

# Elderly Friendly Design of Public Sign: User Experience

## Approach

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## Abstract

As the world enters an aging society, the construction of an elderly-friendly society and the designer to pay attention to the elderly are particularly important. Public signs system directly affects the good experience of the elderly in the process of going out, seeking medical treatment, and traveling. From the perspective of elderly user experience and Pierce Semiotics' classification of signs as the theoretical basis, this research combines the Kansei Engineering (typeI) method and the Formalistic and Visual Semiotic Analysis which processing formal properties of art and design, to get the sign features and forms that loved by elderly, and three aspects hypothesis that affect elderly choose the sign.

**Keywords:** Aging friendly design; UX; Kansei Engineering; Formalistic and Visual Semiotic Analysis;

## INTRODUCTION

The world's population is ageing: virtually every country in the world is experiencing growth in the number and proportion of older persons in their population. The elderly care industry known as "Silver economy" is booming. In 2002, the Second World Assembly on Ageing was held in Madrid. It adopted a Political Declaration and the Madrid International Plan of Action on Ageing. The Plan of Action called for changes in attitudes, policies and practices at all levels to fulfil the enormous potential of ageing in the twenty-first century. Its specific recommendations for action give priority to older persons and development, advancing health and well-being into old age, and ensuring enabling and supportive environments. The public sign system is an important part of the public environment space, and has also attracted the attention of some scholars. The public sign system is the carrier of spatial information and

the visual form. A complete sign system can help people recognize environmental information and improve spatial behaviour. Therefore, the public sign system greatly affects the user's cognitive environment and behaviour trends, and directly affects the user's sensory experience, the feeling and results of the use process, satisfaction experience, etc. This research combines Kansei Engineering and Formalistic to analyse signs, and focusing on the design of the sign system from the perspective of user experience (UX), which can better reflect the human-oriented design thinking (or User-Centered Design).

## LITERATURE REVIEW

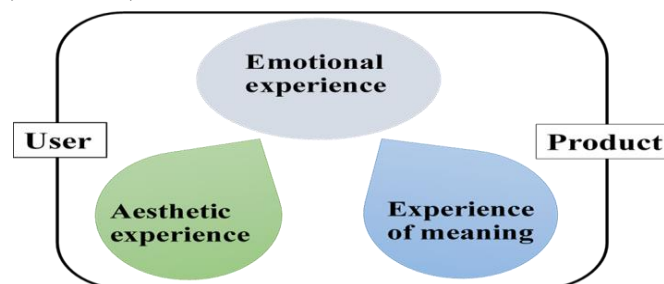
### User Experience (UX)

ISO 9241–210 defined UX(ISO, 2010) (user experience) as "A person's perceptions and responses that result from the use or anticipated use of a product, system or service". It is in line

with the view by most researchers about the subjectivity of UX, but the used terms require more explanation to list possible objects that affect user experience, and in literature, definitions for user experience were proposed, but those definitions were affected by the researcher's background and interest and could not be used as a common definition (Effie L-c Law & Hassenzahl, 2009). In 2010, the definition of UX (ISO, 2010) in ISO 9241-210 was reconfirmed and released. Hassenzahl defined the UX ((Effie L-c Law et al., 2009)) as: A momentary, primarily evaluative feeling (good-bad) while interacting with a product or service. Hassenzahl's definition of UX focuses on the feeling and evaluation of people interacting with products or services. This is a new perspective to think UX as a positive experience that drives people to interact with products or services. UX is an emerging research area that is still immature (Effie Lai-chong Law et al., 2012), and forms the fifth generation of HCI domain which has been shifted, since 2000, toward measuring user experience (Effie Lai-Chong Law, 2011) (Yong, 2013) (Zarour & Alharbi, 2017). "UX is dynamic, context-dependent, and subjective" (Effie L-c Law & Hassenzahl, 2009). It has been noted that users' perception of different product qualities as well as emotions that arise before, during and after using a product is changing which makes UX a dynamic concept as well (Minge & Manfred Thüring, 2017). Because UX is associated with a wide range of vague concepts, including emotional, affective, experiential, hedonic, and aesthetic

variables, etc. (Taylor et al., 2006). As well as the researcher's personal interests and background, it is difficult to accurately define and dimension it. In addition, UX involves the complexity of multiple research fields and interactive objects. Its theoretical model becomes very complicated and scattered because of the different emphases of users' pursuit of practicality, emotion, experience, value, aesthetic orientation, pleasure, and beauty, etc. (E. Law et al., 2007).

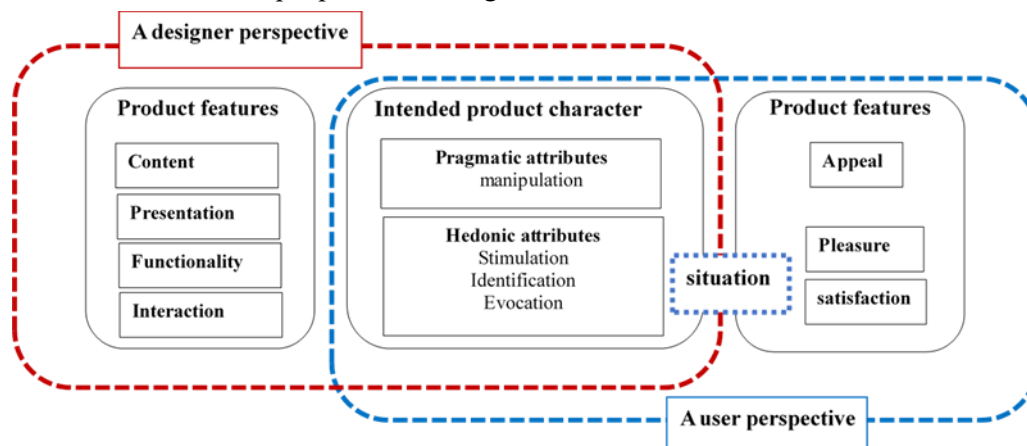
Although relevant research has defined UX from various disciplines or practitioners, it is still a relatively vague and dynamic concept. There are relatively few researches on UX in the field of public graphic design. Insights can be gained from the design field of integrating UX into user interaction interfaces. This research is more inclined to understand UX in this way: it is a combination of the characteristics of users using systems or products (complexity, purpose, usability, function, etc.) in a specific environment, and the result of the internal state (tendency, expectation, demand, motivation, emotion, etc.) during and after receiving the service (Effie L-c Law et al., 2009); It is all the emotional set between the user and the product or service interaction, including aesthetic experience, experience of meaning, and emotional experience in the whole process (Desmet & Hekkert, 2007); Its experience ranges from products to specific spatial environments (airports, museums, etc.) Show as Figure 1



**Fig.1. A framework of user-product interaction**

The user-centered model is to think about what users need, what they like, and what they are willing to buy. At the same time, it explains the different angles and positions of the designer and the user on the product. Hassenzahl proposed a theoretical model that explains the purpose and behaviour of people interacting

with products from the perspective of designers and users (Hassenzahl, 2003). This theoretical model extends the traditional task-goal realization thinking mode, which includes pleasure, fun, satisfaction and action-oriented modes of behaviour. Show as Figure. 2

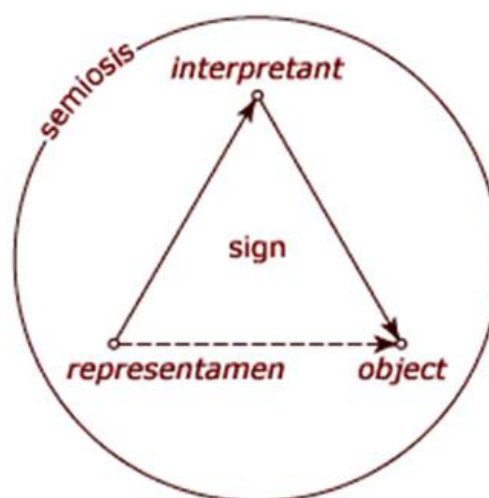


**Fig. 2. The key elements of the model of user experience from a designer perspective and a user perspective**

### Pierce Semiotics' Classification of Signs

Charles S. Peirce (1939-1914), the American philosopher and a principal figure in the development of the modern study of semiotics, advanced the definition of signs "something that stands to someone for something in some respect or capacity" (Peirce, 1991). No matter

which definition is adopted, the question of semiotic relations governing sign processes is necessarily raised. In 1904, Peirce wrote, "Representation" and 'sign' are synonyms" (Greenlee, 1973). Thus, if a model is a representation, it is also a sign according to Peirce. Show as Figure 3



**Fig. 3. The parts of Peirce's triadic model of the sign**

"A sign," Peirce tells us...

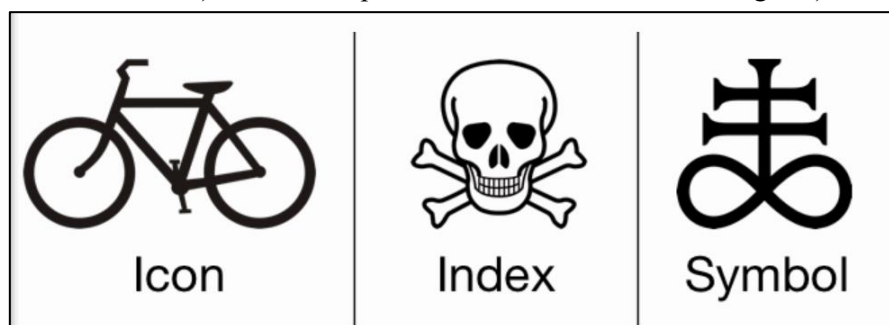
"...is something which stands to somebody for

something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object”(C. Hartshorne, 1958).

1903, Peirce tells us that: “signs are divisible by three trichotomies; first, according as the sign in itself is a mere quality, is an actual existent, or is a general law; secondly, according as the relation of the sign to its object consists in the sign’s having some character in itself, or in some existential relation to that object, or in its relation to an interpretant; thirdly, according as its Interpretant represents it as a sign of possibility or as a sign of fact or as a sign of reason”(C. Hartshorne, 1958). So at this point,

Peirce sees the relation in the semiotically relation: sign, object, and interpretant as defining three trichotomic divisions of signs(Zeman, 1971). The first he calls the division into Qualisigns, Sinsigns, and Legisigns; the second, into Icons, Indexes, and Symbols; and the third into Rhemes, Dicisigns, and Arguments. The second perspective classification is Peirce's more famous symbol classification method, which we only discuss here.

according as the relation of the sign to its object, classification of sign is divided into three main types: (1) an icon, which resembles its referent (such as a road sign for falling rocks); (2) an index, which is associated with its referent (as smoke is a sign of fire); and (3) a symbol, which is related to its referent only by convention (as with words or traffic signals). Show as Figure 4



**Fig. 4. Three types of signs (from Internet)**

Peirce tells us that:

“an analysis of the essence of a sign... leads to a proof that every sign is determined by its object, either first, by partaking in the characters of the object, when I call the sign an Icon; secondly, by being really and in its individual existence connected with the individual object, when I call the sign an Index; thirdly, by more or less approximate certainty that it will be interpreted as denoting the object, in consequence of a habit (which term I use as including a natural disposition), when I call the sign a Symbol”(Morris, 1938). Peirce felt he used most often, which indeed he saw as the most fundamental division of signs(Peirce, 1991) .

### **Kansei Engineering (KE)**

The Japanese word “Kansai” was proposed by Nagamachi(Matsubara & Nagamachi, 1995). It is defined as “translating technology of a consumer's feeling and image for a product into design elements”(Liker et al., 1989); In the 1980s, this method spread rapidly in the Japanese automobile industry. Yamamoto, the president of Mazda, applied “Kansei engineering” in his lecture at Michigan University in 1986, at the same time, this design method spread to Europe. In Europe, many companies had their own methods to evaluate user preferences. However, research in the academic field began in the 1990s and appeared

in various design research fields under different names such as: Emotional Engineering, Emotional Design, Affective Engineering, Kansei Engineering, etc., including: industrial design, mechanical engineering, ergonomics related fields. It has a broader meaning than “Emotion” and includes all psychological feeling in mind, like Want, Need, Aesthetic sensation (beautiful, elegant, etc.), or good taste and so on; Kansei research starts from grasp of customer’s Kansei words and finally creates a good product based on the relation between Kansei and design specifications, which aims the customer satisfaction(Nagamachi, 2018).

Kansei can be used as a tool for product development, the brief content is the identification of product features and the relationship between product features and design features(Yoshio Shimizu, Tsugutake Sadoyama, 2004). Kansei is concerned with a wide assortment of fields, Kansei is defined as an internal concept with three basic pillars: Taste/Sentiment, Feeling and Emotion, and these three pillars are interrelated and influenced.

In 1997, the University of Tsukuba in Japan

conducted a five-year special project to evaluate Kansei. The study found that the term Kansei has different meanings according to the researcher in different research fields(Harada A, 1998). Researchers' understanding of the word “Kansei” includes five aspects:

- 1) Kansei is a subjective feeling that cannot be explained by words alone.
- 2) Kansei is a cognitive concept influenced by personal knowledge, experience, and personality.
- 3) Kansei is an activity and interaction between intuition and intelligence.
- 4) Kansei needs sensitivity, such as beauty, pleasure, etc.
- 5) Kansei is a reflection of mental images in the human brain.

In the 1990s, Naganachi proposed Kansei Engineering for product development and design, and at the same time proposed six types of Kansei Engineering in the product development process(Profile, 2016). Each type of method will be analysed and discussed with cases in the next chapter (Research Methodology). The KES methods summarized here can be show as Table 1

**Table.1. Types of Kansei Engineering (Profile, 2016)**

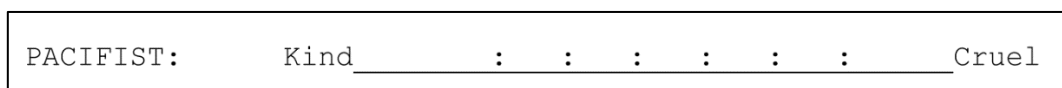
Type I	<i>Category classification</i> —Identifying the design elements of the product to be developed, translated from consumer’s feelings and image.
Type II	<i>Kansei Engineering System</i> —A computer aided system with an so called interference engine and Kansei databases
Type III	<i>Hybrid Kansei Engineering System</i> —The combined computer system or Forward ansei, which goes from the user’s impressions to design specifications and vice versa.
Type IV	<i>Kansei Engeering modelling</i> —Mathematical modelling with an interference engine and databases
Type V	<i>Virtual Kansei Engineering</i> —An integration of virtual reality technology and Kansei Engineering in a computer system
Type VI	<i>Collaborative Kansei Engineering designing</i> —Group work design system utilizing intelligent software and databases over the internet.

#### **Semantic Differential Method:**

Osgood developed a method called ‘Semantic

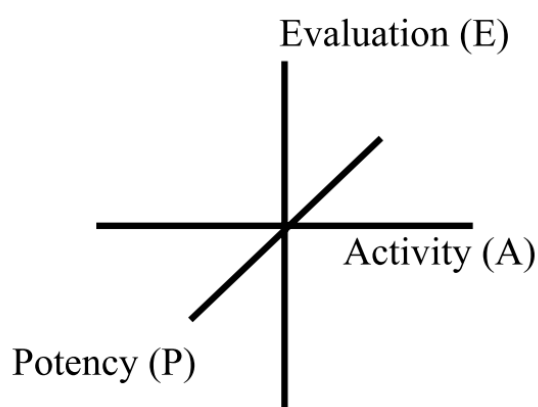
Differential Technique' in 1969, which is an objective method of measuring the emotional content of a word (Osgood, C. E., Suci, G.J. and Tannenbaum, 1969). This method became one of the foundations of Kansei Engineering later (Schütte et al., 2004). Osgood assumed the separation of the object itself and the symbol representing the object (Osgood, C. E., Suci, G.J. and Tannenbaum, 1969). The object--'which is a pattern of stimulation which evokes reactions on the part of an organism', and the sign--'which is any pattern of stimulation which is not the object but yet evokes reactions relevant to "object"--conditions under which this holds lying the problem for theory (Osgood, C. E., Suci, G.J. and Tannenbaum, 1969).

For example: We can use an axe as an example. When we say 'axe', it is a sound wave stimulus, while a real axe is a stimulus that combines visual, olfactory and tactual sensations. When we refer to the 'axe', we associate the behaviours related to the physical axe in our minds. This shows that the 'axe' in colloquialism is a representative symbol of a real axe. Then he simply put forward the question 'Under what conditions does something which is not an object become a sign of that object?' (Osgood, C. E., Suci, G.J. and Tannenbaum, 1969). Stagner and Osgood did a survey to answer this question (Stagner & Osgood, 1946). They use the 7-point rating scale to investigate people's attitude and determination towards a thing. Show as Figure 5



**Fig. 5. Example of a 7-point rating scale, originally used by Osgood**

The survey uses a multivariate analysis tool to find that there is a common pattern (Carroll, 1959). As shown in the Figure 6, the word pairs all span three orthogonal vector spaces, which Osgood calls semantic space and method Semantic Difference Technology.



**Fig. 6. The Semantic space (Carroll 1959)**

Evaluation (E): stands for a pair of words with good or bad degree potential. For example: beautiful- ugly, good-bad, lucky-unlucky, kind-

cruel, etc.

Potency (P): usually stands for a pair of words with a potential, about a capacity and extent of change. For example: strong-weak, hard-soft, etc.

Activity (A): is represents the speed and extent of change. For example: fast-slow, intense-insipid, sharp- blunt, etc.

According to this semantic space division, people can interpret and express their individual views on a concept from three dimensions. Kansei Engineering collects and filters information from three dimensions through Kansei words. One of the most important is what tools and methods to choose Kansei words.

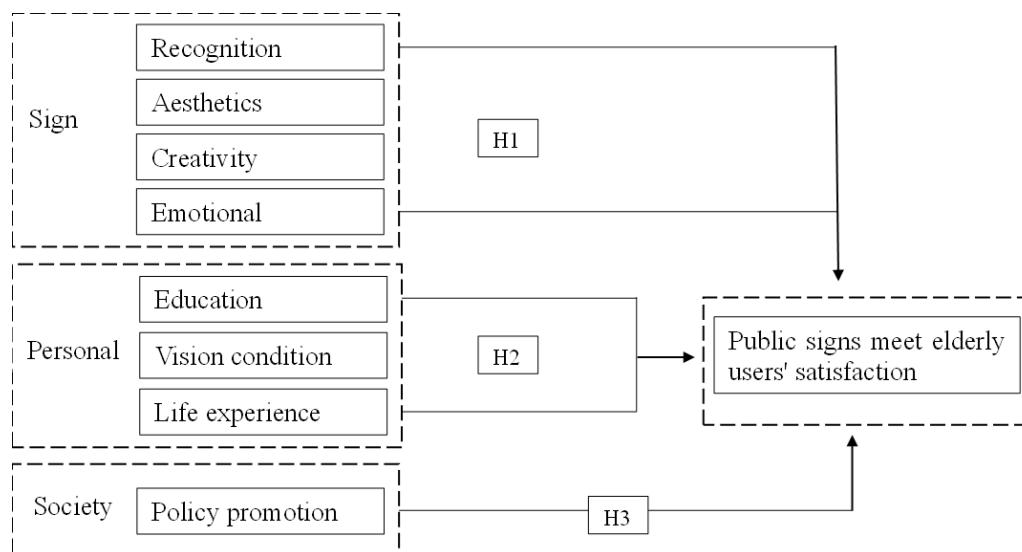
## METHOD

This research mainly adopts the SD (Semantic Differential Method) and Kansei Engineering type I (Category Classification) method to collect data and analyse the results. The combined research method of Formalistic and

Visual Semiotic Analysis (FVSA) explores and improves the selection of Kansei words, which expand the method and format of UX research (Soikun & Ag. Ibrahim, 2021). First, explore the classification of signs favoured by the elderly from the perspective of semiotics. Then, the FVSA method is used to collect Kansei words for the selected signs, which are used to analyse the formal and symbolic features

of the signs. Last, combined with the characteristics of formalistic signs, analyses the aesthetic tendencies and experiences of the elderly.

From the above UX aspects, three hypotheses are established to form the theoretical model of this research. Show as Figure 7


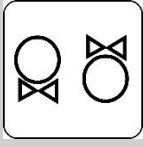


**Fig.7. Theory framework**


Taking the common "toilet" signs in public signs as an example, the signs are classified according to Pierce's famous symbol classification theory. It can be summarized from the table that icon can be seen directly. Index is a graph that needs

logical reasoning or social experience. Symbol is a graphic that can be recognized only after learning and certain social and cultural background. Show as Table 2.

**Table 2. Types and characteristics of signs**

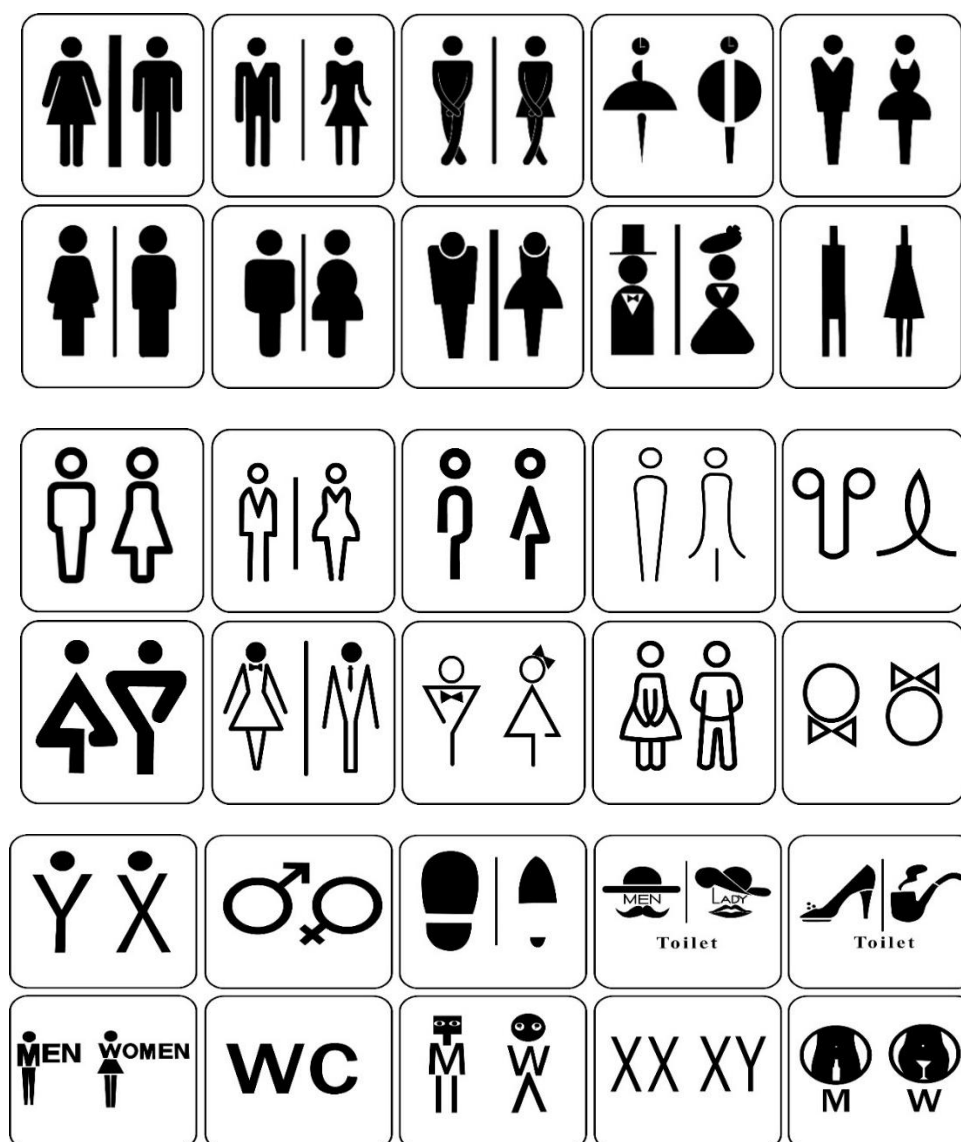
Types and characteristics of signs				
Types	Construction Ways	Cognitive approach	Cognizance characteristics	Example
Icon	Similar image	Can see it directly	Intuitive, what you see is what you get	
Index	The logic is similar	Can figure out	Indirect needs inference, association and experience	



Symbol	Tradition or convention	Must learn	Indirect needs culture, knowledge and common sense	
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This study takes public toilet signs as an example. There are 80 different toilet signs downloaded from the Internet and used in actual places. Then, these signs were screened according to their types and characteristics, and finally 30 were retained. This section only

investigates the understanding of signs and their preference for graphical appearance by elderly users. Therefore, the colours of the signs are filtered out and they are restored to black and white graphics. Show as Figure 8.










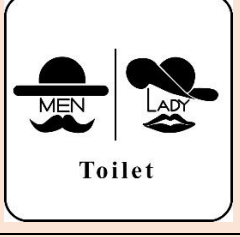
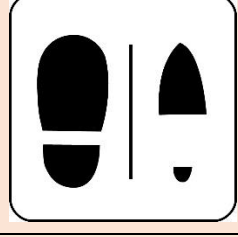

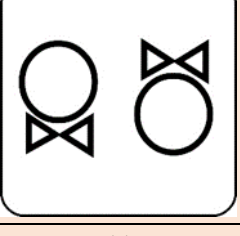
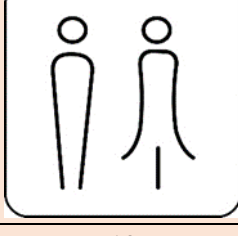
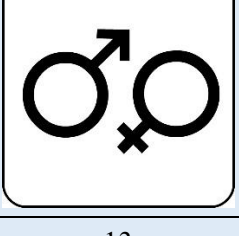
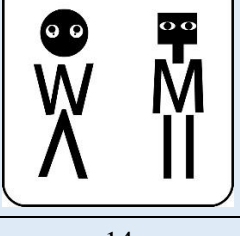
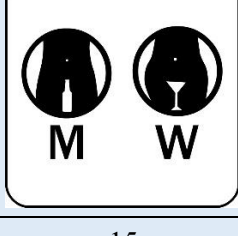
**Fig. 8. 30 Different toilet signs from the Internet and used in actual places**

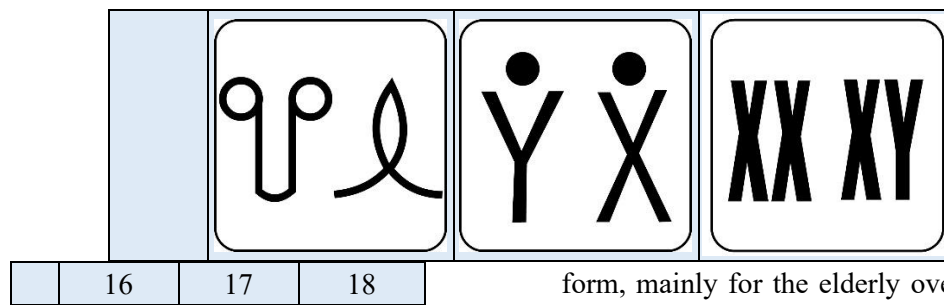
Because many graphics cannot be classified absolutely accurately, they are classified in a fuzzy way. The article selects signs with

different types of representation and investigate the preference of elderly users for the type of signs. Show as Table 3



**Table 3. Different types and representative signs**

Types	Representative signs		
Icon			
	1	2	3
			
	4	5	6
			
	Toilet	Toilet	
Index	7	8	9
			
	MEN WOMEN		
	10	11	12
Symbol			
	13	14	15



Research implementation process: This study adopts the form of questionnaire and conducts investigation and analysis according to the selected 18 signs.

Step 1: A random questionnaire survey was conducted. The questionnaire is designed for Chinese elderly aged 60-80. A total of 280 questionnaires were sent out and 220 valid questionnaires were retained, including 107 females and 113 males. Most of the questionnaire is designed through APP named "WJX. CN" and distributed online. About 15% of the questionnaires were distributed in paper

form, mainly for the elderly over the age of 70 who do not often use mobile phones. The questionnaire survey was conducted with reference to the above 18 case signs and Likert scale to investigate the elderly's preference for signs' classification, and uses FVSA method selected words according to prompt of SD method.

Step 2: The five level Likert scale was used instead of "Very satisfied", "Satisfied", "Neutral", "Unsatisfied" and "Very unsatisfied", which were recorded as 5, 4, 3, 2 and 1 respectively. Then get the signs category loved by the elderly

Classification of signs	The five level Likert scale				
	Very unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
Icon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Index	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Symbol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

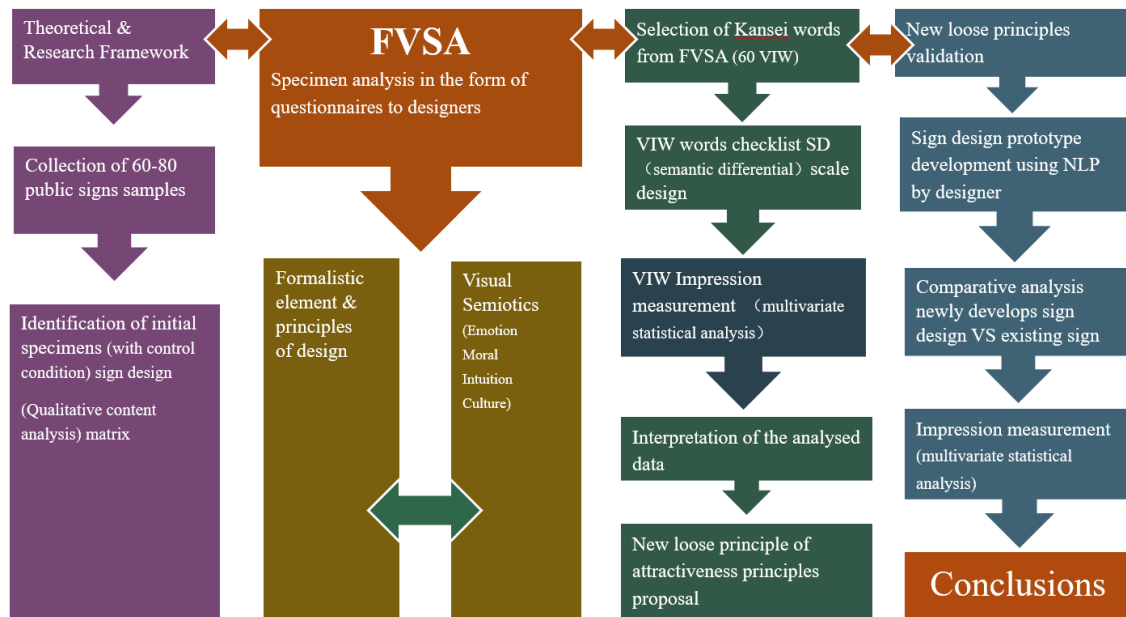
**Fig. 9. Questionnaire sample**

Step 3: Data sorting and analysis. This research use SPSS statistical analysis software to sort out and analyse the data and draw a conclusion.

### **Formalistic and Visual Semiotic Analysis (FVSA)**

Formal and visual semiotic analysis (FVSA) is a new method to improve the collection and

selection of Kansei words based on UX and KE. Participants of these FVSA activities were selected based on their expertise and experience, and this questionnaire activity was aimed at participants with appropriate qualifications and training in the field of arts and design. The research process of this method is shown in the Figure 10



**Fig. 10. The research process of FVSA(Soikun & Ag. Ibrahim, 2021)**

Although there are only some innovations in the research methods in this paper, the research results need further investigation and analysis in the future. Therefore, only some research results are reported in this article.

## RESULTS AND DISCUSSION

The first report basic personal information such as gender, educational background, visual conditions and frequency of going out. As shown in the Table 4

**Table 4. Sample data and percentage**

Types	Options	Number	Percentage
Gender	Female	107	49%
	Male	113	51%
Age	60-65	81	37%
	66-70	70	31%
	71-75	52	24%
	76-80	17	8%
Educational background	Illiteracy	45	20%
	Primary school	87	40%
	Middle school	52	24%
	High school	28	13%
	University	8	3%
Visual conditions	Almost normal	108	49%
	Slight presbyopia	74	34%
	Moderate visual impairment (presbyopia or cataract, etc.)	36	16%
	Severe visual impairment	2	1%
Outgoing frequency (Parks, shopping malls, public	More than 15 times monthly	78	35%
	10-15 times monthly	80	36%

transport centers, venues, etc.)	5-10 times monthly	48	22%
	1-5 times monthly	14	7%

According to the survey statistics, the vast majority of the elderly prefer “icon”. This result is in line with Icon's “what you see is what you get” feature. Taking the maximum value of 5 points (very satisfied) as the standard, the “icon”

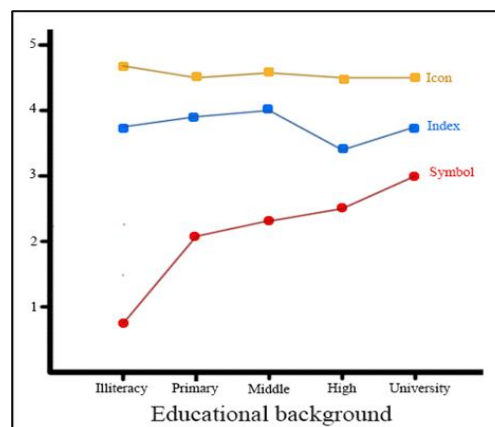
scored an average of 4.66 points, followed by the “index” with a score of 3.79 points, and the unsatisfactory “symbol” which only got a 2.10. Show as the Table 5.

**Table 5. Statistical table of the most popular types of signs for seniors**

	N	Minimum	Maximum	Mean	Std. Deviation
icon	220	4	5	4.66	.474
index	220	1	5	3.79	.665
symbol	220	1	5	2.10	.752
Valid N (listwise)	220				

At the same time, it was investigated whether the “Gender”, “Age”, “Educational background”, and “Frequency of going out” of the elderly affected the choice of the type of signs they liked. According to the method of one-way ANOVA, “Gender”, “Age”, and “Frequency of

going out” “Visual conditions” have no significant effect on the choice of signs. Among them, the “Educational background” affects the choice of “symbol” for the elderly. Show as Figure 1.11



**Fig. 11. Educational background and mean of “Icon, Index, symbol”**

**Table 6 ANOVA Result of Educational background and three types of signs**

		Sum of Squares	df	Mean Square	F	Sig.
icon	Between Groups	.454	4	.114	.502	.735
	Within Groups	48.655	215	.226		

	Total	49.109	219			
index	Between Groups	2.555	4	.639	1.455	.217
	Within Groups	94.404	215	.439		
	Total	96.959	219			
symbol	Between Groups	40.530	4	10.132	26.162	.000
	Within Groups	83.270	215	.387		
	Total	123.800	219			

One-way ANOVA was performed to compare the satisfaction of older adults with educational backgrounds for the three types of signs. Table 6 shows ( $P < 0.5$ ) education level had a significant effect on choosing symbols. Figure 10 shows that the higher the educational level, the higher the satisfaction with the “symbol”. This also confirms the previous explanation of the symbol “requires learning to understand and accept”.

Based on the results obtained above, “Icon”,

which is the most popular signs for the elderly. 6 sign’s cases are respectively analysed for the next step. Formalistic and Visual Semiotic Analysis (FVSA) are used here. It has innovated the selection method of “Kansei words”. It is also the content that this research will continue to study in the future. Only a sample of some questionnaires derived from this method is presented here. As shown in Figure 12 to Figure 14, the results of the research will be reported in detail in future article.


Sign	Select your favourite sign and check its features:	What do you think about this sign?
	<b>How do you feel about your favourite signs?</b> Steady <input type="checkbox"/> Naughty <input type="checkbox"/> Rational <input type="checkbox"/> Inspiring <input type="checkbox"/> Pleasure <input type="checkbox"/> Attractive <input type="checkbox"/> Trusted <input type="checkbox"/> Peaceful <input type="checkbox"/> Safe <input type="checkbox"/> Terrible <input type="checkbox"/> Surprise <input type="checkbox"/> Anxious <input type="checkbox"/> Fuzzy <input type="checkbox"/> Creative <input type="checkbox"/> Exciting <input type="checkbox"/> Stimulating <input type="checkbox"/> Depression <input type="checkbox"/> Consolation <input type="checkbox"/> Easy to identify <input type="checkbox"/> Understandable <input type="checkbox"/>	<b>What kind of sign's formalistic features do you like?</b> <b>Mainly formalistic</b> Point Compositive <input type="checkbox"/> Flat <input type="checkbox"/> Line Compositive <input type="checkbox"/> Semi stereoscopic <input type="checkbox"/> Face Compositive <input type="checkbox"/> Front view <input type="checkbox"/> Combined Compositive <input type="checkbox"/> Appropriate proportion <input type="checkbox"/> Multi-angle <input type="checkbox"/> Steric <input type="checkbox"/> <b>Overall features of signs</b> Round <input type="checkbox"/> Bold <input type="checkbox"/> Sharp <input type="checkbox"/> Thick <input type="checkbox"/> Oval <input type="checkbox"/> Thin <input type="checkbox"/> Rhombus <input type="checkbox"/> Smooth <input type="checkbox"/> Triangle <input type="checkbox"/> Obtuse <input type="checkbox"/>

Fig. 12. Questionnaire sample

What kind of sign's style do you like?	
Elegant <input type="checkbox"/>	Feminine <input type="checkbox"/>
Classic <input type="checkbox"/>	Masculine <input type="checkbox"/>
Fashion <input type="checkbox"/>	Succinct <input type="checkbox"/>
Bulky <input type="checkbox"/>	Surreal style <input type="checkbox"/>
Lightsome <input type="checkbox"/>	Artistic <input type="checkbox"/>
Realistic <input type="checkbox"/>	Flexible <input type="checkbox"/>
Abstract <input type="checkbox"/>	Antique <input type="checkbox"/>
Cartoon <input type="checkbox"/>	Exaggerated <input type="checkbox"/>
Art deco <input type="checkbox"/>	Complete <input type="checkbox"/>
Flashy <input type="checkbox"/>	Lovely <input type="checkbox"/>
Vividly <input type="checkbox"/>	Ideographic accuracy <input type="checkbox"/>

Fig. 13. Questionnaire sample

Signs representation of humour or fun	
What kind of humorous expression do you like?	
The difference in the way of toileting.	<input type="checkbox"/>
The physical difference between men and women.	<input type="checkbox"/>
An interesting story expression.	<input type="checkbox"/>

Fig. 14. Questionnaire sample

## CONCLUSION

This study explores public icons favoured by older adults from a UX perspective. Three hypotheses are made in terms of signs themselves, interpreters and social policy. This study combining semiotic theory and Kansei Engineering of UX research method to explore public signs friendly for the elderly. The results of the survey and analysis of this study show that the elderly prefer the “icon” type that is easy to understand and perceptible. And the results show that older people’s preference for “icon” is not affected by age, visual condition, social promotion and other factors. Only differences in educational background will affect the cognition of signs for elderly. In this study, the selection method of “Kansei words” of Kansei Engineering is extended by the methods of Formalistic Visual Semiotic Analysis (FVSA). On this basis, some questionnaires about signs are innovated. These questionnaires provide useful reference for follow-up research, so as to further explore the design method innovation of signs in symbol characteristics and forms.

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