

Conference Paper

Intercultural Assessment Through Peircean Signs of Scholars' Digital Divide

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Abstract

Individuals using advanced technology appear to react differently when explaining their understanding when exposed to information and communication technology tools and access, such as computers, mobile phones, and the Internet. This creates a digital divide among scholars in regard to the ability to access modern information and communication technology. Intercultural competence is the key element of their ability to select appropriate creative materials in education subjects and specified areas effectively. A particular way of assessing that competence needs to be applied to keep scholars in a globally harmonized system between indigenous and foreign cultures. This study was a qualitative research and used Peircean signs to construct clarity as a way of assessing intercultural competence in the scholarly digital divide. The objective of this research was to find out deeply the effectual way of Peircean signs as assessment in intercultural competence. The data were collected from 20 scholars' ICT materials. Their creation was based on their experiences when carrying out community service activities in the Putri mountain area, Bogor West Java, in 2017. The results show the difference assessment in cultural containers. They are separated into 1) iconic signs; 2) indexical signs, and 3) symbolic signs of the indigenous and foreign cultures that reflect the intercultural competence.

Keywords: digital divide, intercultural assessment, Peircean signs

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1. Introduction

Global communication uses technology to become more widespread. Information and communication technology (ICT) appears as programs in some fields, such as language teaching, where computer-based materials are used to carry out tasks by offering a wide range of activities. The use of ICT among individuals will increase for many reasons in the coming years. New ways of integrating the use of technology into language practice and performance assessment, such as through computers, mobile phones,

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and the Internet, are being implemented. Individuals appear to react differently when exposed to those tools, access to which enhances knowledge, especially for scholars.

Scholars grow up by using technology in some terms to its implementing. They work with a wide range of information and communication technology and this is known as the "digital divide" [1]. Technology provides an important constraint on the range of creative possibilities [2]. Scholars access modern communication technology and reach information globally. The empowering of ICT in language learning develops their skills in selecting and applying appropriate materials in subjects with innovations. There are diverse ways of oncoming to various communities in many countries. It is becoming important to ensure the scholars' abilities into competence in that environment. Understanding of them is outcomes and effort on their educational knowledge. The situation of diverse reactions appears the different outcomes of scholars.

Intercultural competence is the key element in keeping scholars in a globally harmonized system between indigenous and foreign cultures when the diverse ways and reactions involve communities to encourage relations between signs in developing areas. Signs of intercultural competence can be found by using Peircean signs where they assess intercultural competence among scholars as the digital divide. Coombe et al. [3] concluded that "... assessment is a widespread feature of most educational systems in the world today... it makes sense that they know as much as they can about this important activity." The success of them emerges scholars' attention to a social and cultural perspective on their attitudes in the viewing of ICT roles. The different attitudes toward to different systematical signs when information comes into the communication technology as signifying order.

1.1. Competence in intercultural assessment

The achievement of human intellectual regards to cultures. It is contained growth manifestation of human being. Danesi and Perron [4] explained: "The basis of culture, as a system of shared meaning, is what we have called the signifying order... the system of signs, the codes into which they cohere, and the texts these codes allow human beings to construct." Their explanation shows the cultural understanding which delivered into signs system as coherence to be construction. It is meant, the shared meaning of signs as signifying order and has the function to make purposeful behavior, knowledge, social interaction, communication fluid until habitual. They came in human

as reflexes to the ingrained need and find meaning in life. There are cultural manifestations in specific social situations. Manifestations are signifying properties that enable the representation and expression of individuals' performance.

Based on these, understanding intercultural competence starts from cultural competence where cultural knowledge and behavior appear in individuals' attitudes in specific social situations. The finding of meaning is closely related to communication. It shares behavior, belief, values through language practices in a society and experiences of them are represented. Martin and Thomas [5] explained: "From a cultural perspective, however, with various contexts and power differentials in mind, a different view of this intercultural interaction emerges." The explanation of Martin and Thomas clarifies that intercultural competence begins from culture. It is related to ability, which develops targeted knowledge, skill, and attitudes. They present outcomes as intercultural awareness in individuals' reflexes.

Danesi and Perron [4] guided five specific principles to know signifying order: 1) Interdisciplinary: find the applicable situation; 2) Relativity: keep signs, codes, and texts in mind that have structural effects on individuals; 3) Signification: build on signifying properties (iconicity, indexicality, etc.) as manifested in the different ways according to culture that cohere into a specific signification system; 4) Dimensionality: the signifying properties identified in a specific situation of signifying order and psychological process of representation; 5) Interconnectedness: meanings are interconnected throughout the signifying order. The principles are guided toward finding out the intercultural competence and assessment of individuals' awareness in their environment. It is applied by using signifying properties. The shared meaning of intercultural competence as assessment. It has to follow dimensionality principles to extend individuals' outcomes, such as: first, bodily phenomenon. This is sensory to responses to the world; secondly, representation. It is representational mind to give attention to and on the uses, they are put to; Thirdly, a culture-specific way of knowing. This is a form of knowing that is made up of signs, codes, and texts as cultural contexts in individual memory.

1.2. Peircean signs and intercultural competence in scholars' digital divide

The signifying order and dimensionality principles are specifically correlated to signs, such as icons, indexes, and symbols. They are obtained in Peircean signs. It presents the function and position of individuals' intercultural awareness in society, especially scholars in advances ICT as the digital divide. All of them shared meaning into a signs

system when ICT hold into the society. It is used to communicate in particular senses and create signs as intercultural competence. It becomes a cultural being. The signifier of the sign has been characterized as a concrete object, an abstract entity, or both [6].

Peircean signs view signs as indexical, iconic, and symbolic signs into something to be something else. They are the most fundamental divisions of signs [6]. This explains the assessment of the indigenous and foreign cultures that reflect the intercultural competence. All of them consist of signs and assess three dimensions as dimensionality principles. They are a part of the principles in a signifying order. There are signs as physical part and makeup words to call attention. Signs capture the particular object as a signifying order within individuals' mind. They are beyond signs to be the actual one. Merrel [7] said: "Engendering and processing signs and making them meaningful is more than merely getting information out of them or making sense of them." Merrel's explanation supported Noth's view that signs are very useful for obtaining information and making sense of it.

The scholars on the digital divide create the interconnection between representation and expression using their knowledge. Tomasello [8] said: "Human beings share the majority of their cognitive skills and knowledge with other... including both the sensory-motor world of objects in their spatial, temporal, categorical, and quantitative relations and the social world..." There is advanced information and communication technology tools that have the capacity to represent the world by saying signs. They use signs to understand a concrete and abstract reference in a signifying order. These signs refer to physical meanings to achieve understanding. The signifying properties, such as behavior, knowledge, and skills that are used in their social interaction, are intercultural competence and assess scholars' awareness as cultural persons. They are people's way of thinking, behaving, and acting. Intercultural competence shows the ability to produce, understand, and use signs that fill the meaning of human existence. Danesi and Perron [4] said: "Culture is a system of shared meaning that is based on a signifying order... culture as a 'container' of signs and their meaning."

2. Methods

This study was a qualitative research. Dawson [9] said that "qualitative research explores attitudes, behavior and experiences through such methods as interviews or focus groups. It attempts to get an in-depth opinion from participants." The opinions of participants were analyzed by using Peircean signs, such as indexical, iconic, and

symbolic signs. These are applied to clarify the assessment of intercultural competence on scholars as the digital divide.

The objective of this research was to find out about the use and effectiveness of Peircean signs in intercultural assessment on scholars' digital divide. The data were collected from 20 scholars' ICT materials in 2017. The created materials are supported by advanced ICT and their own experiences while carrying out community service activities in the Putri mountain area, Bogor West Java. Experiences on scholars' digital divide were arranged in a natural setting. This is a characteristic in qualitative studies to find the issue or problem under study [10].

3. Results

Here are the materials of 20 scholars' digital divide. The materials are supported by information and communication technology that brings diverse cultures in many ways. They reveal foreign and indigenous cultures. Both of them were carried out by scholars and based on their own experiences in community service activities in the Putri mountain area, Bogor West Java. Those cultures are centered around scholars as the digital divide. (Enclosure) and appear the intercultural competence. They are based on cultural containers as signifying order principles. The views of intercultural competence are based on a signifying order and principles in the cultural container as a basic cultural knowledge on human beings.

A study by Tucker et al. [11] showed intercultural competencies among global leaders and the relationship between these competencies and the criteria for high-performance global leadership. That study clarifies where knowing and understanding intercultural is crucial in individuals' performance. Another study, this time by Bentley et al. [12], explained that The understanding of differences across culture is very important in Internet-based learning (IBL). This will integrate IBL into an increasingly global market and provide quality educational experiences. Both of the studies suggest that culture in intercultural competence requires individuals' concern.

Based on data, individuals basically have intellectual culture. Graphic 1 gives the supported explanation to the enclosure where signifying order share functions of signs to achieve culture. There are some purposeful functions to cohere signs in a cultural container. They are separated be behavior, knowledge, social interaction, communication fluid, and habitual. The purposeful functions as signifying order on scholars' digital divide produce dominant purposeful ones, such as: "business," dominant in behavior, "communication," dominant in knowing, "result," dominant in social interaction,

“relationship” and “ICT tools,” dominant in communication fluid, and “occupation,” dominant in habitual. The purposeful functions provide a reference to other signs as intercultural competence.

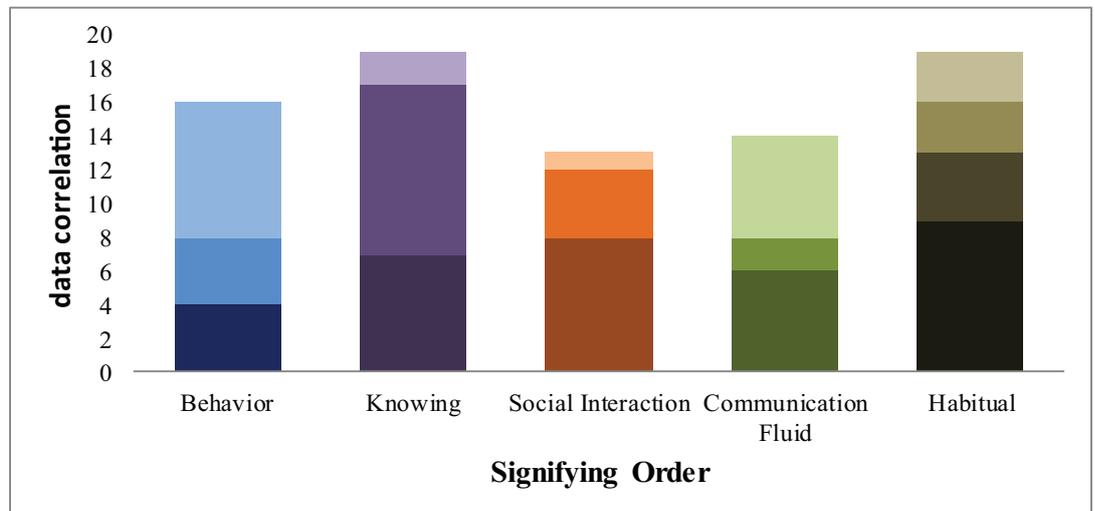


Figure 1: Signifying order in cultural container on scholars' digital divide.

Signifying order refers to purposeful functions and has a direct connection to principles in a signifying order. Graphic 2 clarifies the capacity of the use of principles in a cultural container on scholars' digital divide. The principle “interdisciplinarity” has direct correlation 22% to “behavior,” “relativity” 26% to “knowing,” “signification” 18% to “social interaction,” “dimensionality” 20% to “communication fluid” and interconnectedness 14% to habitual.

Based on the proportions, the principle “relativity” is the most dominant in direct relation to “knowing.” Some signs are already kept in mind and very influential on individuals, such as scholars' digital divide. It is an intellectual culture to them. They share the meaning of its signs and choose purposeful functions to achieve other signs in intercultural competence to scholars' digital divide.

Table 1 spells out Peircean signs in dimensional principles and signifying properties. These are identified in a specific situation from dimensionality on signifying order. The specific one through Peircean signs is used to access intercultural competence on scholars' digital divide. They are separated into three specific signs. Indexical and symbolic signs have higher percentage scores than iconic signs.

Figure 3 shows the percentage scores of intercultural competence which significance on scholars' digital divide. Both indexical and symbolic signs have a percentage of 43%. Iconic signs have a percentage of 14%. The score in percentage appears situation where scholars' digital divide has the highest intercultural awareness on “relationship”

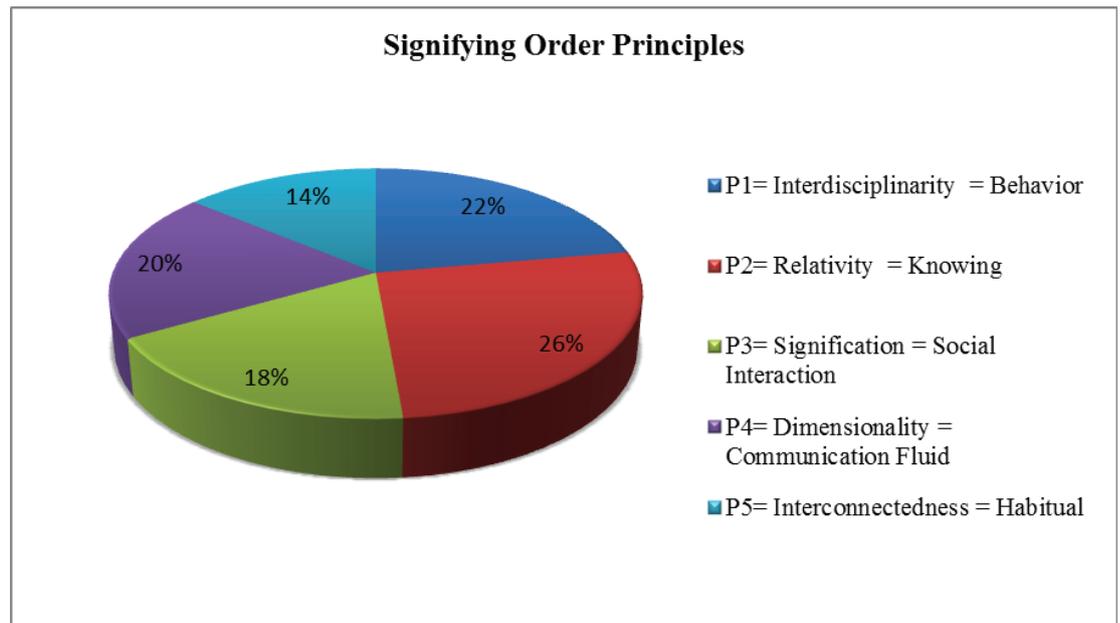


Figure 2: Signifying order principles in cultural container on scholars' digital divide.

as indexical signs and "ICT tools" as symbolic signs. Both of them come into the dominant intercultural competence.

The explanations above present results that account for the diverse dimensions of representation and expressions in a cultural container. All of them are basic guidance aimed at finding intercultural assessment. They are:

3.1. Iconic signs as the second dimension in intercultural assessment

Iconic signs as the first dimension on scholars' digital divide are constructed by "ICT education.". Scholars express "ICT education" into communication fluid to show the impression of ICT in the education field. Scholars represent "ICT education" to share its meaning as iconic signs. Education is close to ICT with both of them having the same quality of social life. Equal quality appears icon into the village and city people. ICT is often seen to be introduced in the cities and shown in the villages as icon signs.

The quality of ICT and education is combined together to gain a better position in social life. Equal quality is applied to gain the attention of the villagers. They learn from icon signs, such as educational interactive images, pictures, etc., which are related to the real situations applied in the cities. Icon signs make them enthusiastic. Scholars use a central character in bright images to gain more attention from villagers with a view to obtaining knowledge through advanced information and communication technology.

The situation brings iconic signs as the first dimension where signs create a bodily phenomenon. "ICT education" as iconic signs are sensory to villagers' responses to the ICT material that bring through education. The equal quality shows up to get more attention. The using of iconic signs on scholars' digital divide appears 14% of all manifestations as signifying the order in the cultural container. Iconic signs are not dominant among scholars when they are correlated with another signifying order in intercultural competence.

3.2. Indexical signs as the second dimension in intercultural assessment

Indexical signs as the second dimension on scholars' digital divide are constructed by "relationship." It showed expressions of communication fluid in a cultural container. Scholars represent "relationship" to share its meaning using indexical signs. The signs applied a representational mind where scholars give their attention to a specific social life in Sanding village, Putri mountain, West Java.

Their awareness of culture begins with the relationship between people in a specific location. The "relationship" is an index to other signs. It creates awareness of intercultural competence. "Relationship" connects to behavior, knowledge, social interaction, and habitual. Scholars have knowledge of foreign and indigenous culture where "relationship" gives an index into the specific situation. Scholars' digital divide uses ICT to derive knowledge that delivers information from the diverse cultures of many countries. They look at habitual and the social interaction of villagers as a background when ICT comes to them through activities. The different relationships are adapted to foreign and indigenous cultures.

The educational background, beliefs, and traditional food ceremony of "Liwetan" influence the kinds of relationship between villagers. They are keen to obtain new information, such as ICT. The using indexical signs on scholars' digital divide appear 43%. It's meant "relationship" as indexical signs having the position. It is almost a half of all manifestations as signifying the order in the cultural container.

3.3. Symbolic signs as the third dimension in intercultural assessment

Symbolic signs as the third dimension on scholars' digital divide are constructed by "ICT tools." Scholars express "ICT tools" in communication fluid. They represent "ICT tools"

to share symbolic signs. The signs position as the third dimension where information and communication tools such as the Internet, mobile phones, and computers give a specific way to gain an understanding of advanced technology.

The use of “ICT tools” is an action that is followed by others. The situation conveys ICT tools as habitual in social interaction. It could be used in many fields, such as business and education. It is presented through communication and entrepreneurship activities. ICT tools create a dynamic situation. The third dimension transports ICT tools into a culture and conveyed in habitual, behavior, knowledge, and social interaction.

“ICT tools” as symbolic signs have a position 43% of all signifying order in cultural manifestations. This means that symbolic signs in a cultural container on scholars’ digital divide have the same significance as indexical signs. Intercultural competence is shown by symbolic signs. It is applied to villagers and has an effect on them. It changes their knowledge and introduces new behavior, such as: being an entrepreneur. Foreign and indigenous cultures benefit from combining ICT tools as symbolic signs.

TABLE 1: Peircean signs in dimensional principles on scholars’ digital divide.

Scholar (Sch)	Peircean Signs in Dimensional Principles			Scholar (Sch)	Peircean Signs in Dimensional Principles		
	First	Second	Third		First	Second	Third
	Iconic	Indexical	Symbolic		Iconic	Indexical	Symbolic
Sch-1	-	-	v	Sch-11	-	-	-
Sch-2	-	v	-	Sch-12	-	v	-
Sch-3	v	-	-	Sch-13	-	-	-
Sch-4	-	-	-	Sch-14	-	v	-
Sch-5	v	-	-	Sch-15	-	-	v
Sch-6	-	-	-	Sch-16	-	v	-
Sch-7	-	-	v	Sch-17	-	-	v
Sch-8	-	-	-	Sch-18	-	-	v
Sch-9	-	v	-	Sch-19	-	-	-
Sch-10	-	-	v	Sch-20	-	v	-
TOTAL	Iconic as Firstness = 2 Indexical as Secondness = 6 Symbolic as Thirdness = 6						

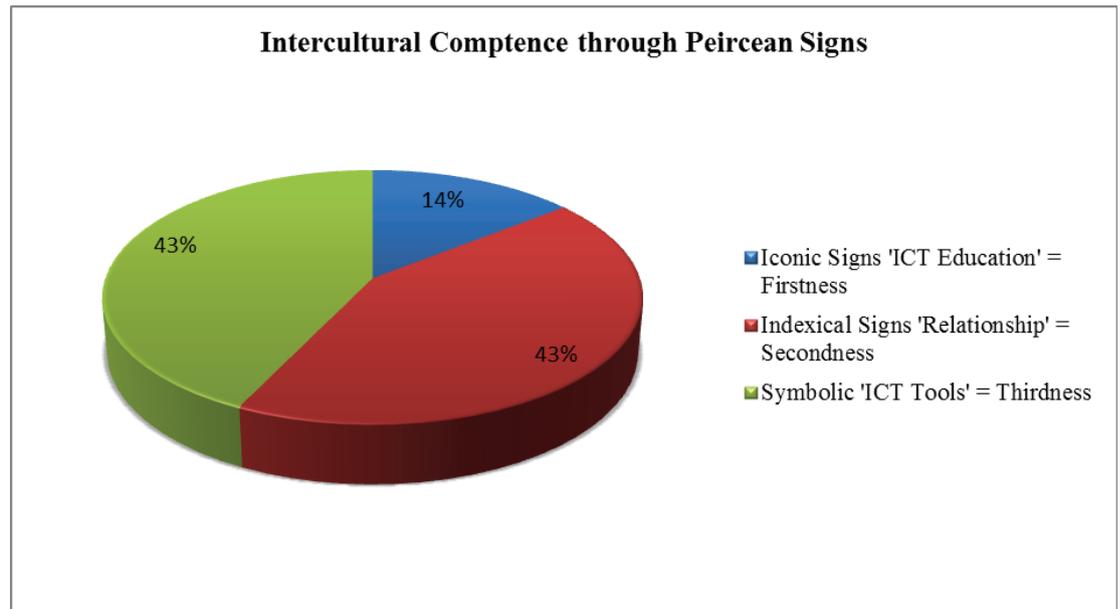


Figure 3: Assessment of intercultural competence on scholars' digital divide through Peircean Signs.

4. Conclusion

Intercultural competence is the key element where indigenous and foreign cultures become harmony into individuals. Information and communication technology has conveyed diverse cultures on individuals, especially scholars as the digital divide. Advanced ICT has a great influence on individuals in their intercultural awareness.

Knowing and understanding ways to assess intercultural competence on scholars' digital divide becomes an important thing to keep them in a harmonized system where advanced information and communication technology is always evolving. Peircean signs are effective ways to assess intercultural competence to know and understand intercultural competence on scholars' digital divide.

Indexical and symbolic signs fill the dominant position in intercultural competence on scholars' digital divide. "Relationship" and "ICT tool" are specific signifying properties. Both of them receive more attention than iconic signs. They are in the second and third dimensions where intercultural competence has entered the mind of scholars' digital divide.

References

- [1] Dudeney G, Nicky H: How to teach english with technology. United Kingdom: Pearson Education Limited; 2007.

- [2] Smith P: Cultural theory: an introduction. United Kingdom: Blackwell Publishing; 2001.
- [3] Coombe CP, Barry O, Stephen S: The cambridge guide to second language assessment. United States of America: Cambridge University Press; 2012.
- [4] Danesi M, Paul P: Analyzing cultures: an introduction & handbook. United States of America: Indiana University Press; 1999.
- [5] Martin JN, Thomas KN: Intercultural communication in contexts. New York: McGraw Hill; 2010.
- [6] Noth W: Handbook of semiotics. United States of America: Indiana University Press; 1995.
- [7] Merrel F: The routledge companion to semiotics and linguistics. New York: Routledge; 2001.
- [8] Tomansello M: The cultural origins of human cognition. London: Harvard University Press 1999.
- [9] Dawson C: Practical research methods. United Kingdom: How-to books; 2002.
- [10] Creswell WJ: Research design: qualitative, quantitative, and mixed methods approaches. United Kingdom: Sage Publications; 2009.
- [11] Tucker FM, Ron B, Adam V, Uma K: Leading across cultures in the human age: an empirical investigation of intercultural competency among global leaders. USA: SpringerPlus; 2014.
- [12] Bentley JPH, Mari VT, Bing HC: Intercultural internet-based learning: know your audience what it values. *Edu Technol Res Dev.* 2005; 53: 117-127.

Enclosure

Scholar (Sch)	Cultural Container									
	Signifying Order					Signifying Order Principles				
	Behavior	Knowing	Social Interaction	Communication Fluid	Habitual	P1	P2	P3	P4	P5
Sch-1	Business	Entrepreneur	Audience (result)	ICT tools	Occupation	v	v	v	v	v
Sch-2	ICT	Communication	-	Relationship	Occupation	v	v	-	v	v
Sch-3	ICT	Communication	Audience (effort)	ICT education	Occupation Educational	v	v	v	v	v
Sch-4	Business	Entrepreneur	-	-	-	v	v	-	-	-
Sch-5	ICT	Communication	Audience (result)	ICT education	Occupation Educational	v	v	v	v	v
Sch-6	-	Vocabulary	-	-	-	-	v	-	-	-
Sch-7	Education	Communication	Audience (feedback)	ICT tools	Occupation Believe	v	v	v	v	v
Sch-8	Business	Entrepreneur	-	-	-	v	v	-	-	-
Sch-9	ICT	Communication	-	Relationship	-	v	v	-	v	-
Sch-10	Education	Entrepreneur	Audience (feedback)	ICT tools	Occupation	v	v	v	v	v
Sch-11	-	Entrepreneur	Audience (result)	-	-	-	v	v	-	-
Sch-12	ICT	Vocabulary	Audience (feedback)	Relationship	Food	v	v	v	v	v
Sch-13	Education	Communication	-	-	-	v	v	-	-	-
Sch-14	Education	Communication	-	Relationship	-	v	v	-	v	-
Sch-15	ICT	Communication	Audience (feedback)	ICT tools	-	v	v	v	v	-
Sch-16	-	-	Audience (result)	Relationship	Occupation Educational Believe	-	-	v	v	v
Sch-17	Business	Entrepreneur	Audience (result)	ICT tools	-	v	v	v	v	-
Sch-18	ICT	Entrepreneur	Audience (result)	ICT tools	Occupation Educational Believe Food	v	v	v	v	v
Sch-19	-	Communication	Audience (result)	-	-	-	v	v	-	-
Sch-20	ICT	Communication	Audience (result)	Relationship	Occupation Food	v	v	v	v	v
TOTAL						16	19	13	14	10

P1= Interdisciplinary P3= Signification 5= Interconnectedness P2= Relativity P4= Dimensionality