2020). Secondly, he would like his students to involve themselves in the ECPW in their own, even simple, English words by employing what they had learned in the class, especially personification, rhyming, metaphor and simile. This reason echoed Sak's notion (2004) that students could be encouraged to employ their creative and imaginative expressions to complete their poems with metaphors and/or similes. Thirdly, he held that this ECPW could develop their creativity and imagination, allowing students to think outside the box. Fourthly, his previous students took positive attitude toward the ECPW activity in this course (Wang et al., 2006; Wang et al., 2009; Wang et al., 2011; Wang & Liu, 2008).

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Several previous studies showed that the participants in the relevant researches were day- or night-program college students' responses to the ECPW activity, as shown in Previous Studies in Literature Review (Wang et al., 2006; Wang et al., 2009; Wang et al., 2011; Wang & Liu, 2008). There is paucity of research studies working on two-year weekend-program AFL undergraduates' perceptions of the ECPW assignment. Therefore, the current study aimed to research into 41 two-year weekend-program Taiwanese AFL college students' responses to the ECPW activity from the perspectives of children's poetry acquisition, creativity stimulation, and imagination development. The research questions formulated to motivate the current study were below:

1. What was the two-year-weekend-program AFL college students' perception of the ECPW in terms of children's poetry acquisition?
2. What was the two-year-weekend-program AFL college students' perception of the ECPW in terms of creativity stimulation? and
3. What was the two-year-weekend-program AFL college students' perception of the ECPW in terms of imagination development?

## Literature Review

### Creativity and Imagination

Creativity and imagination, two vital elements of critical thinking (Wang, et al., 2020; Wang et al., 2022), have diverse possible or operational interpretations, resting on the core of the research. Simply put, creativity via imagination can help unleash the confines of existing knowledge to (re)produce diverse things (Christensen, 2015; Dennis, 2017) that



are “novel, high in quality, and task appropriate” (cited in Henriksen, et al., 2016, p. 29; Sternberg & O’Hara, 1999, p. 255).

It is a common assumption that mankind should have the ability of creativity more or less (Kang, 2010; Nickerson, 1999; Sternberg, 1999), especially young children (Henriksen, et al., 2016), so students can nurture and foster their creativity via suitable drills and practices (Torrance, 1972) in an anxiety-free and supportive environment. The definition of creativity by Wang and Liu (2008) was selected for the paper because it could be reflected in the participants’ English Children’s poems: “an ability to generate original ideas or concepts to produce a certain product through the continuous interaction among the assembly, selection, assessment, and connection of existing and/or previous ideas or concepts” (p. 31).

Imagination is a form of cognitive power to access information and form a mental image of knowledge and understanding (Peirce, 1997; Wang & Liu, 2008), which helps human beings generate new objects by recombining schemata or memory-based materials. The definition of imagination by Wang and Liu (2008) was selected for the paper because it could be reflected in the participants’ English Children’s poems: “the mental power to generate the inner images of objects through the interaction between the existing experiences and prior knowledge” (p. 31).

## Previous Studies

Following discussions on the four previous studies which indicated that college students tended to positively relate English children’s poem writing (ECPW) to children’s poetry and critical thinking development, including [www.madejournal.uk](http://www.madejournal.uk)

creativity and imagination.

Wang et al. (2006) investigated 44 night-program college students’ responses to a critical-thinking-based ECPW in an English Children’s Literature class at a national technological university in the mid-south of Taiwan in the Fall Semester of 2005. The sources of data were a five-point-Likert-scaled evaluation questionnaire, the students’ children’s poems, the instructor’s journal writing, class weblog postings, and the students’ reflection papers. The results of the study indicated that the participants tended to agree with the effectiveness of the ECPW in helping them learn about children’s poetry (M=3.97) and boost critical thinking ability (M=4.27).

Wang and Liu (2008) conducted a research study on 52 day-program undergraduates’ responses to English-name-based children’s poem writing (EnCPW) in an English Children’s Literature class at a national technical university in Mid-Southern Taiwan in the Fall Semester of 2007. Data sources included a six-point-scaled evaluation questionnaire, instructor’s journal entries, the students’ English-name-based children’s poems, class blog postings, and the students’ reflection papers. The results of the study indicated that the participants tended to agree that the EnCPW was helpful in learning about children’s poetry (M=5.08), developing creativity (M=5.12), and stimulating imagination (M=5.12).

Wang et al. (2009) looked into 52 day-program undergraduates’ responses to ECPW in an English Children’s Literature class at a national technical university in Mid-southern Taiwan in the Fall Semester of 2007. Data collection came in a six-point-scaled evaluation questionnaire, instructor’s journals, students’ children’s poems, the students’ final papers, and

e-campus class blog postings. According to the results of the research study, the participants tended to agree that the ECPW assignment was of much help from three perspectives---English children's poetry acquisition (M= 5.16), creativity development (M=5.29), and imagination stimulation (M=5.08).

Wang et al. (2011) explored 23 night-program AFL sophomores' responses to ECPW in an English Children's Literature class at a national technical university in the mid-south of Taiwan in the Fall Semester of 2008. Data collection included a six-point-scaled course evaluation questionnaire, instructor's journal entries, students' children's poems, and students' final papers. The results of the study showed that the participating sophomores tended to agree on the feasibility of the ECPW assignment for English children's poetry acquisition (M=5.23), creativity development (M=4.91), and imagination promotion (M=5.14).

All in all, the connection between the abovementioned previous studies and the current study lay in focusing on the impact of the ECPW activity on the learners in English children's poetry acquisition and the development of creativity and imagination. The results of the current study could reveal whether two-year-weekend-program AFL majors took positive attitudes toward the ECPW activity as four-year-night-program and four-year-day-program AFL majors did.

## Methodology

This section describes the participants' demographics, nature of the English Children's Literature course, English Children's Poetry Writing (ECPW), and data collection. Plus, data collection includes questionnaires and students' mid-term exam papers.

## Participants

For the sake of sampling convenience, 41 two-year-weekend-program AFL majors (M: 9; F: 32) (see Table 1), who took the English Children's Literature course in a fall semester, were recruited to be the participants in the present study at a rural university of science and technology in Mid-Southern Taiwan. Originally, the class size was 44, but three of them were not recruited for the current study because two female students dropped out of school before the mid-term week and one male sit-in day-school Engineering student was not present any more one or two weeks before the mid-term week. More specifically, the forty-one participants included one female freshman, thirty-nine sophomores (M: 9; F: 30), and one female junior. At the end of the semester, all the participants were invited to sign consent forms in which they knew that they had the right to withdraw from this research study any time. For confidentiality all the participants' English names shown in this paper were pseudonyms.

**Table 1. Demographics of the Participants.**

Major	Year	Male	Female	Total
	Freshman	0	1	1
Applied Foreign Languages (AFL)	Sophomore	9	30	39
	Junior*	0	1	1
<b>Total</b>		9	32	<b>41</b>

*Note.* It was a female student's third year to take courses in the two-year program.

## Nature of the Class

The elective course in English Children's Literature was offered to two-year-weekend-program AFL-major sophomores in a fall semester. The goals of the course were to broaden the course-takers' knowledge of English children's literature (e.g., picture books and children's poetry), develop their creativity, stimulate their imagination, and enhance their literacy of technology and art. The students went to the two consecutive classes on Sunday mornings. The textbook chosen for the course was *Literature for children: A short introduction* (5th ed) by Russell (2009), because its contents were rich in the description of children's

from 猜謎語, 學英文 (*Guessing Riddles to Learn English*) by 沙/Sha (2000), the students learned useful elements of a children's poem, inclusive of rhyme, metaphor, simile, simple words, and riddle. The specific reading materials discussed in class were (a) chapter 9 titled "Poetry" (Russell, 2009), including concrete poems, metric feet, rhyme, metaphor, and simile, (b) six types of children's poems: family, praise, ballad/story, ancestor/heritage, advertising, and dialogue poems (Christensen, 1999), (c) English-name-based children's poems (Wang & Liu, 2008), and (d) sample children's poems created by the instructor's previous college students. The students were required to post their English children's poems in the e-campus before week 6, and then for sharing and class discussion they were encouraged to show their works posted in the Assignment Section of the e-campus in the 6th weekly class. Plus, grammar was not emphasized in their works too much in that "writing is less about rules than the apt

literature, especially picture books and poetry.

## English Children's Poem Writing (ECPW)

The English Children's Poem Writing (ECPW) activity aimed to broaden the students' knowledge of children's poetry, increase their creativity and stimulate their imagination. To help the students understand what English children's poems were, the instructor had the students read and guess riddle-like poems in the Riddle Reading & Guessing activity and employed PPT to discuss certain specific reading materials with the students. Reading and guessing 67 poem-like English riddles chosen expression" (House, 2009, p. 98).

## Data Collection

For analysis and discussion, the data collection spanning a fall semester included the students' responses to a 6-point-scaled questionnaire, mid-term exam reflection papers, and English children's poems. Collecting quantitative and qualitative data in an authentic classroom boost the trustworthiness of the current study.

## Evaluation Questionnaire

The anonymous 6-point-Likert-scaled English questionnaire included two parts: (a) 10 items with 6 sub-items in item 5 and (b) a box for free comments or suggestions. Each of these items and sub-items was rated with six ordinal categories (6 = *strongly agree*, 5 = *agree*, 4 = *somewhat agree*, 3 = *somewhat disagree*, 2 = *disagree*, and 1 = *strongly disagree*). In the 17<sup>th</sup> week of the fall semester, to increase the

reliability of the questionnaire results all the students rated each item following the instructor's oral translation of the items one by one. Immediately afterwards, the students felt free to write down their perceptions of the course, including the ECPW activity, in the box of the questionnaire and completed the human subject forms. Among the scaled items, only the responses to items 1-3 were analyzed and discussed in the current study. The responses to the other items were not reported because they were irrelevant to the current research. Forty-one students rated the questionnaire and the number of the valid questionnaires was 40. The valid rate reached 98% (40/41), which indicated that the questionnaire collection was strongly reliable.

### Students' Mid-term Reflection Papers

Forty-one students' mid-term papers (see Appendix A) presented their reflection on their learning process in the course throughout the first half of the fall semester, especially their perceptions of and feelings about the ECPW activity. The students completed their mid-term papers in English or Chinese-English and in the form of a take-home mid-term exam over a three-week period, and submitted them to the instructor in the 9th week; at the same time they posted their mid-term papers on the university's e-campus facility (<http://e3.nfu.edu.tw/ecampus3/learn/>) for the purpose of sharing with their classmates and for the source of research data.

## Results and Analysis

The purpose of the current study was to investigate the attitudes two-year-program college students took toward the ECPW. This section addresses the results and discussion of quantitative and qualitative data to answer the three research questions proposed in the current study. Quantitative data were the results of the questionnaire; qualitative data were the students' mid-term papers with their English children's poems.

### Quantitative Data

Overall, the participants' perception of the ECPW was positive, and by order, the ECPW benefited them in imagination boost, followed by creativity development, and then children's poetry acquisition. The following discussion and analysis was based on the results of questionnaire items 1-3 in three categories: English children's poetry learning, creativity, and imagination.

### English Children's Poetry Learning

In Table 2, the results for item 1, "*English Children's Poem Writing* was helpful for me to learn about children's poetry," demonstrated that all the forty responding students strongly agreed (35%), agreed (50%) or somewhat agreed (15%) that the ECPW activity was helpful in learning about children's poetry, a result which was also supported by the mean value of 5.20 for item 1. In a word, all the participants tended to agree that the ECPW benefited them in children's poetry learning.

**Table 2. Results for item 1, “English Children’s Poem Writing was helpful for me to learn about children’s poetry.”**

Rating*	6	5	4	3	2	1	Total
Valid responses	14	20	6	0	0	0	40**
Percentage	(35%)	(50%)	(15%)	(0%)	(0%)	(0%)	(100%)
Total	84	100	24	0	0	0	208
Mean Value							5.20

Notes. \*6: Strongly Agree; 5: Agree; 4: Somewhat Agree; 3: Somewhat Disagree; 2: Disagree; 1: Strongly Disagree \*\*The participant size was 41. One student’s response was invalid.

### Creativity

In Table 3, the results for item 2, “*English Children’s Poem Writing* was helpful to increase my creativity,” showed that all the forty responding students strongly agreed (47.5%), agreed (40%) or somewhat agreed (12.5%) that

the ECPW activity was helpful in stimulating their creativity, an outcome which was also reflected in the mean value of 5.35 for item 2. In a word, all the participants tended to agree that the ECPW benefited them in developing creativity.

**Table 3. Results for item 2 “English Children’s Poem Writing was helpful to increase my creativity.”**

Rating*	6	5	4	3	2	1	Total
Valid Responses	19	16	5	0	0	0	40**
Percentage	(47.5%)	(40%)	(12.5%)	(0%)	(0%)	(0%)	(100%)
Total	114	80	20	0	0	0	214
Mean Value							5.35

Notes. \*6: Strongly Agree; 5: Agree; 4: Somewhat Agree; 3: Somewhat Disagree; 2: Disagree; 1: Strongly Disagree \*\*The participant size was 41. One student’s response was invalid.

### Imagination

In Table 4, the results for item 3, “*English Children’s Poem Writing* was helpful to increase my imagination,” indicated that all the responding students strongly agreed (50%), agreed (35%) or somewhat agreed (15%) that

the ECPW activity was helpful in developing their imagination, a result which was also reflected in the mean value of 5.40 for item 3. In a word, all the participants tended to agree that the ECPW benefited them in enhancing imagination.

**Table 4. Results for item 3 “English Children’s Poem Writing was helpful to increase my imagination.”**

Rating*	6	5	4	3	2	1	Total
Valid Responses	21	14	5	0	0	0	40**
Percentage	(50%)	(35%)	(15%)	(0%)	(0%)	(0%)	(100%)
Total	126	70	20	0	0	0	216
Mean Value							5.40

Notes. \*6: Strongly Agree; 5: Agree; 4: Somewhat Agree; 3: Somewhat Disagree; 2: Disagree; 1: Strongly Disagree \*\*The participant size was 41. One student’s response was invalid.

## Qualitative Data

The positive results of Tables 2, 3 and 4 could correspond to those from the qualitative data which included the students' mid-term papers and their English children's poems. For example, the following quotations from Albert and Lily show that the ECPW helped them to learn about children's poetry and integrate what they had learned in class in their English children's poems by using their own creativity and imagination. By the way, these two English names, Albert and Lily, were pseudonyms chosen to protect their identities, and the quotations are shown in boxes respectively

because each of them is rather long.

In the quotation (see the following box) from Albert's mid-term paper, he described the process of creating his own English children's poem as a lullaby to celebrate the birth of his newly-born nephew in very simple but loving words. His poem titled "Baby is growing" originated from the experience in which once he cuddled his baby nephew and sang a lullaby to make him comfortably sleep. In the poem, readers can find that "crying" is a rhyme for "eating," "smiling," "sleeping," and "growing" (see Figure 1) and even feel the intimacy between them.

This year, my nephew was born [at] the end of June. I haven't given him anything except my love. Because [of] love, I hope I can give him more. This assignment gave me the chance.

"Poetry is the language of the imagination, of feelings, of emotional self-expression, [and] of high art (Russell, 2009, p.165)." Thus, I just followed my feeling and my emotion. I hoped I could write something for him.

"Poetry is by its nature musical and how the poem sounds is as important as what it says (Russell, 2009, p.166)." Once, I held him in my arms for helping him to sleep. I sang a lullaby for him. Suddenly, the inspiration came in[to] my mind. A song could be a poem. I [hoped] a lullaby [was] written by me for my dear nephew. But I d[id]n't know how to write a musical composition with my poem to be a lullaby. .... Then I started to think and created my poem.

What is the baby's growing process? What does he do? Such as eating, crying, playing, laughing, and sleeping. How to organize the words to be a poem? I thought that was such a huge problem to me. Then I thought it [was] for [a] baby. I d[id]n't need to use complicated words to [create a children's poem]. .... Thus, the first edition [was] done:

Baby, crying.  
Baby, eating.  
Baby, playing.  
Baby, sleeping.  
Baby is growing.

I tried to sing the poem with a simple melody, but I felt it [wa]s not so fluent. I modified it again. I hope[d] it [would] conform to grammar and fluen[cy]...:

Baby, baby is crying.  
Baby, baby is eating.  
Baby, baby is playing.  
Baby, baby is sleeping.  
Baby is growing.

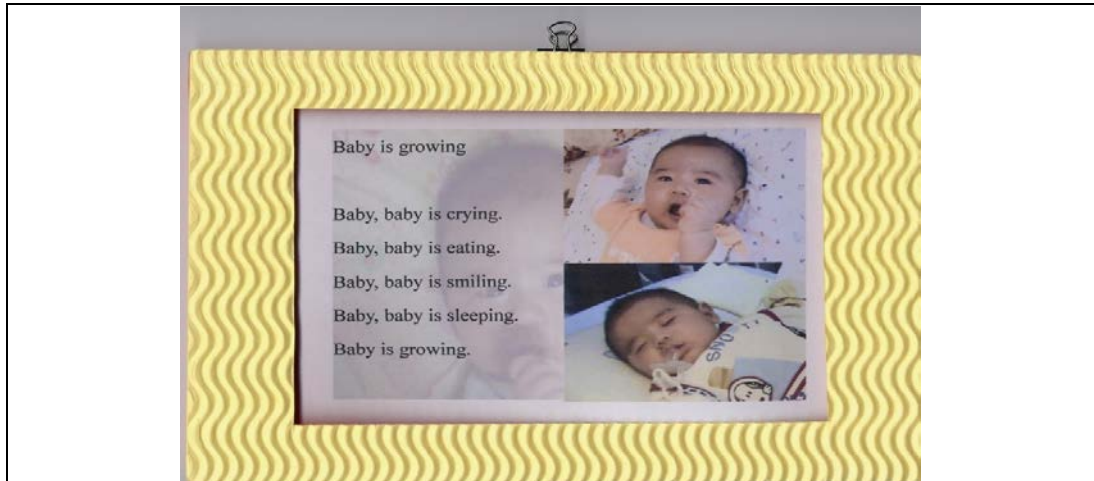
... Before I handed in it, I still th[ought] it c[ould] be better. Once, I got an idea from a friend, [so] I changed a word [playing -> smiling] to [complete] my last edition:

Baby, baby is crying.  
Baby, baby is eating.  
Baby, baby is smiling.  
Baby, baby is sleeping.  
Baby is growing.



Yes, why not “smiling,” when the baby is smiling like an angel. You take care of him, you feed him, but you would not ask him to thank you. A smile that is [the] best thanks [to] you.

“Ideally, reading poetry is a regular part of a child's reading program. Most poetry is best read aloud and—in the classroom (Russell, 2009, p.176).” Our teacher want[ed] us to share our poem. Before I shared my poem with my class[mates], a friend gave a wonderful opinion to me. He suggested I [should] frame the poem with my nephew’s photos, and hang up.



**Figure 1. Baby is Growing by Albert.**

In the quotation (see the following box) from Lily’s mid-term paper, she described the process of creating her English children’s poem titled “Mr. Crocodile” in the shape of a crocodile— a concrete poem— with personification,

rhyming and metric feet. For example, “say” is a rhyme for “day.” In addition, it is a dialogue-based poem involving “WH” questions, and her creative idea originated from The Ginger Bread Man.

Practically, I created this dialogue-based poem to get the kids involved in “WH” questions each time they perform it. And the techniques [were] related to chapter 8 in the textbook. (Russell, 2009, pp.165- 179)

Why is a crocodile? Roughly, I got the idea from The Ginger Bread Man. Most crocodiles share the same characters of sly[ness] and evil. Not to scare the infants, I decided to remain it an open ending. ...

As to the sound patterns, here are the rhymes: say, day, le, le....

**Where** -’s your **un** -cle? **He**’s by the **win** -dow.

**Why** is he **ma** -d? **He**’s got a **head** -ache.

**What** did he **say**~? × **He**’s **hun** -gry all **day**!

**Who** -’s your **un** -cle? **Mi** -ster~ **Cro** -codile!

In addition, personification here can not only stimulate imagination but promote nature awareness. Therefore, I present it in a concrete style. (Russell, 2009, p. 174) Even a tot can “read” my Mr. Crocodile in a visual way.

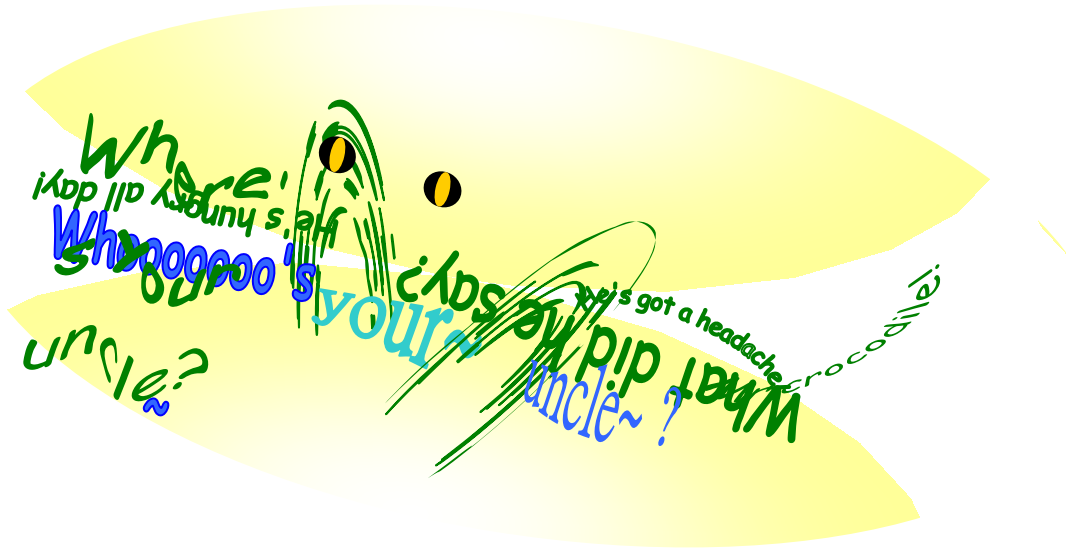


Figure 2. Mr. Crocodile! by Lily.



## Conclusion

The purpose of the current study was to investigate the voices of two-year-weekend-program AFL college students about the ECPW activity. The results in Tables 2, 3 and 4 show that all the two-year-weekend-program AFL undergraduate respondents (n=40) had a strong positive attitude toward the practice of the ECPW in helping them to learn about children's poetry (M=5.20), stimulate their creativity (M=5.35), and develop their imagination (M=5.40), and the qualitative data (i.e., the students' mid-term papers and their English children's poems) supported these findings. In short, the results of the current study endorsed the ECPW as a powerful tool for the children's poetry acquisition and the stimulation of creativity and imagination, which were perfectly in tune with those of the research studies done by Wang et al. (2006), Wang et al. (2009), and Wang et al. (2011), Wang and Liu (2008). Plus, the participating weekend-school students' English children's poems corresponded to the statement by Russell (2009): "Poetry is the language of the imagination, of feelings, of emotional self-expression, of high art" (p. 165).

The reading-writing connection of the ECPW in the current study was a meaningful and intriguing success in widening the students' knowledge of children poetry, developing their creativity, and stimulating their imagination. Even though the ECPW could not help the course-takers learn everything about children's poetry, they could employ their creativity and imagination to implement what they had learned in class into their English children's poems, such as rhyme, simple words, concept of concrete poetry, personification, and metric feet (see Figures 1-2).

The results of the current study contribute to the field of children's literature, especially children's poetry reading and writing. Importantly, the positive voices of two-year-weekend-program college students about the ECPW can encourage the researcher-instructor to continue incorporating the activity in his future teaching contexts, such as Foreign Language Reading and Writing, and even make interested instructors do it as well in their own teaching contexts.

Since this was an individual case study, there is one unavoidable limitation that the findings of the current study cannot be generalized to all the cases. Even so, the results of the current study may inspire interested researchers to investigate the function of the ECPW in various educational settings, such as English or even Chinese poetry teaching and learning.

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### References

1. Christensen, L. (1999). Poetry teaching guide. In B. Bigelow, L. Christensen, S. Karp, B. Miner, & B. Peterson (Eds.), *Rethinking our classrooms: Teaching for equity and justice* (pp. 184-186). A Rethinking Schools Publication.
2. Christensen, T. (2015, May 18). The difference between imagination, creativity, and innovation. Discover how to be more creative. <https://creativesomething.net/post/19280813066/the-differences-between-imagination-creativity>
3. Dennis, D. (2017). *Is There a Difference Between Creativity and Imagination?* The Writing Cooperative. <https://medium.com/writing-cooperative/is-there-a-difference-between-creativity-and-imagination-358c2a9c6e9a>
4. Gordon, J. (2008). True soundings: The findings of the 2007 OFSTED report “poetry in schools” and pupils’ responses to poetry they hear. *Changing English: Studies in Culture and Education*, 15(2), 223-233. 10.1080/13586840802052757
5. Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing creativity and technology in 21st century education: A systemic view for change. *Educational Technology & Society*, 19(3), 27–37. <http://danah-henriksen.com/wp-content/uploads/2016/10/creativity-systemic-view.pdf>
6. House, J. (2009). The grammar gallimaufry: Teaching students to challenge the grammar gods. *English Journal*, 98(3), 98-102. <https://www.proquest.com/docview/237312447>

7. Kang, C.-C. (2010). Creative teaching for ESP courses: An empirical study. *Studies in English Language and Literature*, 25, 81-100.
8. Nickerson, R. S. (1999). Enhancing creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 392 - 430). Cambridge University Press. <https://psycnet.apa.org/record/1998-08125-020>
9. Peirce, P. (1997). *The intuitive way: A guide to living from inner wisdom*. MJF Books. <https://www.amazon.com/Intuitive-Way-Guide-Living-Wisdom/dp/1885223552>
10. Russell, D. L. (2009). *Literature for children: A short introduction* (5<sup>th</sup> ed). Crane.
11. Sak, U. (2004). About creativity, giftedness, and teaching the creatively gifted in the classroom. *Roeper Review*, 26(4), 216 - 222. 10.1080/02783190409554272
12. 沙永玲[Sha, Y.-L.] (Ed.). (2000). *猜謎語, 學英文[Learning English by guessing English riddles]*. 小魯 [Xiao-lu].
13. Sternberg, R. J. (Ed.). (1999). *Handbook of creativity*. Cambridge University Press. <https://psycnet.apa.org/record/1998-08125-000>
14. Sternberg, R. J., & O'Hara, L. A. (1999). 13- creativity and intelligence. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 251-272). Cambridge University Press.
15. Tighe, E., Picariello, M. L., & Amabile, T. M. (2003). Environmental influences on motivation and creativity in the classroom. In J. C. Houtz (Ed.), *The educational psychology of creativity* (pp. 199-222). Hampton Press.
16. Torrance, E. P. (1972). Can we teach children to think creatively? *Journal of Creative Behavior*, 6, 114-143.
17. Wang, C.-H., Armstrong, J., & Wu, T.-Y. (2011). Children' poem writing (CPW) for learning about children's poetry and developing creativity and imagination. *The International Journal of Learning*, 18(4), 29-48. <https://doi.org/10.18848/1447-9494/CGP/v18i04/47565>
18. Wang, C.-H., Chiu, C.-Y., & Wang, J. (2009). Children's poem writing (CPW) in an English Children's Literature class. *Journal of Foreign Language Instruction*, 3(1), 163-179.
19. Wang, C.-H., Kuo, J.-M., & Fang, Y.-C. (2006). Night-school college students' responses to children's poem writing. *English Teaching & Culture*, 2, 94-108.
20. Wang, C.-H., Li, Y.-C., Chang, Z.-W., Lin, Y.-Z, Ma, Y.-T, Zhang, Y.-J., & Tsai, C.-P. (2022). College students' responses to the Card-Based English e-Picture Book Creating Activity (CEePBCA).

- Journal of Multimedia Art, Design and Education*, 2(1), 40-61.  
<https://app.box.com/s/jlt9y7id4i7vpzt5h4w084oz6g2087sv>
21. Wang, C.-H., & Liu, H.-H. (2008, June 5-6). *English-name-based Children's Poem Writing (ECPW)* [Paper presentation]. The 2008 International Conference on Language Teaching & Learning, Hungkuang University, Taichung City, Taiwan.  
 甲、(NSC-96-2411-H-150-004)
22. Wang, C.-H., Thomson, G., Chen, Y.-S., Peng, S.-Y., Wang, E.-H., Chin, J.-K., Cheng, M.-Y., Chen, Y.-R., Huang, S.-C., & Wu, T.-Y. (2020). College students' responses to the Recycling English Songs/Lyrics Activity (RESLA). *Journal of National Formosa University*, 35(1), 1-21.  
 file:///C:/Users/admin/Downloads/01College\_Students\_Responses\_to\_the\_Recycling\_English\_Songs%20(1).pdf

## Appendices

**Appendix A:** Mid-term Exam in Children's Literature. **Note:**

1. Deadline: Nov. 1, 2XXX
2. Department, year, name (English and Chinese), and student ID number
3. You should type the questions and your answers; you may draw a brief mind-map to summarize each answer or all the answers through computer or with a pencil/pen.
4. No folders; no cover page.
5. The language(s) you are required to use: English or Chinese-English.
6. Give examples to support your answers.
7. You should submit your paper to Room 4-2 in the Red Building by the due day, and then post your paper on our e-campus.

## Questions

1. Please describe the process of creating your own children's poem in great detail. What does/do your poem/poems tell? Try to relate your creation to any chapter of the textbook and any relevant materials. What did you learn from the assignment, especially from the perspectives of learning about children's poetry and critical thinking (e.g. creativity and imagination)? (60%)
2. What did you learn from your classmates' children's poems shown on the screen, especially from the perspectives of learning about children's poetry and critical thinking? You are required to choose at least two of your classmates' works to discuss. What do their poems tell? Try to relate your creation to any chapter of the textbook and any relevant materials. (40%)
3. Any other ideas related to the class. (5 bonus points)

# Research on the Usability of Mobile Shopping Application Interface Design

Yun Shan<sup>1,2</sup>, Wei-Hao, Lai<sup>3,4</sup>, and Fa-Hsiang Hu<sup>5,6</sup>

<sup>1</sup> Department of Applied Arts, Fu Jen Catholic University, Master of Fine Arts

<sup>2</sup> rebeccajessica1989@gmail.com

<sup>3</sup> Graduate Institute of Technology Management, National Taiwan University of Science and Technology, Graduate Student

<sup>4</sup> Robin861014@gmail.com

<sup>5</sup> Department of Applied Arts, Fu Jen Catholic University, Associate Professor

<sup>6</sup> hufa@ms12.hinet.net

## Abstract

As technology advances, the widespread adoption and convenience of mobile phones have shifted consumer habits from traditional computers to mobile devices. Concurrently, users are increasingly seeking higher shopping quality and smoother experiences. Generation X (Gen X) consumers, representing the demographic with the highest purchasing power, have demonstrated a significant growth trend in recent years. This research aims to investigate the usability of mobile shopping app interfaces for Gen X consumers, focusing on the three most widely used shopping applications in 2020 according to the Market Intelligence & Consulting Institute (MIC).

Using usability task tests, the System Usability Scale (SUS), and the Questionnaire for User Interaction Satisfaction (QUIS), we sought to understand the current evaluation of shopping applications by users. Results revealed that among the three mobile shopping applications - Shopee 24hr, Momo Shopping, and PChome24h - Shopee and PChome exhibited superior usability for Gen X seniors, while Momo Shopping was comparatively less user-friendly. Several principles influencing the assessment of mobile shopping app interface design by the Gen X demographic were identified: 1. Contrast in interface colors, 2. Size and quantity of advertising spaces, 3. Font size within the interface, 4. Logical transitions between pages, 5. Consistency in interface structure and operation, 6. Universality of interface terminology. These principles serve as valuable references for interface designers seeking to enhance the user experience for the Generation X consumer demographic.

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**Keywords** – Mobile Shopping, Usability Research, Generation X, User Interface.

**Relevance to Design Practice** – This research can help e-commerce enterprises to identify the common user experiences and needs of Generation X consumers.

## Introduction

Mobile phones have become an indispensable item for the majority of the population. According to the National Development Council (2019), the percentage of people in our country using mobile phones for internet access has risen from 35.3% in 2011 to 88.2%. Nearly 9 out of

10 individuals now utilize their phones for shopping (National Development Council, 2019). The Market Intelligence & Consulting Institute (2020) found that approximately 55.9% of consumers engaged in mobile e-commerce in 2019, surpassing computer-based orders. This shift signifies the advent of the mobile shopping era, where consumers increasingly favor more

convenient and rapid methods of making purchases.

Interestingly, research from the Taiwan Network Information Center (2020) revealed that Generation X consumers (ages 39 to 54) constitute the largest demographic in terms of both age and spending when it comes to mobile shopping. This indicates that mobile shopping not only enhances consumers' willingness to shop but also contributes to revenue growth. In the realm of mobile commerce, the application interface serves as the most direct communication channel between businesses and consumers. The overall interface design, developed with the user at its core, significantly influences consumers' satisfaction with the enterprise.

Interface designers need to recognize that the primary objective of interface design is to provide users with a straightforward operational environment. Recognizing that each user has distinct characteristics and preferences, designers must delve into user characteristics, interests, and preferred methods of information presentation during the design phase (Adipat & Zhang, 2005). Renowned human-computer interaction researcher Dr. Nielsen (1995) proposed ten usability principles for interface design:

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards in interface design
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design of interfaces
9. Help users recognize and correct errors

10. Help and documentation for message creation.

By adhering to these principles, interface designers can create mobile shopping app interfaces that align with Generation X consumers' expectations and preferences, thus enhancing overall user satisfaction and fostering a positive shopping experience.

Nowadays, many shopping apps focus on young people, and most of the related usability studies focus on young people and senior citizens, with fewer studies focusing on Generation X consumers. Under this phenomenon, it is worthwhile to conduct an in-depth study to evaluate the usability of mobile shopping apps by Generation X consumers.

The purpose of this study is to investigate the usability issues of Gen X consumers in the design and operation of different shopping app interfaces. The study aims to understand how Taiwanese designers and companies can create user-satisfying apps to enhance the quality and experience of Gen X consumers in the face of increasing demand for mobile shopping.

## Literature review

### Mobile Shopping

The Mobile Shopping is a rapidly developing consumption mode under the development of smart phone devices in recent years, simply put, it is the originator of the commercial behavior through the device and the network, which makes the traditional computer order e-commerce mode gradually began to change, and now consumers can easily get the desired product information by simply moving their



fingers, for the B2C consumption mode for both enterprises and consumers have brought new opportunities.

As a business model, the design of mobile shopping application interface is very different from that of web and mobile services. Mobile shopping program involves the transaction process of both buyers and sellers, including user security concerns, etc. Because of this characteristic, mobile shopping application does not have the opportunity to make up for the service errors as other services do, and it must provide consumers with a satisfactory consumption experience (Kuo , Tsai, Lu, & Chang, 2016), the four key points of mobile commerce apps, including security, promotions and specials, convenience and ease of use, and customer service system, are the key points that users care about when operating (Chen, Zou, Gu, & Chen, Yi-Jie, 2019).

In Table 1 below, Jiang Xinying (2013) compares the virtual channel with the physical channel, and finds that the advantages of virtual channel marketing are that it can provide more flexible discounts on the price of products, and thanks to the development of the Internet, enterprises can provide a large number of product images for buyers to browse at once, and buyers can compare the price of products through different sellers and shopping programs. The disadvantage is that buyers are unable to touch the products as they do in the physical channel, which may lead to other purchasing problems. It also suggests that in order to achieve a sustainable business model, e-shops must proactively build long-term relationships with customers, position the products clearly, make good use of the multimedia tools of the Internet for marketing, and plan their marketing

properly and effectively. utilization of funds (Hsu, Jian-Yuan, 2018).

When mobile shopping becomes the future trend of consumption, from the above related research, it can be seen that the virtual channel seems to have a higher advantage than the physical channel, but the disadvantage is that it is unlikely to be solved through the network in reality, so in the design of the interface, it should be avoided to avoid other factors that may lead to the loss of consumers, no matter whether it is the owner of the enterprise or the developer of the interface design, in the decision-making of the mobile shopping related, it is necessary to take the user's point of view as the starting point for consideration.

**Table 1. Difference between online and offline channels (Jiang, 2013).**

	Offline Channel	Online Channel
<b>Service Information</b>	<ol style="list-style-type: none"> <li>1. Less product information and limited space.</li> <li>2. You can enjoy the atmosphere of the store.</li> <li>3. Can touch the physical.</li> <li>4. The salesperson can serve.</li> <li>5. After-sales service is convenient for customers.</li> <li>6. It is difficult to collect complete transaction information.</li> </ol>	<ol style="list-style-type: none"> <li>1. More product information and unlimited space.</li> <li>2. You can browse a large number of products.</li> <li>3. Convenient and fast price comparison.</li> <li>4. Problems can not get direct feedback.</li> <li>5. Enjoy the seven-day appreciation period.</li> <li>6. Customer information is relatively abundant.</li> <li>7. Customer transaction information is easy to record.</li> <li>8. Higher flexibility than physical channels.</li> </ol>
<b>Service Information</b>	<ol style="list-style-type: none"> <li>1. Store operation.</li> <li>2. Store rent.</li> <li>3. Inventory.</li> <li>4. Personnel.</li> </ol>	<ol style="list-style-type: none"> <li>1. Website operation.</li> <li>2. Personnel</li> <li>3. Logistics &amp; Transportation</li> </ol>

**Related research of application usability**

System Usability Scale (SUS) is often used as a research tool in application usability studies due to the problem of research funding and manpower. Lewis (2018) conducted an overall review of the development of usability scales, and he pointed out that the SUS scale is still the indispensable and the most usable research scale in the human-computer interaction field. He pointed out that the SUS scale is still the most user-friendly and indispensable research scale in the field of human-computer interaction, but with the rapid change of time, researchers should be able to update the scale at a higher speed, and the language of the scale should be translated to increase the versatility of the scale, and the results of international usability studies should be stored through the use of network data to increase the popularity of the relevant studies,

so that the researchers can have access to the information they need. As for the studies that also used literature review, Ramos, Rita, & Moro (2019) focused on the three domains of mobile apps (MA) and social media (SM) and research organization websites (IW), and searched for journal paper reviews of related studies through the Scopus website, and finally consolidated 69 studies on mobile apps in 18 journals. LDA model analysis was conducted, and it was found that in the research on mobile programs, the research on the technical aspects of education and mobile devices became a trend after 2013, and it was emphasized that in the future of the usability of mobile programs, user-centered design with the literature on usability research can create program interfaces that meet the needs of users. In Jung's (2017) study, a questionnaire survey of 283 university students and office workers was conducted to investigate the effects of mobile shopping application user interface design performance on program



usability and user shopping intention. The researcher proposed five hypotheses through the literature review, which were: the simplicity of the UI design of a mobile shopping application affects the users' evaluation of the program's usability and simplicity positively affects users' evaluation, and the consistency of the UI of a mobile shopping application affects the users' evaluation of usability and consistency positively affects users. The researcher proposed five hypotheses through the literature review, which are: the simplicity of the UI design of mobile shopping application will affect the users' evaluation of usability and simplicity will positively affect the users' evaluation, and the consistency of the UI design of the mobile shopping application will affect the users' evaluation of usability and consistency will have a positive effect on the users. The last hypothesis was that the usability of mobile shopping applications would affect consumers' intention to shop. The researcher analyzed the responses provided by the participants in the SEM structural equation model and verified that the simplicity and consistency of the UI design do affect the consumers' evaluation of the usability of mobile shopping apps, and both factors have a positive effect, and the usability of mobile shopping apps directly and significantly affects the consumers' shopping intention.

Bhullar and Gill's (2019) study also focused on the usability of mobile shopping apps through 300 study participants, which was tested using the MAU scale with a reliability of 0.7 or higher, with the respondents mainly distributed in the younger age group and with postgraduate or higher education level, which had a total of ten usability factors, with each factor containing four questions. The results of

the study found that in the interface design of the application, Gestalt completion can allow the respondents to shop in an organized structure, too many animations can cause dissatisfaction, easily recognizable fonts and appropriate sizes can attract consumers to use a fixed shopping program, and aesthetics, sound, and other factors affect the users' intention to continue to use the application.

In "The Effect of Improving the Operating Interface of Mobile Shopping Programs on Online Shoppers' Trust", Chang and Cheng (2018) explored the difference in trust between online shoppers on two different platforms, shopping websites and mobile shopping apps, through questionnaire surveys and prototyping, and improved the unfriendly parts of the apps. It is found that the consumption process of shopping website and mobile shopping is not the reason for the difference in trust between the two platforms, but the interface design of the app. Mobile shopping apps are not like physical channels where you can directly ask the store staff about product-related issues verbally, and most of them are solved by leaving messages and intelligent customer service, which is not so high in immediacy. Therefore, when designing the interface, we should consider whether the function and layout of the interface are designed to improve the consumer's sense of risk, so as to avoid creating a sense of distrust in the enterprise.

The apps of delivery ordering system have similar usage with shopping apps. Chang and Chen (2019) conducted an interface usability study with the apps of chain delivery platforms, tested with 30 respondents aged between 25 and 45 years old and used a one-way between-groups research design with subjective

questionnaires to evaluate the interface usability, which found that the relevant types of cell phone interfaces should not be too complicated for respondents to shop, and the text and images should be kept at the right size, and that too many page transitions are prone to make the users confused with their concepts.

At present, there are many researches that propose different points for the design of the interface, which can be used as a reference for the designers in the development, to avoid making mistakes that should not be made, and reduce the user's satisfaction with the application, however, the criteria are proposed very quickly, and some of the criteria are related to each other, and the designers should be able to utilize and modify the criteria between them, instead of using them unchangedly, Bhullar and Gill (2019) study is through the previous proposed high reliability scale as a research tool, can make the research to improve the reliability, but in the operation of the study, directly in the form of questionnaires to fill in the form of respondents who have used a certain five research samples for data collection, the respondents did not actually operate the sample, the researcher can not be through the way of observation or interviews to learn more about the problem of the use of sexuality, is the This is a pity that the researchers could not learn more about the usability problems through observation or interviews.

Whereas in the study by Chang and Chen (2019), the operational method was to allow the respondents to conduct a usability test on the sample and fill out a questionnaire at the same time, but the questionnaire was not tested for reliability and was not a citation of the tested scales, the present study adopts the strengths of

the operations of the two studies for the operational design for the subsequent operations, and most of the research subjects used the younger ethnic groups as the respondents, and the present study will be based on the relevant literature in this section for further comparison with the findings of the study.

## **Methodology**

### **Testing Equipment**

In order to enhance the consistency of the test, the test equipment of this study is fixed use of Apple's mobile phone device iPhone XR, the screen is touch 6.1 inches in size, the mounted display is Liquid Retina HD, the version of the device is iOS 13.6.1, and the test application of each program version are: (2.63.7) Shrimp Skin 24hr, (4.55.2) Momo Shopping, (3.29.0) PChome 24h.

### **Selection of Participants**

In this research, in order to explore the evaluation of Generation X consumers on the usability of mobile shopping application interface, this study adopts a purposive sampling and selects users who have ever used mobile shopping apps for consumption. In order to minimize the error of users' operating carrier habits, the conditions of the test subjects were limited to the original cell phone operating system as iOS system, and the test subjects' recruitment advertisements were posted in two places, namely, on the notice boards of the community-type buildings and on the bulletin boards outside the mayor's office. The average

**Table 2. Basic Information of the participants.**

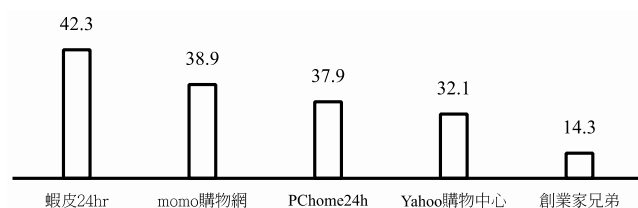
	Gender	Average age	Education	Mobile time used (daily average)	Mobile purchases (Frequency)	Mobile Shopping Experience
Male	10	45				
Female	20					
Below Junior High School			6			
Senior High School			8			
College			11			
MA/PhD Students			5			
Less than 2 hours				6		
2 to 6 hours				12		
6 to 12 hours				9		
12 hours (or more)				3		
Used 3 times a week (or more)					5	
1 to 2 times a week					8	
1 to 3 times a month					5	
Less than once a month					6	
Every day					6	
1 to 3 months						2
More than 3 months to half a year						8
More than half a year to one year						4
One to three years						6
More than 3 years						10

age of the final test subjects was 45 years old, with 20 males and 10 females by gender, 8 (26%) in high school, 11 (36%) in college or university, 5 (16%) using cell phone shopping three times a week (or more), 8 (26%) using cell phone shopping once or twice a week, and 1 to 2 times using cell phone shopping once or twice a month (or more), and 1 to 2 times using cell phone shopping once or twice a month (or more). In terms of the experience of using cell phone for shopping, 8 (26%) used it for more than 3 months to half a year, 6 (20%) used it for one year to three years, and 10 (33%) used it for more than three years, indicating that the respondents in this study were more interested in using cell phone programs for shopping. This shows that the respondents in this study have some experience in using cell phone programs for shopping. The basic information of the

respondents is shown in Table 2 below.

### Research Sample

In order to understand the usability of mobile shopping apps, this study relies on the top three mobile shopping apps used by Taiwanese consumers in B2C, Shrimp24hr, Momo Shopping, and PChome24h, as the samples for this study. The usage rates of mobile shopping apps preferred by consumers are shown in Figure 1 below.



**Figure 1. Usage of mobile shopping apps by consumers in Taiwan (Institute for Information Industry, 2020).**



**Figure 2. Shopee lunch page & home page.**

As shown in Figure 2 below, the Shopee interface color scheme is mainly orange and red, with small icons and advertisements in a messy color scheme and moderate fonts. There are many dynamic banner advertisements inserted into the page, the search field is fixed at the top left, and the basic function columns are fixed at the bottom of the page, which are the homepage,

dynamic, direct dialing, notification, and the member's area, and there is a shopping cart and a dialog button on the top right, which allows users to review their favorite products and the seller's dialog record, and the homepage section provides similar product information based on the products that the user has browsed.

The interface color of Momo shopping



**Figure 3. Momo's lunch page & home page.**



**Figure 4. PChome 24h's lunch page & home page.**

application is mainly in pink and purple, and the accent color of the icon is yellow, the overall color layout is relatively simple, with large fonts, the upper part is the fixed search field, which is hidden when users scroll the page, the upper right is the browsing history, and the lower part is the functionality field, which is the homepage, the hot list, the tracking list, the shopping cart, and the member center, the upper left is the product category, and the lower right has the customer service button and the top mobile button, which enables users to enter into intelligent customer service through the customer service button, and Momo has the dynamic banner ads in the homepage as follows in Fig. 3.

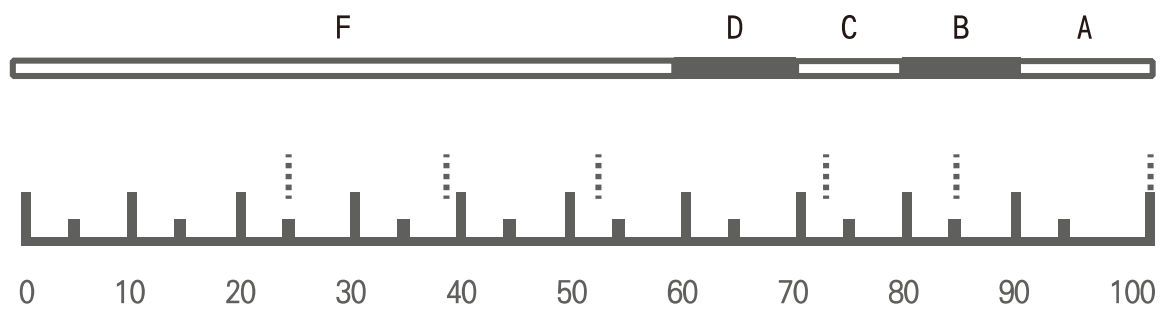
As shown in Figure 4 below, PChome24h has a fixed search field at the top, using a white background, with advertisements and icons in more complex colors, and a multi-function menu in the upper left corner, and a fixed function field at the bottom, with the following order: home, category, notification, customer center, shopping cart, and also with a move to the top field, with a slightly larger font size, and

with a large number of banner ads as well.

### **System Usability Scale (SUS)**

In this research, the SUS scale was used to understand the subjective feelings of the participants when operating the sample interface to understand the interface usability of the mobile shopping application. The Usability Scale was created by John Brooke in 1986, and has been widely used to measure the system interface of the product as well as desktop programs and website interfaces. There are a total of 10 questions in the scale, with 1, 3, 5, 7, and 9 being positive questions, and 2, 4, 6, 8, and 10 being negative questions. questions, and 2, 4, 6, 8, and 10 are negative questions, the rating of the SUS scale as proposed by Bangor and Miller (2009), the scale can be weighted and summed through the positive and negative questions to classify the results of the study, and the detailed rank and score correspondence is shown in Figure 4 below, and the present study adopts the SUS total score of 88.5 as proposed by Ependi, Kurniawan, and Panjaitan (2019). SUS total





**Figure 5. SUS scale grading (Bangor & Miller, 2009).**

score of 88.5 level B of the usability scale modified as a test scale.

### **Questionnaire for User Interface Satisfaction (QUIS)**

Though SUS can reduce the cost for efficient usability evaluation, the scores may not be able to be used as a complete judgment of reliability. Since the users are still the ones who directly interact with the shopping program, in order to understand how the participants feel about the interaction factors when they operate the interface, this study used the User Interaction Satisfaction Scale (UIS), which was proposed by Lee (2009), for the design of the interface, as a tool for this study.

### **Operation Tasks and Steps**

There are four operational tasks in this research: (1) to test the recognition and ease of use of the sample for the test subjects; (2) to test the ease of use of the sample for the test subjects; (3) to test the test subjects' response to the buttons; and (4) to test the test subjects' ability to locate the products by using different guides.

In order to reduce the learning effect of the test subjects, the samples were randomly assigned and sorted by random sampling before the start of the test. In response to the epidemic, the test equipment was disinfected briefly before the test, and the purpose of the test, the test

procedure, and the operation tasks were explained to the test subjects after the disinfection. Participants were required to complete three samples independently and were interviewed and answered two questionnaires at the end of each procedure. The procedure was as follows: 1. Disinfect and clean the test equipment; 2. Explain the purpose and procedure; 3. Conduct the first stage of the test according to the sample taken; 4. Fill in the scale after completion of the procedure; 5. Subjects followed the same procedure to perform the second sample; 6. Fill in the scale; 7. Perform the third sample procedure; and 8. Fill in the scale and conduct the brief interview, the details of the procedure can be seen in Table 4 below.

**Table 3. Operation task.**

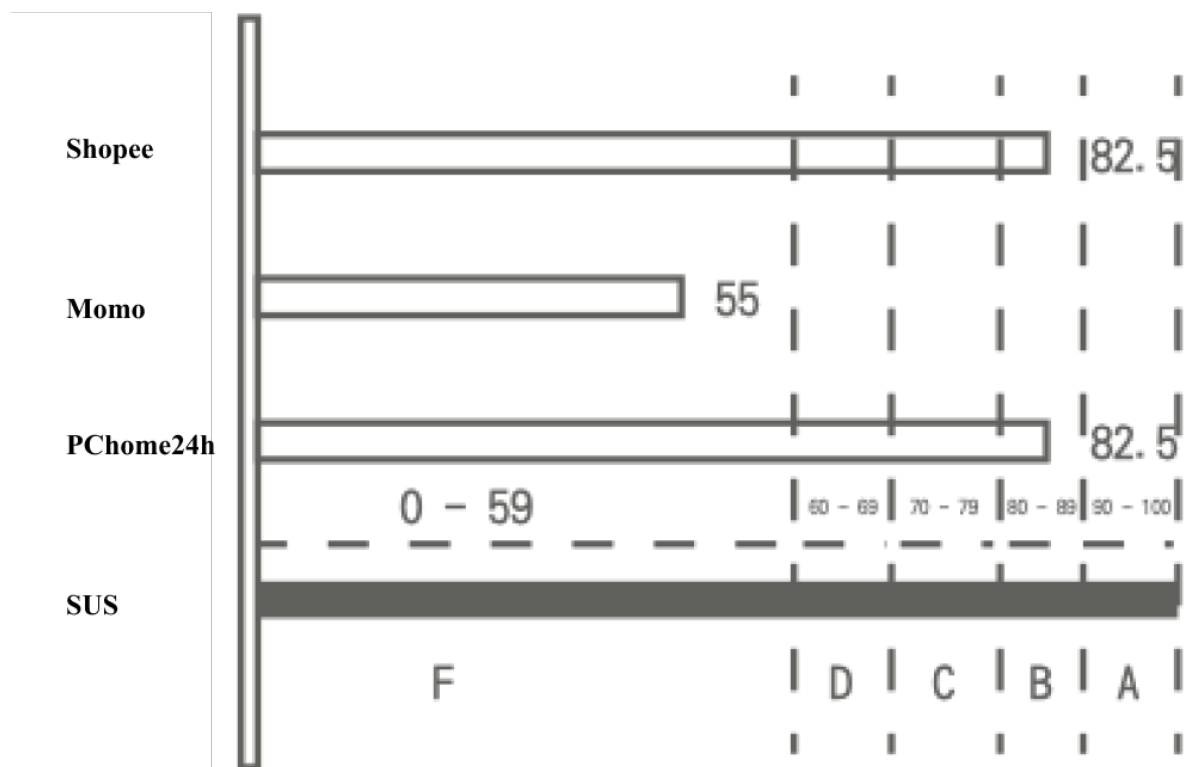
No	Task	Detailed
1	Please buy the SWITCH with zero interest rate on installment. One in red color.	Users must locate the specified product and select a store that allows installment payments, and specify payment by credit card. Enter the buyer's information and press Checkout is complete.
2	Please search Sofas and find stores that have prices between \$300 and \$9,000 and can be picked up by Superstore. Display them from low to high and add them to your shopping cart. and add it to your shopping cart.	Users have to filter the products in the sofa to find the stores that are capable of zero-interest installment stores, and stores with prices within the specified range that can match the price is within the specified range, and can match the payment method of the task, until the product is added to the shopping cart. The shopping cart will not be completed until the products are added to the shopping cart.
3	Delete items from your cart	The user must go to the shopping cart in the shopping program and delete the products of the aforementioned the products of the previous task.
4	Find tickets by category and go to the Browse History page.	The user must find the item in the specified context. Enter the account history. Finish when the page is reached.

### **System Usability Scale Analysis**

#### **Discussion**

In this section, we will statistically analyze the research data and discuss the current state of usability and interface design of the three samples tested in terms of the results of usability level and user interaction satisfaction, respectively, and compare them with the previous literature. Taiwan's move from Grade 1-9 Curriculum to 12-Year Basic Education is an attempt to solve the current dilemma that education. Suffers from teachers in the school context, hoping to make changes in order to dispel students' and parents' myths about star high schools, which may instead deepen their obsessions (Cheng, 2017; Yang, 2010).

In this section, the usability scale questionnaires of the three app test samples were firstly scored, and the usability scores of the tested samples are summarized in Figure 6 below. (Huang, 2019; Hsu, 2019; Ding, 2012; Chen, 2018).



**Figure 6. SUS scores of the three samples tested.**

According to the scoring results, Shrimp Skin 24hr scored 33 out of 33 for the original application usability score and 82.5 after weighting, momo shopping mall scored 22 out of 22 for the original score and 55 for the weighted total score, and PChome 24h scored 33 out of 33 for the original score and 82.5 for the weighted total score, and Shrimp Skin 24hr scored a grade of B after converting to the SUS scale grades, momo shopping mall grade F, PChome 24h grade B. Based on the aforementioned grading in Bangor's (2009) literature, it can be seen that for Generation X consumers, the tested samples of shrimp skin 24hr and PChome 24h have higher usability ratings, while momo shopping mall is more lacking in usability design.

### **Analysis of User Interaction Satisfaction Scale**

This section focuses on the statistical analysis of the user interaction satisfaction scales (QUIS) completed by the respondents on the three samples. Since the evaluation results of the three scales were all evaluated by the same 30 respondents, which violated the independence of sample collection, this study used the one-way dependent measured ANOVA to conduct the statistical analysis.

The subjective post-test scale evaluation, there were 15 items, and the results of the one-way dependent ANOVA are shown in Table 4 below.



**Table 4. QUIS Scale Statistics (Question 1-8).**

Question	App	Mean	Standard deviation	Spherical calibration	F-value	P
Typography	Shopee	3.80	0.32	0.247	15.844	<0.001***
	Momo	5.33	0.26			
	PChomew24h	3.36	0.23			
Highlighted Functionality	Shopee	4.63	1.79	0.146	5.330	0.007*
	Momo	3.66	1.29			
	PChomew24h	3.63	1.40			
Information Architecture	Shopee	3.73	1.48	0.274	3.346	0.039*
	Momo	4.50	1.27			
	PChomew24h	4.53	1.30			
Interface paging continuity	Shopee	4.86	1.38	0.084	11.444	<0.001***
	Momo	4.90	1.66			
	PChomew24h	3.43	1.07			
Interface Terminology	Shopee	3.73	1.31	0.249	5.555	0.006*
	Momo	4.73	1.38			
	PChomew24h	4.66	1.29			
Text manipulation relevance	Shopee	5.16	1.36	0.346	2.695	0.076
	Momo	4.40	1.19			
	PChomew24h	4.86	1.30			
Interface Text Placement	Shopee	4.66	1.66	0.002*	2.890	0.100
	Momo	3.83	1.11			
	PChomew24h	3.96	1.40			
Interface presentation speed	Shopee	5.43	1.45	0.418	15.886	<0.001 ***
	Momo	5.10	1.18			
	PChomew24h	4.03	1.54			



Figure 7. Shopee's typography.

In "Typography", highly significant difference ( $P < 0.001$ ) can be found, the average total satisfaction is 4.1 (standard deviation 0.71), the average satisfaction of momo shopping website is 5.33 as the highest, shrimp skin 24hr satisfaction is 3.8, the lowest is PChome 24h, satisfaction is 3.36, shrimp skin auction and PChome satisfaction are lower than the average.

From Fig. 7 below, it can be seen that the reason for the low satisfaction of Shopee Skin 24hr is presumed to be that the fonts in the interface are slightly small, and the fonts in the interface are different from the fonts in the advertisement text and the colors of the fonts in the navigation column, and the background color of the screen also affects the readability of the fonts, so the user's satisfaction is less than the average value.



Figure 8. PChome24h's typography.

In Figure 8 PChome 24h, we can see that the text of the application interface are all gray color blocks with burgundy fonts, and the color and brightness of the two are too similar, so the readability is reduced, and it is assumed to be the key factor affecting the users' ability to read the fonts in the interface, which can be deduced that the consumers of Generation X need to have control of the color configurations of the interface as well.

In the "Highlighted Functionality", the average satisfaction rating is 3.9, among which momo shopping site and PChome 24h are both rated at 3.6, while Shrimp 24hr is the highest at 4.6, as shown in Figures 9, 10, and 11 below:



Figure 9. Shopee Highlighted Functionality.



Figure 10. Momo Highlighted Functionality.

In Fig. 9, we can see that in the interface of Shopee, the reminders of key functions are [www.madejournal.uk](http://www.madejournal.uk)

marked with bright orange with high brightness and high color, and the icons of each function have independent colors, although the recognition of the text is not high, the problem can be solved by the color and the icon. In Fig. 10, we can see that in the interface of momo shopping mall, the icons of highlighted functionality are all of the same color, the icon is white, which has a slightly lower recognition, while the other function icons are bottomless and pure wireframe, which has a low recognition, and the Smart Overcome button in the lower-right corner of the interface is too small, and the translucent icon background color is easy to be confused because of the background color of the interface. The highlighted functionality of PChome 24h interface in Figure 11 are designed with a simple white background and gray characters. The TOP button below is in white



Figure 11. PChome 24h – Highlighted Functionality.

characters on a gray background, which is also

easy to identify due to the white background of the main interface.

At the "Information Architecture", Shopee only got 3.73 from user interaction satisfaction, which is lower than the other two samples (4.50 and 4.53). The reason for this is that Shopee application has too many icons and similar names. For example, if the test subject is asked to choose "Cheap Tickets" in the task, he will see similar phrases such as "Grab 50% off Ticket", "Ticket For example, if the task asks the tester to choose "Cheap Tickets", he will see "Grab 50% off Tickets", "Tickets", "Tickets", "Cheap Tickets" and so on in the page at the same time, which will lead to the testers' mistakes. Also, in the product page, the information of the product is presented in a series of the product details, unlike the other two samples which are independent of each other in a separate page, which is easy to confuse the users when they are looking at it.

In terms of "Interface panging continuity", the lowest user interaction satisfaction was found in PChome24h, with a satisfaction level of 3.4, which is lower than the average satisfaction level of 4.4. The reason for this is that, PChome24h's product categorization page is "Product", but the left side of the page displays "Main Event" and a large number of advertisements appear in the page, and on the right side of the page, there is a "Product Categorization" but the user cannot easily find the tasked products smoothly. However, after clicking on it, a row of incomplete text was displayed, and after clicking on the column, a row of even more detailed and incomplete text categories appeared, which could easily cause users to be unable to find the tasked products smoothly. According to the results of the post-

interview, it was assumed to be the result of too much text, too many categories, and the problem of categorization hierarchy in the interface as shown in the following Fig. 12.

Among the " Interface terminology ", the



**Figure 12. PChome 24h Interface Category hierarchy.**

lowest satisfaction level is Shopee, with a satisfaction level of 3.7, which is lower than the average value of 4.3. The reason for this is that Shrimp Auction, as a shopping program focusing on the young people's market, has a lot of self-created professional terms such as "Shopee Currency", "Shopee Pints", "Shopee Newspaper", "Shopee Wallet", and "Free Shipping for XXX if you are full of XXX", etc. For example, in the interviews with the participants, it was learned that when shopping process, it was found that the page presented a channel superstore free shipping fee of 299 RMB, but in actuality, it could not be selected when making payment, and many other terms were used to make payment, which were not chosen when paying for the purchase. In the post-test interview, the user was told that in the shopping process, he/she will find that the page shows free shipping for a certain channel superstore when he/she is full of 299 RMB, but



he/she will not be able to choose free shipping when he/she actually pays for the purchase, and that many other terms will be easier to understand for users who have contact with the application from time to time.

In the "Interface presentation speed", PChome's satisfaction rate is 4.0, which is lower than the average satisfaction rate of 4.8. After the interview, we understand that the reason is that the program interface of PChome24h is filled with a lot of advertisements, and the loading time of switching pages is too long for users to click on the various products and functions, which leads to the appearance of semi-gray color in many places after switching the page, and the product images load slowly in order, unlike the other two tested samples, thus leading to a lower evaluation as shown in Figure 13 below. The product images were loaded slowly, unlike the loading speed of the other two samples, resulting in lower ratings, as shown in Figure 13 below.



**Figure 13. PChome 24h's skeletons.**

Table 5 (next page) above shows the questions 9 to 15 of the User Interaction Satisfaction Scale, in which there are significant differences in the questions of "User interface learning", "Easy to understand tasks",

"Interface execution speed", "Errors can be modified", and "Interface is designed for everyone", and the following analysis will be made to focus on the items that have significant differences.

In the question of "User interface learning", the average rating of Shrimp24hr was 5.4, momo shopping mall was 3.8, and PChome24h was 4.4, with a total average of 4.4. The reason for the post-interview was that momo shopping mall would appear on the product page when entering the page, but users would enter the "Shopping Cart" after clicking on the page, and they would have to log out in order to select the correct "product". However, when the user is purchasing a product, the confirmation page will automatically include all the products that the user has added to the "shopping cart", and the user must individually remove the unwanted products before purchasing them again, and when the user is confirming the purchase, buttons such as "Add to Tracking", "Select Gift", and "Gift Optional" will appear, and the user will need to click all of them in order to fill in the information, however, when filling in credit card information, if the user does not have a credit card, it will be necessary for the user to click on the button. However, if the user accidentally presses the back button when filling out credit card information, all information must be filled out again, and the speed of transitioning between screens is too slow, so this is the reason for the speculation.

**Table 5. QUIS Scale Statistics (Question 9-15).**

Question	App	Mean	Standard deviation	Spherical calibration	F-value	P
User interface learning	Shopee	5.10	1.32	0.961	10.259	<0.001***
	Momo	3.86	1.19			
	PChomew24h	4.46	4.46			
Discover new features by bugs	Shopee	4.63	1.35	0.301	2.863	0.065
	Momo	4.16	1.34			
	PChomew24h	4.90	1.44			
Easy to understand tasks	Shopee	4.33	1.06	0.419	4.429	0.016*
	Momo	3.66	0.84			
	PChomew24h	4.43	1.35			
Interface execution speed	Shopee	5.66	1.29	0.035	27.671	<0.001***
	Momo	2.70	1.53			
	PChomew24h	4.63	1.37			
Interface trust	Shopee	4.16	1.44	0.688	0.923	0.403
	Momo	4.43	1.47			
	PChomew24h	4.63	1.35			
Errors can be modified	Shopee	4.80	1.39	0.014	14.961	0.001**
	Momo	3.56	1.19			
	PChomew24h	3.00	1.36			
Interface is designed for everyone	Shopee	4.06	1.41	0.708	3.705	0.031*
	Momo	4.76	1.45			
	PChomew24h	3.90	1.34			



**Figure 14. MOMO checkout page.**

In the "Easy to understand tasks", momo had the lowest rating. According to the post-interview, the reason for this was that there were too many words and options in the app, for example, "If you buy this product, you can participate in the [www.madejournal.uk](http://www.madejournal.uk)

activities..." on the product page, or all the bank's credit card activities were presented on the scrolling page, too many relevant categories were presented at the bottom of the page, and the information presented at one time was too long in the scrolling page, and the categories appeared on the page, but they could not be switched from left to right by gestures, while the scroll bar at the bottom of the page was able to be switched to the other side with gestures, and this inconsistency of the mode of operation would be misleading to the user, as shown in the Fig. 14 below.

In the "Interface execution speed", momo has the lowest rating of 2.7. The reason for this is

that although the speed of loading images in the app is very fast, the speed of page switching is much faster than that of the other two samples, which causes the user to wait for a period of time to enter the next page after each click, and there is a lagging-like situation when some buttons are pressed. The user has to wait for some time to go to the next page after each click.

In "Errors can be modified", PChome24h user interaction satisfaction was the lowest at 3.0, which was lower than the average satisfaction rate of 3.7. After the interviews, the reason was that PChome had deliberately crowded all the text on the deletion page of the car shopping page on the same line, which resulted in the word "Delete" being placed on the rightmost side of the screen, and the respondents were close to the middle-aged or elderly, which made the page not user-friendly and convenient for users to click. In the "Shopping Cart" page, if there is a product whose unit price is too high for "Supermarket Pickup", it is not possible to click "Supermarket Pickup" at all, and the product has to be deleted in order to click on it. However, when the user deletes the product, it will be removed from the shopping cart, and the user will have to search for the product again if he needs to re-purchase the product, repeating the same action as in Fig. 15 below.

In "the interface is designed for everyone", the satisfaction level of Shrimp Skin 24hr is 4.0 and PChome24h is 3.9, which is slightly lower than the average satisfaction level of 4.2. Summarizing the previous questions and the interview results, the reason for this is that the text of Shrimp Skin 24hr is too small, which makes it inconvenient to be read by the respondents of the age group of this study, and

the color scheme of the text of PChome 24h is also too low in terms of readability for the respondents of the age group of the study. The color scheme of the text in "PChome 24hr" was also too low for the research age group.

## Discussion

With the increase in mobile penetration, the opportunity for users to access mobile shopping has also increased dramatically. The results of the current research show that in the usability evaluation, "momo" has a grade of F and a score of 55, which indicates that the shopping application is relatively unfriendly to the users. In the user interaction satisfaction, PChome 24h has to repeat the same action for deletion command when correcting an error, which leads to a decrease in user satisfaction with the application. In this section, it is similar to the results of the study conducted by Chang and Chen (2019) in the literature, which shows that the steps of the operation are indeed the key for the users to evaluate the usability of the interface; in the 'Interface panging continuity', the interface categorization of PChome 24h and the text is too complicated. The categorization is not at a consistent level, which leads to a decrease in the satisfaction with the application among the test subjects. In the literature, the age group of respondents in Wu (2009) research had a higher percentage of respondents between 21 and 30 years old. In Jung's (2017) research had a higher percentage of respondents who were young students and office workers. In the conclusions of these two literatures, the key factors for evaluating the usability of the interface for this age group were similar to the ones for the Generation X age group. In this research, which included the consistency, simplicity, and

typography of the interface. These include consistency of the interface, simplicity, and complexity of the layout.

In Bhullar and Gill (2019) research, identifies several key factors for the continued usability of mobile shopping apps by consumers in the younger age groups, where the appropriate font size is also the same as the conclusion of this research on “Typography”.

## Conclusion and Suggestions

In order to understand the usability of the interface of mobile shopping apps for Generation X consumers, this study took three apps, Shopee, Momo and PChome 24h, and tested them with the System Usability Scale and the User Interaction Satisfaction Scale respectively, and based on the results of the System Usability Scale, Shopee was graded as Grade B, Momo was graded as Grade F, and PChome24h is grade B.

For users aged 39 to 54, momo is less usable. The following are the results of the user interaction satisfaction scale analyzed by the respondents, and the usability suggestions for each of the three applications:

### 1. Shopee

Shopee auction currently a larger interface problem for the "font" is too small, and the interface of the color layout is too "colorful", it is recommended that the interface of the color standard in a certain brightness and color, to shrimp skin representative color close to the NCS color system in the 1050-Y70R color, can be lowered by 2 to 3 levels of color or brightness as a large area of the advertisement bar, can

reduce the user's sense of incongruity in the interface of the big red and purple. It can reduce the user's sense of incongruity of the interface with the big red and purple colors.

### 2. Momo

It is suggested to avoid the use of white background for key functions such as "Shopping Cart Quantity", which will blend with the current background color of the menu bar or scrolling page, and when users scroll the page, the Smart Customer Service and Top button will disappear with their gestures, the inconsistency in operability will result in the assessment of the user interface, and the disappearance of the related key buttons will increase the users' perception of the risk of elevation.

It is also suggested that the text description can be simplified. Currently, too much text is squeezed into one line at the same time, and users have to zoom in and out of the page by gestures to see it clearly.

### 3. PChome24h

Currently, the text and color scheme of PChome is not obvious, it is suggested that the burgundy ad background or the grey ad text, take one of the two to be corrected in terms of brightness or color, in order to increase the recognition of the text, because the visual recognition ability of the X-generation consumers may not be as good as that of the general consumers, and the current color scheme may cause inconvenience to the consumers in the viewer.

In the left and right scrolling columns of products, it is suggested to juxtapose the columns with similar attributes. Currently, the advertisements are slightly asymmetric with the products and the categorization method.



In the categorization page, the text of the medium and small categories is too small, which will make the users unable to get the information they really need, and in the cart page, it is suggested to abolish the default purchase of all the shopping cart products.

Remove the delete button of the "Delete" button in shopping. In the shopping cart page, it is suggested to cancel the default purchase to bring in all the shopping cart products, and the delete button of "Delete" in the shopping cart is too marginal, which is difficult for the user to click, and some products are purchased by displaying the "Order Now" product which will go to the purchasing page after the user clicks on it. But the page that is presented is still the shopping cart page, so it is suggested to make a separation between the two pages, and in the indication of the key functions, the background color of the Top button can be separated from the background color of the page and a large amount of advertisement images can be cut down.

So as to lower the time of system load when the page is switched. The system will take less time to load when switching pages.

## References

1. Adipat, B., & Zhang, D. (2005). Interface design for mobile applications. *AMCIS 2005 Proceedings*, 494.
2. Bangor, A., Kortum, P., & Miller, J. (2009). Determining what individual SUS scores mean: Adding an adjective rating scale. *Journal of usability studies*, 4(3), 114-123.
3. Bhullar, A., & Gill, P. S. (2019). Mobile Shopping Application Usability: An Empirical Study on Factors Affecting Continued Intention to Use and Mobile Application Loyalty. *IUP Journal of Marketing Management*, 18(4).
4. Chen, J.G, Fen Zhen, and Chen, Y.J. (2019). A Study on the Influence of Shopping: A Case Study of PChome and Shopee. *Journal of Graphic Communication Arts*, 168-181.
5. Ependi, U., Kurniawan, T. B., & Panjaitan, F. (2019). System usability scale vs heuristic evaluation: a review. *Simetris: Jurnal Teknik Mesin, Elektro dan Ilmu Komputer*, 10(1), 65-74.
6. Hsu, C.Y (2018). Research on the Operation Mode and Marketing Strategy of Online Shop ◦ M.S. thesis, Department of Information Management, National Central University, Taoyuan, Taiwan.
7. Jiang, X.Y(2013). Exploring the Interaction Relationship between Virtual Channel and Physical Channel in Enterprises from the Perspectives of Co-competition Strategy, Graduate Institute of Technology Management and Intellectual Property, National Chengchi University.
8. Jung, W. (2017). The effect of representational UI Design quality of mobile shopping applications on users' intention to shop. *Procedia Computer Science*, 121, 166-169.
9. Lewis, J. R. (2018). The system usability scale: past, present, and future. *International Journal of Human-Computer Interaction*, 34(7), 577-590.
10. Kuo, T., Tsai, G. Y., Lu, I. Y., & Chang, J. S. (2016, December). Relationships among service quality, customer satisfaction and customer loyalty: A case study on mobile shopping APPs. In Proceeding, The 17th Asia Pacific Industrial Engineering and Management System conference (pp. 7-10).
11. Li, J.Y (2009). The Influence of Information Representation and Product Photo Styles of Internet Bookstore User Interface on User Experience ◦ M.S. thesis, Graduate School of Design, National Taiwan University of Science and Technology, Taipei, Taiwan.
12. MIC (2020). Mobile Ordering Catching Up with PC in Five-Five Wave Mobile Commerce Officially Becomes Mainstream. Online retrieval date: 03/15/2021. Website: <https://mic.iii.org.tw/#index1>
13. National Development Council (2019). Report on the 108th Annual Digital Opportunity Survey of Cell Phone Owners. Online retrieval date: 03/15/2021. Available at: <https://www.ndc.gov.tw/>.
14. Nielsen, J. (1995). 10 usability heuristics for user interface design. Nielsen Norman Group, 1(1).
15. Ramos, R. F., Rita, P., & Moro, S. (2019). From institutional websites to social media and mobile applications: A usability perspective. *European Research on Management and Business Economics*, 25(3), 138-143.
- TWNIC (2019). 2019 Taiwan Internet Report. Online retrieval date: 03/15/2021. URL: <https://report.twnic.tw/2019/>
16. Wu, Q.F (2019). A Usability Study of Mobile Shopping Applications. Master's thesis, Department of Digital Technology Design, National Taipei University of Education, Taipei, Taiwan.
17. Zhang, J.Z & Chen, J.X (2019). A study on the usability of the interface of fast-food delivery platforms. *Industrial Design* ◦ (139) ◦ 31-36 ◦
18. Zhang, C.P & Zhang, P. Y (2018). The Impact of Mobile Shopping Program Interface Improvement on Online Shoppers' Trust. *IJDMD* ◦ 9 ◦

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