



Survey Of Functional Needs Of Indigenous Language Self-Learning Website

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ABSTRACT

There are 16 ethnic groups and 42 language groups in Taiwan. The government announced and implemented the "Indigenous Language Development Law" in 2017, which officially made the indigenous language a national language, and introduced innovative technologies to create a more friendly multi-ethnic language learning environment and channels. This study focuses on the functional requirements of indigenous language self-learning websites, with a total of 258 indigenous university students. According to the findings of the research, the results can be served as an important reference index for the establishment of the Indigenous language self-learning website, in order to meet and serve the needs of indigenous language learners in language, education, culture, learning and employment, so as to achieve the sustainable development of language preservation and cultural inheritance.

Keywords-Ethnic language website, Indigenous, Self-learning, Website functional need

I. INTRODUCTION

There are 16 ethnic groups and 42 language groups in Taiwan. In 2017, the government promulgated and implemented the "Indigenous Language Development Law", which officially made the indigenous language a national language, and actively promoted the revitalization of the indigenous language through the four aspects of language promotion, transmission, preservation and research. Indigenous languages often contain unique knowledge about local ecosystems, traditional customs, medicinal plants and sustainable living. Losing these languages means losing valuable insights into sustainable and harmonious ways of living that have developed over centuries. Learning indigenous languages ensures that these oral histories, myths and storytelling practices are preserved. Learning indigenous languages helps preserve and promote the unique cultural heritage of Taiwan's indigenous communities. It fosters a sense of identity and connection with traditional customs, and is also the preservation of traditional culture. Second, language is often a central element of community bonding. Language plays a key role in promoting understanding between different cultural groups. Through the preservation and revitalization of indigenous languages, there are opportunities to promote better understanding and reconciliation between indigenous and non-Indigenous communities, break down barriers, and foster respectful interactions and cooperation between indigenous and non-Indigenous communities.

However, there are structural problems such as the small number of indigenous people living in different places and the lack of language teaching materials and language interaction. Coupled with the need to work and study far away from home, lack of ethnic language interactive learning objects or because the native family uses different ethnic languages, etc., the language literacy of indigenous people often faces difficulties. Therefore, strengthening the improvement of indigenous language literacy is the cornerstone to effectively help and promote the revitalization and development of indigenous culture.

With the advent of the AI era in the 21st century, the introduction of innovative technologies is bound to create a more friendly multi-ethnic language learning environment and channels, and more effectively improve the preservation and promotion services of indigenous languages. Therefore, the integration of the National Network Center, Kaohsiung Normal University, Yang-ming Chiao-tung University (NYCU),

Indigenous Languages Research and Development Foundation, various indigenous language development societies and a number of ethnic language experts, To work together to build the largest, most complete and digital corpus of ethnic languages in Taiwan for the sustainable preservation of ethnic language materials. At the same time, we have introduced advanced AI technology to develop AI models for two-way translation analysis of ethnic Chinese (ethnic Chinese two-way text translation, ethnic speech synthesis, ethnic speech recognition, ethnic chatbot), and develop interactive technology platforms for ethnic Chinese language education (literacy learning system, self-learning service system) and other artificial intelligence technology platforms for indigenous language education [1].

Also, Geetha & Elayaraja (2024) highlighted in their study that the collective importance of perceived usability, website functionality, and perceived usefulness in explaining and potentially enhancing customer satisfaction on websites [2]. This study focuses on the investigation of functional requirements of indigenous language self-learning websites.

In general, the first step of designing a website is to define the purpose, audience and functional requirements of the website. Then to plan the structure of the website, content and design specifications, design the appearance of the website and user interface, and then the design of the website can be implemented into a web page, and choose the appropriate server configuration and station mode, and finally go online and continue to maintain the website. Therefore, this study first investigates the first steps of designing the website, and its purpose is described as follows:

- a. Analyze the order of importance of self-learning connotation needs.
- b. Analyze the order of the importance of the content of the test questions.
- c. Compare the difference of the importance of self-learning connotation needs.
- d. Compare the difference of the importance of demand in the scope of content collection of test items.

II. LITERATURE REVIEW

The authors of the accepted manuscripts will be given a copyright form and the form should accompany your final submission. From the point of view of ethnolinguistics, if a nation loses its language, it is equivalent to losing its culture. Regarding the difficulties of cultural inheritance and development of Taiwan's indigenous peoples, Hung (2023) pointed out that the loss of mother tongue, the disintegration of tribes and the alienation of art and culture are among them[3]. Even while advocating the learning of mother tongue, should we also learn Chinese and English well? In the past, due to the influence of the single national language policy, the vitality of Taiwan's indigenous languages has been greatly weakened, and UNESCO has listed them as "endangered languages" [4]. Chen (2018) put forward the classification system of language health status to determine the following indicators: intergenerational transmission between parents and children, language population and official status, among which whether children are learning the language is the most important [5].

Looking forward to the future, the state should implement the current national language law and policy on the basis of the indigenous peoples' transformation and justice, and urge the indigenous peoples and all citizens to pay attention to the maintenance and active use of their national languages. One of the most powerful tools is the establishment of the self-learning website of the indigenous language, which will cooperate with the development of AI to enable the sustainable development of the indigenous language. In particular, Hsu(2022), CEO of the Foundation for Research and Development of Indigenous Languages, expects to build a corpus of indigenous languages as soon as possible in the future, and strengthen the compilation of indigenous language teaching materials with information technology systems, which will provide more contributions to word frequency research and further develop learning software corresponding to indigenous language teaching materials [6]. At present, the most commonly used website for ethnic language learning digital textbooks in Taiwan is Eyuan (<https://web.klokah.tw/>). Commissioned by the Foundation, it is designed and produced by the National Language Digital Center of Taipei City University. It has the following functions and features: online learning and pronunciation, assisted by a large number of pictures, online simulation test, cross-unit search, tablet compatibility, social network functions and offline system design [6], which contribute a lot to ethnic language learners.

In response to the research and development of innovative AI technologies, the "Artificial Intelligence Technology Platform for Indigenous Language Education", which integrates manpower and material resources from all walks of life, also aims to build a big data Indigenous language corpus to search and digitize a large number of Indigenous language corpus, which is the first set of ethnic language corpus in Taiwan with complete Chinese characters, sounds and corresponding Chinese characters and phonetic data (Kuo et al., 2023).

III. METHODOLOGY

The purpose of this study was to explore the functional requirements of "Indigenous language self-learning website", with the independent variable being "Taiwan Indigenous students", and the observed variables being "importance of learning connotation needs in self-learning zone" and "importance of content ranges in test questions".

A. Definition of Terms

- a. Individual background variables of indigenous people include: college, ethnic origin and gender.
- b. The requirements for the learning area of the Self-learning Indigenous Language website include: "Listening and speaking interactive literacy Zone", "Speech self-comparison zone", "Ethnic Chinese translation zone", "man-machine dialog zone", "AI ethnic language creation zone for hint fiction", "Ethnic language board game zone", "Ethnic language teaching and singing zone", "Ethnic language self-learning path planning zone", "Ethnic language learning experience sharing zone" and "Hometown tourism culture zone" and other self-learning zones.
- c. The demand variation of the content sampling range of the Indigenous language self-learning website includes: "Life experience", "interpersonal interaction", "language and humanities", "leisure and entertainment", "social system", "science and technology health", "all things natural" and "values" and other test content sampling and scope needs.

B. Research objects

A total of 258 Indigenous students participated in the study. The number of females is 156 students (60%), which outnumbered that of males (N=102). The participants are mainly from three colleges, namely the college of Humanities, College of Arts and College of Education. As for the ethnic status, the number of participants from Paiwan, Bunon, Amis and Atayal outnumbered the other tribes.

Table 1 Basic data table of research subjects (N=258)

Condition	Variable	N	%
Gender	male	102	40%
	female	156	60%
College	College of Humanities	80	31%
	College of Arts	79	31%
	College of Education	99	38%
Ethnic status	Amis	50	19.4%
	Atayal	43	16.7%
	Paiwan	60	23.3%
	Bunon	59	22.9%
	Pinuyumayan	10	3.9%
	Rukai	12	4.7%
	Cou	4	1.6%
	Saisiyat	2	0.8%
	Yami	1	0.4%
	Truku	9	3.5%
Sdeiq	6	2.3%	
Hla'alua	2	0.8%	

IV. RESULTS

A. Analysis on the importance of the function of the self-learning website of Indigenous language and the range of test content

After the investigation and analysis of the self-learning website, the importance of its self-learning function is listed in Table 2, and the importance of the scope of test content is listed in Table 3. According to the results of the student self-learning zone demand survey, the top three demand areas are Chinese translation of ethnic languages, ethnic language teaching and singing, hometown sightseeing culture and listening and speaking interaction. The lowest demand is for AI native language creation for hint fiction.

In order of the importance of the scope of the test, the top three are Life experience, interpersonal interaction and value. Respondents rated Tech Health as the least important.

Table 2 Importance ranking of self-learning zone needs (N=258)

Self-learning zone	Mean	SD	Sort
Ethnic Chinese translation	4.39	.793	1
Teach singing in ethnic language	4.31	.792	2

Original township sightseeing culture	4.29	.812	3
Listening and speaking interaction	4.29	.801	3
Phonetic self-alignment	4.28	.800	4
Language learning path planning	4.24	.811	5
man-machine dialog	4.20	.807	6
Language learning experience sharing	4.19	.849	7
Ethnic language board games	4.07	.855	8
AI indigenous language creation for hint fiction	4.04	.852	9

Table 3 Test Content Scope Importance ranking (N=258)

Test content scope	Mean	SD	Sort
Life experience	4.54	.701	1
interpersonal interaction	4.51	.701	2
Values	4.51	.707	2
Language Humanities	4.50	.734	3
Everything in All things in nature	4.40	.769	4
Casual entertainment	4.39	.767	5
Social institutions	4.39	.767	5
Tech Health	4.22	.838	6

B. Analysis of gender differences in function and scope of test content of Indigenous language self-learning website

The difference analysis of functional requirements of the self-learning website of indigenous people of different genders is shown in Table 4, and the difference analysis of the demand for the scope of test content is shown in Table 5, both of which show no difference.

Table 4 One-way variation analysis of the need for self-learning zone by indigenous with different gender

Self-learning zone	Gender	N	Mean	SD	F-value (p-value)
Listening and speaking interactive zone	Male	102	4.26	.820	.128 (p=.72)
	female	156	4.30	.790	
Speech self-comparison zone	male	102	4.23	.819	.870 (p=.352)
	female	156	4.32	.787	
Chinese translation area for ethnic languages	male	102	4.32	.810	.241 (p=.266)
	female	156	4.44	.780	
Man-machine Dialog zone	male	102	4.15	.813	.768 (p=.382)
	female	156	4.24	.804	
AI ethnic language creation zone for hint fiction	male	102	4.04	.878	.003 (p=.959)
	female	156	4.04	.837	
Ethnic language board game section	male	102	4.00	.901	1.002 (p=.318)
	female	156	4.11	.824	
Ethnic language teaching singing zone	male	102	4.20	.833	3.530 (p=.061)
	female	156	4.38	.757	
Language learning path planning area	male	102	4.13	.864	3.295 (p=.071)
	female	156	4.31	.769	
Language learning experience	male	102	4.10	.885	1.820

sharing zone	female	156	4.24	.822	(p=.178)
Original township sightseeing	male	102	4.19	.864	3.022
culture zone	female	156	4.37	.771	(p=.083)

Table 5 One-way variation analysis of the needs for the test content scope by different sex Indigenous

Test content scope	Gender	N	Mean	SD	F-value (p-value)
Life experience	male	102	4.47	.741	1.601 (p=.207)
	female	156	4.58	.672	
interpersonal interaction	male	102	4.43	.764	2.219 (p=.138)
	female	156	4.56	.654	
Language Humanities	male	102	4.40	.799	3.280 (p=.071)
	female	156	4.57	.683	
Leisure Entertainment	male	102	4.31	.796	1.568 (p=.212)
	female	156	4.44	.746	
Social system	male	102	4.29	.778	2.520 (p=.114)
	female	156	4.45	.756	
Tech Health	male	102	4.20	.838	.148 (p=.701)
	female	156	4.24	.843	
All Things in All things in nature	male	102	4.34	.802	1.025 (p=.312)
	female	156	4.44	.747	
Values	male	102	4.46	.740	.872 (p=.351)
	female	156	4.54	.685	

C. Analysis of ethnic differences in the function and scope of test content of Indigenous language self-learning website

Difference analysis of the functional requirements for both Self-learning zones for different ethnic groups of indigenous people on websites and a differential analysis of the range of test content requirements did not show significant differences.

D. An analysis of the college differences between the functions of self-learning websites of Indigenous languages and the scope of test content

The number of college variances is as follows: (1) College of Humanities, (2) College of Arts, (3) College of Education. The difference analysis of functional requirements of the website. There are significant differences in website functional requirements of "listening and speaking interaction zone", "Voice self-comparison", "Ethnic Chinese translation zone" and "Ethnic language path planning zone". There are significant differences in the sample areas of "life experience", "interpersonal interaction", "Language and humanities", "social system" and "All things in nature and all things", as shown in the following tables 6 & tables 7.

Table 6 Difference analysis of functional requirements of the website of the Indigenous self-learning zone in different colleges

Self-learning zone	College	N	Mean	SD	F-value (p-value)	Scheffe Comparison after the fac
Listening and Speaking interactive zone	College of Humanities	of 80	4.51	.656	4.953 (p=.008)	(1) > (3)
	College of Arts	79	4.23	.862		
	College of Education	of 99	4.15	.825		
Voice self alignment zone	College of Humanities	of 80	4.50	.675	4.928 (p=.008)	

	College of Arts	79	4.25	.824			(1) > (3)
	College of Education	99	4.13	.841			
Chinese translation section for ethnic languages	College of Humanities	80	4.63	.644	6.262		(p=.002)
	College of Arts	79	4.38	.848			(1) > (3)
	College of Education	99	4.39	.793			
Man-machine Dialog zone	College of Humanities	80	4.34	.745	2.772		(p=.064)
	College of Arts	79	4.24	.804			n. s.
	College of Education	99	4.06	.843			
AI Dialect Creation zone	College of Humanities	80	4.07	.823	.306		(p=.737)
	College of Arts	79	4.08	.844			n. s.
	College of Education	99	3.99	.886			
Ethnic language board game section	College of Humanities	80	4.20	.848	2.339		
	College of Arts	79	4.10	.826			(p=.098) n. s.
	College of Education	99	3.93	.872			
Ethnic language teaching zone	College of Humanities	80	4.43	.689	2.287		(p=.104) n. s.
	College of Arts	79	4.35	.785			
	College of Education	99	4.18	.861			
Language learning path planning area	College of Humanities	80	4.41	.669	3.321		
	College of Arts	79	4.24	.835			(1) > (3)
	College of Education	99	4.10	.875			
Language learning experience sharing zone	College of Humanities	80	4.34	.762	1.905		(p=.151)
	College of Arts	79	4.14	.858			n. s.
	Institute of Education	99	4.10	.898			
Sightseeing culture zone	College of Humanities	80	4.19	.828	1.072		(p=.344)
	College of Arts	79	4.37	.771			n. s.
	College of Education	99	4.32	.831			

Table 7 Difference analysis of demand for the scope of test content in different colleges

Test content scope	College	N	Mean	SD	F-value (p-value)	Scheffe Comparison after the fact
Life experience	College of Humanities	80	4.66	.615	4.659 (p=.010)	(1) > (3)
	College of Arts	79	4.62	.647		
	College of Education	99	4.37	.777		
interpersonal interaction	College of Humanities	80	4.63	.624	4.219 (p=.016)	(1) > (3)
	College of Arts	79	4.59	.631		

	College of 99	4.35	.787			
	Education					
Language Humanities	College of 80	4.65	.618	3.515	(1) > (3)	
	Humanities			(p=.031)		
	College of 79	4.53	.695			
	Arts					
	College of 99	4.36	.826			
	Education					
Leisure Entertainment	College of 80	4.44	.744	1.878		
	Humanities			(p=.155)		
	College of 79	4.48	.731		n. s.	
	Arts					
	College of 99	4.27	.806			
	Education					
Social system	College of 80	4.51	.693	3.884	(1) > (3)	
	Humanities			(p=.022)		
	College of 79	4.47	.731			
	Arts					
	College of 99	4.22	.828			
	Education					
Tech Health	College of 80	4.22	.842	1.530		
	Humanities					
	College of 79	4.34	.815	(p=.218)	n. s.	
	Arts					
	College of 99	4.22	.838			
	Education					
All Things in nature	College of 80	4.55	.673	5.758	(1) > (3)	
	Humanities					
	College of 79	4.51	.732	(p=.004)	(2) > (3)	
	Arts					
	College of 99	4.20	.833			
	Education					
Value concept	College of 80	4.61	.626	2.734		
	Humanities					
	College of 79	4.57	.673	(p=.067)	n. s.	
	Arts					
	College of 99	4.38	.779			
	Education					

V. DISCUSSION & CONCLUSION

A. The importance of Indigenous university students' demand for the connotation of learning in the self-learning section of the "Indigenous Language Self-learning Website" is highly demonstrated. The students with "Chinese translation Area of ethnic language" got the highest score, while the students with "AI ethnic language creation for hint fiction" got the lower score.

B. Indigenous college students' demand for the importance of the content ranges of the test questions of the "Indigenous language self-learning website" is highly reflected. The "life experience" question scored the highest, while the "science and technology health" question scored the lowest.

C. There are significant differences in the demand of indigenous students from different colleges for the content of "Indigenous language self-learning website", including "listening and speaking interactive area", "voice self-comparison", "Ethnic Chinese translation area" and "ethnic language path planning area".

D. There are significant differences in the demand of indigenous students from different colleges for the content range of the "Indigenous Language self-learning website" test questions, including the five aspects of "life experience", "interpersonal interaction", "language and humanities", "social system" and "all things in nature".

E. Based on the above research conclusions, the researchers will use the platform as a reference for the establishment of the website, hoping that when the platform is completed and launched, it can meet and serve the needs of indigenous people and non-indigenous people in language, education, culture, learning and employment, and thus achieve the sustainable development of language preservation and cultural inheritance.

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