

A Comparative Study of the Need Hierarchy Between Real and Virtual Environments

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Abstract: The Virtual Environment is composed by many elements, and it brings many benefits. Beside it, we also developed much in the digital and mobile learning fields, and we hope to construct even more powerful tools to advance further human learning. However, is everything positive for kids to contact with virtual environment? We should face this advancement carefully. Perhaps Virtual environments may eventually subvert the social system. The present research explored the mental level in hopes to find the evidence about how people get their Hierarchy needs from Virtual Environments, and their identification with Virtual ID and its interaction with others. This research focused on the students whom were born after 1990, so junior high students were selected as sample population. The sampling area is in Kaohsiung City, Taiwan, it is located on the East Asia. The sampling adopted two-stage random sampling: one stage was the school, and the other was cluster sampling that focused on classes in each grade.

Through the analysis, this research found evidence on the identification with Virtual ID, the Hierarchy Needs in the virtual environment, and social imitation between the virtual and real environment.

Key-Words: Virtual ID, Virtual environment, Social Imitate, Need of esteem, need of safety, need of social, need of self-actualization

1 Introduction

Computer Science is manifested in humans life, as we can find many of its benefits in life. However, everything that is positive may or may not benefit the human system. We need to safeguard ourselves when facing computer technology. Especially as we construct virtual environment that **simulate** our real environment. We have powerful skills to **deceive** our senses. However the most important issue is “Will the human mind become confused between the real and virtual environment?” Before we enjoy the benefits of technology, we need think about this issue.

In the past, people contact with others through face to face, physically and personally in the real environment. But now, one can create virtual identities for free in the Internet. Through their virtual (Internet) identities, people communicate with each other. Therefore in cyberspace, people develop interpersonal relationships. Many times we find that a person’s virtual identity differs from their real persona, and therefore this is one reason for this research.

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In the ICT society, Information technology had become the partner of life. In the past, we always

managed an affair through one self in real environment. It was hard to hide them from the process. Until now, we have another choice. We can control many things through the virtual ID in the virtual environment. But it is just an ID in the cyberspace. And they also can construct many kinds of ID that easily to hide. Are Virtual IDs the same with their real selves between real and virtual world?

According to scholar “Freud” [1][6], he thought that human had three kinds of personality in the real environment. It included ID, Ego, and Super ego. People Integrated above into real ID to connect with others. According to another scholar “Carl Rogers” [1], he had distinguished the self into real self and ideal self. People hope to earn the appreciation in the real environment. And it included the interaction between self and real environment. So is correlation the same between “Real ID & real environment” and “Virtual ID & virtual environment”.

Besides it, Scholar Maslow had provided the “Hierarchy of Needs”. It included physiological need, need of safety, need of social, need of esteem, and need of self actualization. It presented the basic needs through the real self in the real environment. Could virtual world get the same basic needs?

People constructed the personality from the childhood in real environment. Until now, children must contact with two kinds of environments. Can they distinguish clear between real and virtual environment. According to the scholar Bandura (1986), he provided the theory of social imitate. Students would learn experience from modeling (Robert, 2003) [2]. It is also the way to construct the real self from the real environment. But how were the imitation from the virtual environment? Are Kids construct the virtual ID from the modeling?

Bases upon these theories, this study tried to explore the self, Need Hierarchy and imitation between real and virtual environment.

3 Methodology

Maslow’s Hierarchy of needs (Maslow) [1] describes the basic human needs. It includes the physiological need, need of safety, social, self-esteem, and self-actualization. Based upon this research, we became interested in psychological aspect. Therefore this research focused on the need in safety, social, esteem, and self-actualization.

Learning is an important process to help people adapt society. It includes many elements, just like school education systems, family education, social imitation (Bandura)[2][7][8], and so on. This research adopts the social imitation to explore the differences between real and virtual environments.

Based upon the theory, this research developed the questionnaire. The questionnaire was modified through 1 professor and 5 scholars. The pretest had 60 participators (student of junior high school) to participate in. After the analysis, the reliability of this questionnaire reached the 0.91 and the cumulative reached 53.3%.

In the formal test, the population of this research is the students of junior high schools in Kaohsiung City, Taiwan. This City is the second City in Taiwan. And it had the 1.50 billion populations. Beside it, Kaohsiung city have the harbor. Volume of freight handled is the sixth in the global. So Kaohsiung port is the important place in Taiwan and globe. This research adopted the two stages random sampling. The amount of junior high schools is 46 in Kaohsiung City. So in the first stage, 10 schools was sampling in random. After it, this research used the cluster sampling in school, each grade sampling one class. So total sampling classes were 30 classes, it had 1050 students. After survey, this study had 952 participators whom data were analyzed in this research.

The survey of questionnaire combined with Internet tool. Participators were arranged to the computer classroom and replied the opinions.

4 Results and Discussion

Based upon the results, we discussed in Identification of ID, Hierarchy of needs, and social imitate between virtual and real environment.

4.1 The cognition for Real & Virtual ID

According to Table 1, student felt that they had self-concept within virtual ID. They were 82.2% that students had a virtual ID that could represent selves. Especially they had 66.4% that show the fit at all. And negative thinking was just 6.8%. So we could know that virtual ID would be the part of the Life. They had two kinds of Id to present themselves between real and virtual environment.

Table 1. I had owned the Virtual (Internet) ID that could represent self.

Choice	% Selecting	% Selecting
Fit at all	66.4	82.2
Fairly Fit	15.8	
Neuter	11.1	11.1
Not Fairly Fit	1.1	6.8
Not Fit at all	5.7	

In the using of virtual ID, they were 62.8% that students had been using the virtual ID to communicate and chat with others (Table 2.). It was more than negation (15.6%). According to this evidence, we know virtual ID was been operating actually in life.

In the real environment, people communicate with each other through face to face. So we could catch the felling and information from language and body language. The most important was that we used real self to interact with others in the real environment.

Based upon it, people developed the networking of real social through real ID. But now, student contact with virtual environment at their childhood. They were learning the methods to use virtual environment that included interaction with others whom had never seen. Through it, they would contact with two kinds of environment. So they would try to develop the social network in the real and virtual environment.

Table 2. I had used virtual ID to chat and communicate with others by word or sound.

Choice	% Selecting	% Selecting
Fit at all	44.1	62.8
Fairly Fit	18.7	
Neuter	21.6	21.6
Not Fairly Fit	5.9	15.6
Not Fit at all	9.7	

In the table 3, we could find the rate in the statistic that students used virtual ID to chat and communicate with others whom had never met by face to face before. The data presented that the positive and negative were closed. And the students had 36.4%-41.6% to have experiences, so we could not ignore the situation that students using virtual ID to develop networking of virtual environment.

Table 3. Interaction with people whom had never seem face to face

Choice	% Fit at all/Fairly Fit	% Not Fairly Fit/Not at all
I always used virtual ID to chat and communicate with others whom had never met face to face before.	36.4	38
My friends always chat with people whom had never seem in the Virtual environment	41.6	21.8

In the table 4, we explored 64.5% students whom had not always contact with others (never met face to face) in the virtual environment. Further, it had second higher rate in choice of 1-3, especially it also had many studetns that chosen the over 11. So we found that virtual environment could be the channel to contact with others. But it seems to develop gradually.

Table 4 How many subjects (never met face to face) always contact in virtual environment?

Person	0	1	2	3	4	5	6
%	64.5	7.1	6.3	5.3	2.7	4.4	1.3
Sum %	64.5	18.7		8.4			
Person	7	8	9	10	11		
%	.6	0.8	0	0	6.9		
Sum %	1.4		6.9				

Comparing with the virtual and real Id, we found that 33.2% students felt it was the same (Table 5). But in other side, discrepancy showed the 27.1%. When we focus on recessive thinking, it had 38.2% that behaviors were presenting the recessive thinking in my virtual Id. It means the student whose ID could be different between Real and Virtual ID.

Table 5. Compare with virtual ID and real ID

Choice	% Fit at all/Fairly Fit	% Not Fairly Fit/Not at all
The appearance of my real and virtual ID was the same.	33.2	27.1
The behaviors of my virtual ID presented the recessive thinking.	38.2	25.2

Table 6 presented the identity attitude to the virtual ID. We found that students attached importance to their Virtual IDs. The rate was higher than opposite. So through it, we could know the importance for virtual ID.

Table 6. I was attached importance to my virtual ID.

Choice	% Selecting	% Selecting
Fit at all	35.7	61.3
Fairly Fit	25.6	
Neuter	28.2	28.2
Not Fairly Fit	4.6	
Not Fit at all	5.9	10.5

4.2 Hierarchy of needs in Real & Virtual environment

In the need of social (Table 7), they were 38.3% that the friends of the real environment had taken more care with them than virtual environment (21%). But there were 35.9% that virtual ID could offer them the felling with belong to.

Table 7. Need of social

Choice	% Fit at all/Fairly Fit	% Not Fairly Fit/Not at all
I felt that the friends of virtual environment were taken care about me more than real environment.	21.0	38.3
It could offer me the feeling of belong, when I was used the virtual Id.	35.9	27.7

In the need of esteem (Table 8.), they had 40.7% that could get the praises in the real environment. It was more than the virtual environment (27.8%). Real environment was still the main source that students got the praises. About the satisfied for their behaviors, it was similar between real and virtual. Otherwise students could not get the feeling of satisfied, we found that real environment had more than virtual environment.

In the need of self-actualization (Table 9), students had 69.5% that had dream to practice in the real environment. It was more than virtual environment (38.8%). Especially in choose of not fairly fit and not at all fit, we could find most of students had dreams in the real environment. This result was the similar with aspiring the growing. So this study was found that virtual environment were not ripe in the need of self-actualization. But it seems to develop gradually.

Table 9. Need of self actualization

Choice	% Fit at all/ Fairly Fit	% Not Fairly Fit/ Not at all
I had dreams to practice in the real environment	69.5	5.7
I had dreams to practice in the virtual environment	38.8	20.1
I aspired the growing and developed the potential in the real environment.	71	7.5
I aspired the growing and developed the potential in the virtual environment.	44.5	13.7

Through the Table 10, we found that students could receive the feeling of safety more than opposite. Especially when we focused on the looks and defect, divergence was enlarged. According to this, the looks and defects could hiding through virtual ID.

Table 10. Need of safety

Choice	% Fit at all/ Fairly Fit	% Not Fairly Fit/ Not at all
When I was using Virtual Id, people didn't know my real self. Based on it, I could catch the feeling of safety	32.8	24.8
I could hide my looks and defects, when I was using virtual ID.	43.7	18.5

According to the Table 11, they just only had 24.4% that satisfied virtual ID. The rate was less than real environment (36.3%). Until now, real ID was main identification for students. But this data showed one quarter the students chose the virtual environment. We could not neglect these data.

Until now, Real environment was still the main source of needs, it was better than Virtual environment. Furthermore we should not ignore the students, more or less 35%, that could be getting the needs from virtual environment. And the students were spent over 11 hours per weeks that had reach 30%.

Table 8. I were satisfied with my virtual ID more than real ID.

Choice	% Fit at all/ Fairly Fit	% Not Fairly Fit/ Not at all
I always got the praises from teachers, families, and classmates in the real environment.	10.7	24.4
I always got the praises in my ability from the people of virtual environment.	13.7	16.8
I was satisfied my behavior in the real environment	39.3	39.3
I was satisfied my behavior in the virtual environment	18.9	36.3
I always got the praises in my ability from the people of virtual environment.	17.4	29.2
I was satisfied my behavior in the real environment	40.6	14
I was satisfied my behavior in the virtual environment	40.9	11.2

4.3 Imitational subject in Real & Virtual environment

In the Social learning, this study had probed into the modeling of real and virtual environment. According to the Table 12, we found that 54.2% had the imitative subjects in the real environment, it was more than virtual environment (21.4%).

Therefore the student's social imitation was still based on real environment. The feeling that somebody had imitated students' speaking or behavior was analyzed between the real and virtual environment. Real environment (32.6%) was still more than virtual environment (18.7%). So until now, real environment was more importance than virtual environment. But it seems to develop

Table 12. Imitative subject between real environment virtual environment

Choice	% Fit at all/ Fairly Fit	% Not Fairly Fit/ Not at all
I had been imitating somebody's speaking or behavior in the real environment	54.2	13.9
I had been imitating somebody's speaking or behavior in the virtual environment	21.4	48.8
I had been feeling that somebody had imitated my speaking or behavior in the real environment.	32.6	28.1
I had been feeling that somebody had imitated my speaking or behavior in the virtual environment.	18.7	48.1

gradually.

This study had checked the numbers of imitative subject detailed in the real environment (Table 13), they were 38.2% had no subject. But we could see that the subject of 10-11 had reach 39.3%.

The rate was more than subject of zero. But it seems to develop gradually in the virtual environment.

Focused on table 14, it was 39.1% that had nobody to imitate in virtual environment. This result was similar with real environment. But in the 1-3 Modeling subjects, it presented 38.1%. It was difference with real word. So this study provided that real environment had more imitative subject (10-11) than virtual environment (1-3). So in the processing of social imitation, real environment still had more

impact than virtual environment. Compared with table13 and 14, we could find students also chose

4.4 The correlation among “Hierarchy needs”, “Identification in virtual environment”, “ friends in the virtual environment”, and “ imitative subject in virtual and real environment”.

Table 15 The correlation among “Hierarchy needs”, “Identification in virtual environment”, “ friends in the virtual environment”, and “ imitative subject in virtual and real environment”

	Identification with virtual ID	Identification with friends in virtual environment	Identification with imitative subject in virtual environment	Identification with imitative subject in real environment
Virtual ID is satisfying more than reality ID	.717***	.602***	.479***	.099***
Need of safety in virtual environment	.765***	.620***	.361***	.147***
Need of safety in real environment	.409***	.292***	.223***	.236***
Need of social in virtual environment	.639***	.729***	.418***	.116***
Need of social in real environment	-.406***	-.617***	-.379***	.024
Need of esteem in virtual environment	.794***	.630***	.502***	.188***
Need of esteem in real environment	.022	-.008	.082*	.231***
Need of self actualization in virtual environment	.768***	.541***	.487***	.309***
Need of self actualization in real environment	.214***	.095***	.130***	.378***

***p<.005 *p<.05

4.4.1 Identification with Virtual ID would be influence upon Hierarchy needs.

According to the table 15, the population’s identification with virtual ID, they will influence upon basic Needs. The results presented the highly positive correlation between students whom virtual Id satisfies more than Reality ID and identification with virtual ID (r=. 717, p<. 001). So students satisfy virtual Id more, the identification will be more.

In the need of safety, the population has present the highly positive correlation between need of safety in the virtual environment and identification with virtual ID (r=. 765, p<. 001). Further, in the real environment, the correlation is middle positive correlation(r=. 409, p<. 001).

In the need of social, the population has present

the imitation subject from the real and virtual environment.

Table 14. How many subjects did I have been imitating in virtual environment?

Person	0	1	2	3	4	5	6
%	39.1	12	11.8	14.3	6.1	5.7	1.1
Sum%	39.1	38.1			12.9		
Person	7	8	9	10	11		
%	.4	.6	0	.4	8.6		
Sum%	1.0			9.0			

the middle positive correlation between need of social in the virtual environment and identification with virtual ID (r=. 639, p<. 001). Further, in the real environment, the correlation is middle negative correlation(r= -.406, p<. 001).

In the need of esteem, the population has present the highly positive correlation between need of esteem in the virtual environment and

Table 13. How many subjects did I have been imitating in real environment?

Person	0	1	2	3	4	5	6
%	38.2	4.2	7.4	6.5	3.2	4.4	1.3
Sum%	38.2		18.1			8.9	
Person	7	8	9	10	11		
%	1.3	1.3	2	8	31.3		
Sum%	4.6			39.3%			

identification with virtual ID ($r = .794, p < .001$). Further, it has no correlation in the real environment.

In the need of self-actualization, the population has present the highly positive correlation between need of self-actualization in the virtual environment and identification with virtual ID ($r = .214, p < .001$). Further, in the real environment, the correlation is low positive correlation ($r = .214, p < .001$).

Above these results, the population's identification with virtual ID, they will influence upon basic Needs. Especially, the needs of safety, esteem, and self-actualization, in the virtual environment, present the stronger correlation (higher correlation) with virtual ID. Beside it, needs of safety in the real environment is also influences the virtual ID. It presented the middle correlation. Need of social is also the important result, the more satisfied in real environment, the lower identification in virtual Id.

4.4.2 Identification with friends will be influence upon Hierarchy needs in the Virtual environment

According to the table 15, the population's identification of friends in virtual environment will influence upon basic Needs. The results present the middle positive correlation with students whom virtual Id satisfies more than Reality ID and identification of friends in virtual environment ($r = .602, p < .001$). So the more students satisfy their virtual Id, the more the identification of friends in virtual environment is.

In the need of safety, the population has present the middle positive correlation between need of safety in the virtual environment and the identification of friends in virtual environment ($r = .620, p < .001$). Further, in the real environment, the correlation is low positive correlation ($r = .292, p < .001$).

In the need of social, the population has present the highly positive correlation between need of social in the virtual environment and the identification of friends in virtual environment ($r = .639, p < .001$). Further, in the real environment, the correlation presents middle negative correlation ($r = -.617, p < .001$).

In the need of esteem, the population has present the middle positive correlation between need of esteem in the virtual environment and the identification of friends in virtual environment ($r = .630, p < .001$). Further, it has no correlation in the real environment.

In the need of self-actualization, the population has present the middle positive correlation between

need of self-actualization in the virtual environment and the identification of friends in virtual environment ($r = .541, p < .001$). Further, in the real environment, the correlation is low positive correlation ($r = .095, p < .001$).

Above these results, the population's identification of friends in virtual environment, they will influence upon basic Needs. Especially, the needs of social in the virtual environment present the stronger correlation (higher correlation) with identification of friends in virtual environment. Beside it, the other needs in the virtual environment also have obvious correlations. And Need of social is also the important result, the more satisfied in real environment, the lower identification of friend in virtual Id is.

4.4.3 Identification with imitative subject will be influence upon Hierarchy needs in the virtual and real environment

According to the table 15, the population's identification of imitative subject in virtual environment will influence upon basic Needs. The results present the middle positive correlation between students whom virtual Id satisfies more than Reality ID and identification of imitative subject in virtual environment ($r = .479, p < .001$). It is more than imitative subject in real environment ($r = .099, p < .001$). So the more students satisfy virtual Id, the more identification of imitative subject in virtual environment is.

In the need of safety, the population has present the middle positive correlation between need of safety in the virtual environment and identification of imitative subject in virtual environment ($r = .361, p < .001$). The correlation of virtual environment is more than imitative subject in real environment ($r = .147, p < .001$). In the need of safety which in the real environment, it is $r = .233 (p < .001)$ in identification of imitative subject in virtual environment and identification with imitative subject is " $r = .236 (p < .001)$ " in real environment.

In the need of social, the population have present the middle positive correlation between need of social in the virtual environment and the identification of imitative subject in virtual environment ($r = .418, p < .001$). It is more than the identification of imitative subject in real environment ($r = .116, p < .001$). In the need of social which in the real environment, it is $r = -.319 (p < .001)$ in identification of imitative subject in virtual environment, else it had no correlation in identification of imitative subject in real environment.

In the need of esteem, the population has

present the middle positive correlation between need of esteem in the virtual environment and the identification of imitative subject in virtual environment ($r=.502, p<.001$). The correlation of virtual environment is more than imitative subject in real environment ($r=.188, p<.001$). In the need of esteem which in the real environment, it is $r=.082(p<.001)$ in identification of imitative subject in virtual environment, and it is $r=.231(p<.001)$ in identification of imitative subject in real environment.

In the need of self-actualization, the population has present the middle positive correlation between need of self-actualization in the virtual environment and the identification of imitative subject in virtual environment ($r=.487, p<.001$). Further, in the real environment, the correlation is low positive correlation ($r=.309, p<.001$). In the need of self-actualization which in the real environment, it is $r=.378(p<.001)$ in identification of imitative subject in virtual environment, and it is $r=.130(p<.001)$ in identification of imitative subject in real environment.

Above these results, the population's identification of imitative subject in virtual environment, they will influence upon basic Needs. Especially, the needs of social need of safety, need of social, need of esteem, and need of self-actualization in the virtual environment present the obvious correlation (middle correlation) with identification of imitative subject in virtual environment. Beside it, Need of social is also the important result, the more satisfied in real environment, the lower identification of imitative subject in virtual environment. And this study finds the phenomenon out that basic need will effect the imitative in virtual and real environment. And the correlation between basic need in the virtual environment and imitative in virtual environment, it is more than the correlation between basic need in the real environment and imitative in virtual environment.

Through the result, this study show the evidence that basic needs of the virtual environment will effect the Identification in virtual environment, friends in the virtual environment, and imitative subject in virtual environment. And students will interaction with in the virtual environment through virtual ID. Furthermore students had Hierarchy of Needs except physiological need in the virtual environment. According these evidences, this study conjectures that the junior high students have virtual personality in the virtual environment.

6 Conclusion

According to the Scholar Liu Z. brought Emotion interaction of virtual character in 3D artificial society up. 3D virtual characters interact with emotion and construct a 3D artificial society (Liu Z)[3][4]. And in his architecture of 3d virtual character, he addressed the mental variables that include the Emotion, Personality, and Motivation. So this research tried use the similar directions to explore the mental level.

Technology is the tool to help people to control the environment. When we have ability to construct the virtual environment, could people distinguish into virtual or real? Could they distinguish that their mind control the Technology or Technology control their mind?

Through this research, we could find that some points:

- (1) Students can get the Hierarchy Needs from the Virtual environment.
- (2) Hierarchy Needs of students are different between virtual and real environment.
- (3) Identify with Virtual ID would be influence upon Hierarchy Needs in the virtual environment.
- (4) Identify with friends of Virtual environment, it will influence upon Hierarchy Needs in the virtual environment.
- (5) Identify with imitative subject in virtual environment, they will influence upon Hierarchy Needs in the virtual environment.

Even the social imitation is less, but we could not ignore that it develop gradually in the Virtual environment. Digital Learning had many benefits, and it also the best way to teach students to receive the virtual environment. So Before use it, we need to take care about this situation.

References:

- [1] Zhen-Wu Wang (王震武) (2001). *psychology*. Taipei : Xue-Fu culture (學富文化).
- [2] Robert E. Slavin (2003). *Educational Psychology: Theory and Practice, 7th ed.* Boston: Allyn and Bacon.
- [3] Liu Z. (2006). *Emotion interaction of virtual character in 3D artificial society. Simulated evolution and learning, proceedings lecture notes in computer science 4247: 648-655 2006.*
- [4] Liu Z. (2006). *Emotion social interaction for virtual characters. Advances in natural computation, pt 1 lecture notes in computer science 4221: 275-278 2006.*
- [5] Hill KJ, Howarth PA (2000). *Habituation to the side effects of immersion in a virtual environment. DISPLAYS 21 (1): 25-30 MAR 2000.*

- [6] Ito M(1988). *Consciousness from the viewpoint of the structural-functional relationships of the brain. INTERNATIONAL JOURNAL OF PSYCHOLOGY* 33 (3): 191-197 JUN 1998
- [7] Myowa-Yamakoshi M, Tomonaga M, Tanaka M, Matsuzawa T(2004). *Imitation in neonatal chimpanzees. DEVELOPMENTAL SCIENCE* 7 (4): 437-442 SEP 2004
- [8] Berndt TJ(2002). *Friendship quality and social development. CURRENT DIRECTIONS IN PSYCHOLOGICAL SCIENCE* 11 (1): 7-10 FEB 2002