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A PEDAGOGICAL PERSPECTIVE ANALYSIS OF TURKISH GENERATION Z UNIVERSITY STUDENTS' VIEWS ON VIRTUAL ECOLOGIES AND AVATAR AS SELF-CONSCIOUSNESS AND SELF-PRESENTATION

Research article

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Abstract

This study aims to analyse the views of Turkish Generation Z higher education students with metaverse experience on virtual-digital ecologies, self-consciousness, virtual sense of self, and avatar. Conducted on 389 students studying at Fırat University, this study is based on a descriptive survey design. The research data collected with the survey developed in line with the methodology were analyzed using the licensed SPSS package program of Fırat University. While doing analyses, the researchers drew upon frequency and percentage, which are diagnostic statistical techniques, as well as the Chi-square test. The results obtained from the analyses are as follows: Turkish Generation Z higher education students partially differ from their global peers in terms of self-consciousness. Self-consciousness and the virtual sense of self of Turkish Generation Z higher education students are associated with reality-virtuality oscillation. These students view the avatar as an ideal profile self-presentation rather than a substitute for their real self. The following considerations were revealed based on the results: It can be envisaged that depending on the proliferation of the virtual-digital revolution on a global scale, the massiveness of the virtuality phenomenon is likely to increase in the self-formation of Turkish Generation Z higher education students. The fact that the individual's self-consciousness and self-development are associated with the purpose, design, and practices of education requires Turkey to be ready for virtual-digital ecologies in education, at least as a contemporary complement to existing face-to-face education for now.

Keywords: Avatar, self-consciousness, virtual self, Turkish generation z, virtual ecologies,

1. Introduction

While a great number of subjects and fields are constantly changing, some aspects of human nature are unchanging. One of them is the need for existence and self. For an ontologically conscious person, the need for existence and self is vital. The most distinctive psychic qualities of being an individual are listed as self-consciousness and a sense of self for a conscious person who feels the need of being known and seen. Affecting the whole life of the individual and determining his/her role and position in society, the relevant qualities form the basis of his/her emotional as well as intellectual traits. A linear relationship exists between the individual's sense of self and attention, and cognitive and control processes (Özen and Gülaçtı, 2010: 22).

This relationship incorporates the phenomenon of self within the integrity of consciousness into the field of interest of pedagogy. An essential goal of education is to support the construction of a balanced self (positive self) of the individual (Aktaş, 2020). This relationship between education and self (Saygılı et al. 2015) results in a balanced development in the individual's sense of self and self-presentation (Karaırmak et al. 2014).

The education-related sense of self of the individual is associated with his/her attitude and social relations as well as intellectual processes. Therefore, values education, a crucial factor in raising balanced individuals, can only be built on a balanced self (Tamer, 2014: 83). Ultimately, all this is about raising individuals who are balanced and happy in terms of self, identity, and personality, which altogether signify the ultimate goal of pedagogy. The close relationship of the individual's self-construction, self-consciousness, and sense of self with education identifies the modern pedagogical institutions, the school, and the teacher with the phenomenon of self. For, it is known that the school as a social institution and the teachers have an impact on self-formation (Vidinlioğlu, 2010: 38, as cited in Jersild, 1983). In this respect, the phenomenon of self is not only on the radar of philosophy, sociology, and psychology but also of the discipline of pedagogy.

On a macro level, the self is ontologically associated with concepts such as ego, identity, and personality and refers to a very complex and multifaceted phenomenon. The self, conceptualized by William James, is generally the whole opinion of the person about what s/he is (Özen and Gülaçtı, 2010: 22). On the other hand, the self refers to the templates formed in the mind of the individual as a result of making sense of the situations and events about him/herself and his/her environment (Aktaş, 2020: 33). The concept of self is comprised of all the perceptions and judgments of the individual about his/her characteristics (Altıntaş, 1991: 62). Being associated with the personality in the psychoanalytic approach, the self (ego) is divided into id and superego (Burger, 2006 as cited in Son, 2014: 26). According to Özkara (2014), who takes a different perspective, the sense of self reflects an individual picture. It consists of wide-ranging interactions that separate the individual from those in the physical and social environment. As can be seen, with a myriad of definitions the self is a multidimensional, variable, and complex phenomenon that depends on many variables in the course of life. Since it is not the main subject of the research, it is sufficient to mention it briefly.

The focal point of the study is to reveal whether there has been any kind of change in the self-formation and self-presentation of the individual with the proliferation of virtual-digital applications based on new-generation internet technologies in recent years, and if so, the potential impact of this on educational theory and practice. For, more supporting data regarding this potential impact (Kocaman-Karoğlu et al. 2020) are available. A close look at the issue reveals that the virtual-digital ecologies, which are rapidly advancing and becoming the new stakeholder of education, are eroding the education and school system, which is traditionally built on the notion of bringing together the physical individual and information in the real environment. The ones most affected by this erosion are the generations that exist ontologically in virtual-digital media. Among them, Generation Z, born after 2000, mostly meets their needs of communication, information, game, and socialization in virtual channels (Deniz and Tutgun Ünal, 2019). Therefore, the educational needs of this generation, who came into the world of technology with mental processes templated with digital stimuli, can only be met with virtual-digital pedagogy. However, what kind of residues this virtual-digital pedagogy leaves on the self while teaching is debatable.

Considering the relevant literature (Erden, 2017; Kesgin, 2019; Fettahlıoğlu et al. 2018), people born after 2000 were accepted as Generation Z within the scope of the present study. The education of this generation, born in the environment of internet technology and existing

through the mediation of *virtual and digital technologies*, should also be placed on an "epistemic-cognitive" (Tsai et al. 2013) ground. This ground for the education of Generation Z can also be expressed as "*digital epistemic cognition-virtual self*". Research on the virtual-digital mediated Generation Z (Özdemir, 2021; Kul: 2019; Taş et al. 2017) shows that the preferences of this generation for communication, interaction, socialization, and even learning are predominantly virtual ecologies. The self of this generation, who is exposed to digital information and information, is associated with the virtual world in some aspects, although not entirely. Moreover, some of the main functions of the school have already been taken over by new generation internet technologies such as metaverse, which is a virtual ecology (Akpınar and Akyıldız, 2022). As a result, we are faced with a new pedagogical world where smart machines and software present information, conduct exams, and even write books and articles. Thus, it is inevitable to experience dramatic changes in the meaning, scope, and implementation of education in this world, and topics such as virtual ecologies, virtual self, and digital knowledge are likely to occupy the discipline of pedagogy in the coming decades.

In the theoretical sense, the ontology of education is based on the triad of humans, knowledge, and teacher (Cevizci, 2011). The phenomenon called the education system is the combination of these in a physical environment and a real form. Modern education was generally been understood as matching the student with the knowledge (curriculum) through the teacher at school until the 21st century. In the first quarter of this century, new-generation internet technologies have caused ontological and epistemological breaks in education in the traditional sense and continue to do so. For example, in 3-dimensional virtual-digital education ecologies such as the metaverse, the existence, role, and functions of the school, student, knowledge, and teacher are changing dramatically. For, in this timeless and spaceless ecology, while the student transforms into a virtual self (avatar), the curriculum becomes the digital information forum, and the teacher serves as the moderator who coordinates this environment. In this *contactless ecology*, education transforms into the *student-avatar-digital information interaction* while learning evolves from the familiar stimulus-response (U-T) process into a digital information/stimulus-avatar (DS-A) relationship. Although all of these are important, what is really dramatic is the transformation of the student into a *bodiless subject* (Göker, 2017) through the virtual-digital mediation of an avatar. Thus, the student's self evolves into the virtual self, the ontological meaning of which is unclear. It is unclear to what extent avatar/avatars, which express two- or three-dimensional visual characters representing the student in virtual education ecologies (Sabah, 2017: 118), represent the individual's self on which knowledge and attitude would be built. Moreover, even if it represents, it is not known where the mental, emotional, and social processes of the *bodiless individual* (virtual self) might evolve. It is an unsettling possibility that the virtual self in question is likely to be added to the individual's original self over time. For, it seems that from now on, it is not possible to deal with the self-formation and self-presentations of the technology-mediated Generation Z independently of virtual and digital phenomena. Such uncertainties, on the other hand, seem to question the purpose, scope, and practices of pedagogy related to the self. For, the virtual-digital technology mediated virtual self is more complex than real self-formation and self-presentation (Tosun and Akıncı, 2016: 30).

The troubling aspect of these virtual-digital ecologies, which constantly relocate education in terms of space and time with a plethora of contributions such as enriching the content of education (Hazneci, 2019; Ayiter, 2008), is associated with the aforementioned uncertainties and transformations. However, if the virtual-digital trend continues in this way, it seems inevitable that the mentioned virtual-digital technologies will penetrate all stages of life, including education. Therefore, having qualms about these uncertainties and transformations is not the solution. Rather, the solution is to be ready for the possible effects of these

uncertainties and transformations on pedagogy and the meaning and forms of individual and community life. For this reason, understanding this change and transformation is critical in terms of individual and community life as well as pedagogy. At this point, it is clear that there is a need for theoretical and field studies that deal with virtual-digital transformations in education in terms of concerns for the individual. The views and thoughts of current higher education students, called Generation Z, who are exposed to these transformations and changes, can be informatory for the studies on the subject. In this respect, this study is significant as it has been designed to shed light on the views of higher education students with virtual-digital ecology experience on virtual-digital environments, virtual self, and avatar.

2. Method

2.1. Research Model

Designed to analyze the views of Turkish Generation Z higher education students with metaverse experience on virtual-digital ecologies, self-consciousness, virtual sense of self, and avatar, this descriptive study was conducted based on a survey model. The survey model is aimed at collecting data to describe a current situation by seeking an answer to the question "What is it?" (Karasar, 2018: 77).

2.2. Population and Sampling

The population of the study is comprised of a total of 1815 undergraduate students studying at the faculties of engineering and technology (software) and the faculty of education (science and mathematics departments) at Fırat University in the spring semester of 2021-2022 (www.firat.edu.tr). The sample, on the other hand, was formed via the stratified sampling method on a voluntary basis. In line with the methodology (Şahan and Uyangör, 2021), the stratified sampling is comprised of a population including the following five elements: a) Those with and without Metaverse virtual environment experience, b) Those who were born after 2000 and those who were not, c) Turkish nationals and non-Turkish nationals, d) Those who are enrolled in the software department of engineering faculties and those who are not, and e) Those who are in the mathematics departments of the faculty of education and those who are not. Then, those who have metaverse experience, those who were born after 2000, those who are Turkish nationals, those who are in the software department of engineering faculties, and those who are in the mathematics departments of the education faculty were selected from among them. 500 surveys were applied to the selected group, whose total number was 478, and 397 of them were completed. Following the removal of eight of these completed surveys due to correct and incomplete filling, the remaining 389 people were determined as samples. Based on the information that a sample of 351 people is sufficient for a population size of 4000 people according to the deviation ratio of ".05" in a scientific study (Balcı, 1995: 10), a sample of 389 people was found to be sufficient enough to represent the population. Table 1 represents the distribution of the participants included in the sample according to their demographic characteristics.

Table 1: *Distribution of Research Sample by Variables*

	Variables	Frequency (n)	Percentage (%)
Do you have metaverse experience?	Yes	389	100.00
	No	--	--
Gender	Female	151	38.8
	Male	238	61.2
Faculty	Education	256	65.8
	Engineering	133	34.2
Grade	Freshman	83	21.3
	Sophomore	122	31.4
	Junior	110	28.3
	Senior	74	19.0
	Total	**389**	**100**

2.3. Data and Analysis

In this study, the data were collected via the "Student Views on Virtual Self Survey" (SVVSS) developed by the researchers. The survey, in which nominal classification was used, consists of independent questions using discontinuous categories. As such, the survey serves as appropriate research material for survey studies designed for social and human phenomena (Akdağ, 2021; as cited in Aiken, 1997: Büyüköztürk et al. 2013). While preparing the SVVSS, the topic was chalked out through a review of the relevant literature. Thus, a total of 25 draft item pools were created, five of which were related to personal information in the nominal form, and 20 of which were in the nominal form related to the topics of virtual self and avatar. Then, the opinions of experts with metaverse virtual environment experience were called for the draft items to ensure the scope and face validity of the survey. These experts included two psychological counselors, two instructors of computer and instructional technologies, two instructors working in education programs and teaching at the Faculty of Education, Fırat University, in the 2021-2022 academic year, and five graduate students studying in the educational sciences department of the same university. The "appropriate/valid" agreement rating of the experts on the points of "clarity, comprehensibility, and relevance of the items" is 82%. In line with the criticism and suggestions from the experts, the draft survey items were revised and five items were eliminated, one of which was about personal information and four of which were about the virtual self and avatar. Thus, the validity was ensured following the final form of the SVVSS, which consists of 20 items, four of which are about personal information and 16 about the virtual self and avatar. Based on the information obtained from the relevant literature (Oğur and Tekbaş, 2003), the validity of the SVVSS was ensured once the problem was well defined, the boundaries and objectives of the research were clearly defined, and expert opinions were called for (Büyüköztürk et al. 2013, as cited in the American Statistical Association, 1997:). The 16 items about the virtual self and avatar included in the SVVSS developed in this way were nominally and categorically rated as "*3: Yes*", "*2: Partially*" and "*1: No*". Then, the survey was applied face-to-face to a total of 450 students, who were determined as detailed above, following the approval of the Fırat University Social and Human Sciences Ethics Committee for the SVVSS. Eight surveys responded to after one week were eliminated due to problems of compliance and incomplete filling, and the remaining 389 surveys were received for analysis.

From among the diagnostic statistical techniques, frequency and percentage techniques were used in the analyses via the licensed SPSS package program of Fırat University. Non-

parametric Chi-square test was used in the analysis of students' views according to demographic variables. The chi-square test was used to primarily check the distribution of the data. In the Fisher test applied for this purpose, the expected value in each cell was greater than zero and above 5. This distribution of the data obtained from the survey items with nominal characteristics is suitable for the chi-square test (Akdağ, 2021: 1; Balcı, 1995: 268). While performing the analysis via the chi-square analysis, the items with a significant difference between the students' views according to the demographic variables were shown in a table. P = .05 was accepted as the level of significance in the analyses.

3. Findings and Interpretation

3.1. Self-Consciousness Towards Physical Reality

It is reported in the literature that Generation Z would rather exist in virtual ecologies and socialize in these ecologies than communicate and socialize face to face (Alp, 2021). Whether this is an escape from physical reality for Generation Z or the preference of this generation, known as "network youth", is a matter of debate (Özdemir, 2021). The distribution of the responses by the participants to the relevant questions is shown in Table 2.

Table 2. *Students' views on Physical Reality Perception*

Number	Views	Yes		Partially		No	
		f	%	f	%	f	%
1	Are you satisfied with your current physical/real environment?	201	51.7	102	26.2	86	22.1
2	Are you satisfied with your current physical/real appearance?	244	62.7	72	18.5	73	18.8
3	Are you satisfied with your current mental/intellectual state?	255	65.6	70	18.0	64	16.5

Table 2 represents the views of the Generation Z engineering and education faculty students on physical reality and their current situation, highlighting that the participants are partially satisfied with the physical reality and related physical image and current mental state. However, it is also remarkable to observe that some students are dissatisfied with the physical reality, albeit at a low rate. This can be associated with the fact that the participants belong to Generation Z mediated by virtual-digital technology. It is known that this generation born in the internet technology environment exists and socializes in virtual media, and is familiar with digital information (Taşlıbeyaz, 2019). What is also remarkable is that some individuals belonging to this generation are not satisfied with their current situation in terms of mental processes. This could be attributed to the impact of digital stimuli on their outlook on life (Özdemir, 2021) and mental processes (Eşitti, 2015), as stated in the literature.

The Chi-square (X^2) test was applied to determine whether there was a significant difference between the participants' views on the items in Table 2 according to demographic variables. As a result of the test, no significant difference was found between students' views according to gender and faculty variables while a significant difference ($X^2_{(df=8)} = 19.468$; $p=0.013$) was found in the 3rd item according to the grade variable. Accordingly, the 4th-grade students are observed to be more satisfied with their current mental/intellectual state (75.7%; n=56) than the 3rd-grade students (57.3%; n = 63). This could be attributed to the higher level of consciousness of the 4th-year students of the faculty since the level of education is an important variable in subjects such as self-consciousness.

3.2. Virtual Ecologies as a Space of Self-Consciousness

The distribution of the participants' views on virtual ecologies as an ontological space of self-consciousness is given in Table 3.

Table 3. *Students' views on Virtual Ecologies as a Space of Self-Consciousness*

Number	Views	Yes		Partially		No	
		f	%	f	%	f	%
4	Are virtual environments the mediums where you best express yourself?	99	25.4	129	33.2	161	41.4
5	Do virtual environments affect your judgments about yourself?	73	18.8	94	24.2	222	57.1
6	Are online games your emotional expression?	90	23.1	104	26.7	195	50.1
7	Do virtual environments affect your way of thinking?	98	25.2	95	24.4	196	50.4
8	Do virtual environments express your quest for social acceptance?	49	12.6	66	17.0	274	70.4

A general consideration of the students' views in Table 3 suggests that the students *partially* see virtual ecology as a space of self-consciousness. Remarkably, nearly half of them (25.4% Yes and 33.2% Partially) see the virtual environment as the medium in which they express themselves best. This confirms the information that virtual ecologies-dependent Generation Z is the escape area, as stated in the literature (Bayhan, 2020). Similarly, it is striking that about half of these students (25.2% Yes and 24.4% Partially) report that the virtual environment affects their thoughts. The same is true for emotional expression (23.1% Yes and 26.7% Partially). A possible interpretation of these findings makes it clear that Generation Z prefers virtual ecologies not only for socialization but also for expressing feelings and thoughts.

The Chi-square (X^2) test was applied to determine whether there was a significant difference between the students' views on the items in Table 3 according to demographic variables. As a result of the test, no significant difference was found between the students' views according to the grade variable while a significant difference was found in the 6th ($X^2_{(df=2)} = 10.179$; $p = .006$) and 7th ($X^2_{(df=2)} = 8.001$; $p = .018$) items according to the gender variable. Accordingly, male students (28.4%; n = 69) are observed to be more empathetic with virtual games than female students (15.4%; n = 25) and male students (29.6%; n = 72) are influenced more by the virtual environment than female students (17.3%; n = 28). These findings could be attributed to the higher level of familiarity of male students with virtual games and ecologies.

Among the student views, the 7th ($X^2_{(df=6)} = 13.481$; $p = .036$) item was found to be significant according to the faculty variable. Accordingly, engineering students (29.7%; n = 73) are influenced more by the virtual environment in terms of thought than education faculty students (17.6%; n = 27). This finding could be attributed to the higher level of familiarity of engineering students with virtual ecologies.

3.3. Avatar as Self-Presentation

The distribution of students' views on avatars as self-presentations is given in Table 4.

Table 4. *Distribution of Students' views on Avatars as Self-Presentations*

Number	Views	Yes		Partially		No	
		f	%	f	%	f	%
9	Does the avatar you made represent your self?	102	26.2	105	27.0	182	46.8
10	Is the avatar you made the ideal profile that you want to be?	88	22.6	99	25.4	202	51.9
11	Does the avatar you made cause self-confusion in you?	49	12.6	80	20.6	259	66.6
12	Is the avatar you made your self that you can give up when you want it?	128	32.9	97	24.9	164	42.2
13	Do virtual games have an effect on making your avatar?	150	38.6	116	29.8	123	31.6
14	Is making multiple avatars a reflection of diversity in your self?	98	25.2	117	30.1	174	44.7
15	Do you get upset if the avatar you made dies/is stolen?	115	29.6	107	27.5	167	42.9
16	Will the avatar destroy the natural human species and give rise to the digital human over time?	93	23.9	89	22.9	207	53.2

Table 4 reveals that the avatar made by the students in virtual ecologies partially reflects their self (26.2% Yes and 27% Partially), ideal profile (22.6% Yes and 25.4% Partially), and self-diversity (25.2% Yes and 30.1% Partially), albeit *partially*. Students' views in this direction can be seen as an effort to show themselves better than they are, as stated in the literature (Türk et al. 2022). For, current university students see virtual ecologies as a tool for freer self-presentation (Kavut, 2018). These students, who believe that the avatar did not cause self-confusion (66.6% No) in the research, are *partially* (29.6% Yes and 27.5% Partially) saddened by the loss of the avatar. According to more than half of the respondents (53.2% no), who also *partially* agree (38.6% Yes and 29.8% Partially) with the effect of virtual games in making the avatar, the avatar does not risk destroying the human species. A possible interpretation of these findings is that virtuality is a part of the real self in the self-formation of the students belonging to Generation Z mediated by the new-generation internet technology. For, the virtual profiles (avatars) made in virtual ecologies are tools that manage the individual's self, identity, personality, social relations, and lifestyle (Boz, 2012: 39, as cited in Livingston, 2008).

The Chi-square (X^2) test was applied to determine whether there was a significant difference between the students' views on the items in Table 4 according to demographic variables. As a result of the test, no significant difference was found between the students' views according to the class variable while a significant difference was found in the 12th ($X^2_{(df=2)} = 7.719$; $p = .021$) and 13th ($X^2_{(df=2)} = 8.553$; $p = .014$) items according to gender. Accordingly, male students (36.2%; n = 88) are reported to be likely to give up their avatar more easily than females (27.2%; n = 44). A possible interpretation of this finding is that female students are more dependent on avatars in the virtual environment. Similarly, male students (43.6%; n = 106) are affected more by virtual games when making avatars than females (29.6%; n = 48). This could be attributed to the higher hours spent by male students playing virtual games.

The students' views also revealed that there was a significant difference in the 10th ($X^2_{(df=6)}=21.838$; $p = .001$) item according to the faculty variable. Accordingly, engineering students (31.3%; n = 67) are observed to see avatar as a more ideal profile than education faculty students (15.7%; n = 24). This could be attributed to the higher level of familiarity of engineering students with virtual ecologies.

4. Conclusion, Discussion and Recommendations

By nature, self-construction and self-presentation are spiritual and psychic vital needs of the human being in search of existence. For, the self, which means "to be known" and "to be seen",

and self-presentation are among the main determinants in the individual's goals, decisions, and behaviors in the life adventure. The self and self-presentation have a great role in the transformation of the physiological person into a spiritual, emotional, and social individual. In this respect, self-construction and self-presentation are among the main goals of education since education is perhaps the most important intermediary that transforms the physiological individual into a spiritual, emotional, and social individual. As a matter of fact, modern education has been designed to help individuals reach this goal. However, this fiction has been at serious risk in recent years. This risk implies that the metaverse-like virtual or abstract universe (Lee, 2021; Choi and Kim, 2017) is trying to be articulated as a new stakeholder in education based on new-generation internet technologies. In short, these timeless and spaceless ecologies, which are the intersection of virtuality and reality (Erkılıç and Dönmez, 2020) and called digital pedagogy, radically transform the theoretical and practical dimensions of education. In these ecologies, the student becomes the avatar, the curriculum (knowledge) becomes digital information, and the teacher becomes the moderator. The reflections of these virtual-digital ecologies, which are gradually taking the place of family, school, teacher, and culture, are uncertain for individuals and society. During times of such uncertainty, the effects of the virtual self that is created through the avatar on the self-development of the individual are unsettling since during the self-development process of the individual, which is closely related to the quality of life like pedagogy, it is unclear where the uncertainty in question might evolve. Previous studies (Deniz and Tutgun-Ünal, 2019; Özdemir, 2021; Vidinoğlu, 2010) report that the consequences of virtuality-reality conflict can be dramatic in the self-development of Generation Z, especially those born into the internet technology environment with self-consciousness mediated by internet technology. Virtual ecologies and avatars also affect the mental and emotional processes and social relations of the individual, which are essential in self-formation (Küçükvardar, 2019; Olcay, 2018). Bearing in mind the individual self is formed by the interaction of cognitive processes, emotions, and culture (Çınar, 2020; Uçar, 2016), it can be better understood how Generation Z, who is exposed to virtual-digital stimuli and messages, is at risk in terms of self-formation. It is reported that with the penetration of the virtual-digital trend into all fields and stages of life over time, digital people can replace the real human species. However, whether these risks and threats posed by the said virtual-digital technologies are valid for Turkish Generation Z higher education students is a matter of debate. For, the way and rate of experiencing these technologies in Turkey is different, and so are their effects on the self-development of Generation Z (Görmez, 2021; Şahbaz, 2019). It is important to identify and describe the current situation in determining this possible difference and divergence. At this point, the results obtained from the responses to the items in this study are given below.

The researchers primarily investigated the views of the Turkish Generation Z on physical reality and virtual reality. For, these students that exist in environments that virtual ecologies manipulate and obscure (Balkan, 2019) are likely to experience reality-virtuality confusion (Ferhat, 2016). As regards this possibility, the participants born after 2000 and called Generation Z (Özdemir, 2021) were observed to *partially* experience the illusion of reality-virtuality. It is possible to say that this blurs their perception of reality. The *partial* degree here may indicate that, in a sense, Turkish Generation Z higher education students' sense of self is not completely isolated from physical reality in terms of time and space. In terms of demographic variables, on the other hand, the grade level was a source of significant difference in self-consciousness, which means that as the grade level increases, the level of consciousness increases. Based on the research findings, Turkish Generation Z higher education students do not fully perceive virtual ecologies as reality but as an extension of reality. This shows that Turkish Generation Z higher education students are partially differentiated from their peers (Özodaışık, 2019), who are closely connected to virtual-digital ecologies on a global scale. As

a matter of fact, related studies (Kıran, 2021; Sarıoğlu and Özgen, 2018) support this divergence in some aspects. This divergence stems from several reasons. Firstly, the exposure rate of the Turkish Generation Z included in the research sample to the mentioned virtual-digital technologies is lower than that of developed countries. For, as was expected, the virtual-digital technologies applied in Turkey, albeit partially, during the Covid-19 pandemic process, were not accepted and could not become widespread rapidly. These technologies were perceived by the public as an imposition of extraordinary situations rather than a necessity of the age (Sezgin and Fırat, 2020). Second, the cultural characteristics of the participants are also crucial in this sense.

The second finding of the research was that the students belonging to the Turkish Generation Z *partially* see virtual ecologies as a space of consciousness and such ecologies *partially* affect their feelings and thoughts. It can be inferred that the participants *partially* see virtual ecologies as a realm of existence. Supporting the other findings of the research, this finding reveals that the quest for self-consciousness and self-formations occurs in the virtual-reality oscillation. Rejecting to see virtual environments as seeking social acceptance, the students *partially* empathize with the games in these ecologies. From the demographic perspective, it is observed that male students were more empathetic and influenced at higher levels by the virtual environment in terms of thought. One may also notice that engineering students were affected more by the virtual environment in terms of thought than the education faculty students on the same subject. The research finding outside the demographic perspective does not fully coincide with the literature information such as "the younger generation prefers virtual environments for acceptance, resistance, and socialization" (Demez, 2013; Yardimci, 2021). This could be attributed to the characteristics of the sample group, as well as the fact that the global characteristics specified for Generation Z are not fully reflected in Turkish Generation Z. Turkey's experience of virtual-digital technologies that characterize this generation is different from other countries. Turkish Generation Z higher education students are different from their global peers in that they are solely technology users and want to have access to such technology (Çavuşoğlu and Yalçın, 2021). Therefore, the claim that the Generation Z characteristics of different countries are fully valid for Turkey is doubtful (Şahbaz, 2019). Thus, there is a clear need for more detailed research on the characteristics of Turkish Generation Z (Akpınar et al. 2022). The recognition of this generation, which is also called "digital natives" (Kul, 2019: 14), is important for making pedagogical arrangements for them as well as their self, identity, and personality development. As a matter of fact, it is not possible to make effective pedagogical designs for this generation without recognizing the sense of self and personal and cultural values (Savaş and Karataş, 2019: 231). It is known that traditional learning methods and environments are insufficient to respond to the differentiating expectations of Generation Z, born and raised in a digital age (Somyürek, 2014).

It was determined that the participants belonging to Turkish Generation Z are of the opinion that the avatar/avatars they make in virtual ecologies *partially* represent their self. Participants who are *partially* affected by virtual games in making avatars (more in male students) *partially* see avatar as their ideal profile (higher in the rates of engineering students) and think that they can give up at any time (higher in the rates of male students). According to participants, multiple avatars are associated with the diversity of self. It can be suggested that Turkish Generation Z higher education students see the avatar they make as a virtual self in form of self-presentation. This finding is supported by the fact that the participants are of the opinion that the avatar does not cause self-confusion. The fact that the participants are *partially* saddened by the loss of the avatar shows their reality-virtual oscillation in their sense of self. Considering the views of the participants about the avatar collectively, it can be said that Turkish Generation Z higher education students see the avatar made by self-presentation as the

ideal profile rather than replacing their real self. On the other hand, more than half of the participants do not attach much importance to the risks of avatar-like formations in the literature, which are related to increasingly dehumanizing the world (Kılınç and Kılınç, 2021), creating digital human twins (Wakefield, 2022), and even destroying the human species.

In conclusion, based on the views of the participants, it is observed that Turkish Generation Z higher education students *partially* exist in virtual-digital ecologies, and these ecologies *partially* affect their feelings and thoughts, and self-formation. In this case, it can be said that Turkish Generation Z higher education students participating in the research exist in the virtuality-reality oscillation in form of the sense of self and presentation. However, it is noteworthy that many global technology giants are turning to new-generation internet technologies (Bayrakçı and Küçükvardar, 2019). Accordingly, it can be predicted that the weight in the virtuality-reality oscillation in the pursuit of self-consciousness and self-formation of Turkish Generation Z higher education students will inevitably shift towards the virtuality pole. Therefore, Turkey should be ready for this digital-virtual revolution, especially in the education system, at least for now as a complement to traditional face-to-face education and e-learning (Barry et al.

2009). The backbone of this ecology seems to be *virtual-digital technologies* and *student/avatar interaction*.

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