

Students' Opinions about Virtual Science and Technology Museum and Educational Interface Agent

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The objective of this study is to analyze the opinions of the sixth year primary school students about the Mineral Research and Exploration Institute Virtual Science and Technology Museum and Battery Friend Educational Interface Agent developed by the researcher. In this descriptive qualitative research the study group is composed of the 6th year students at 2010-2011 education and teaching season at a Primary School located in Kırşehir city center. This study showed that the students those utilized The Energy Park Virtual Museum with or without the support of educational interface agent both they liked The Energy Park Virtual Museum, planned to utilize again and thought that utilizing these kinds of environments in learning process will affect their successes positively. Moreover it is found that most of the students those utilized educational interface agent supported environment expressed their positive opinions regarding utilization of educational interface agents in learning environments.

Introduction

Museums are seen as a basic institution of the contemporary modern societies. International Council of Museum – Icom (2007) describes the museums as institutions those are permanent and open to the public and those are on the community and its development's service without any profit making purpose and those are gathering , protecting, researching, transferring and exhibiting mankind's and its environment 's moral and material heritage with educational, studying and entertainment purposes. Moreover, museums can be described also as the institutions in which the objects related with nature, history, art and scientific merits are keep, protected, analyzed and exhibited (Maccario, 2002).

When the Museum Science examined in detail it will be seen that the purpose of the museums is not only maintaining, studying or doing science but the museums are also education institutions too. Museums instruct its visitor spontaneously when they are visiting museums (İlhan, 2009). As it can be seen from the descriptions of museum, one of the most important mission of museums is to keep mankind's moral and material heritage while education is another mission that is as important as this mission. In last two century museums' education role have showed a significant evolution that must be underlined. At the beginning of 19th century it was underlined that educating and instructing visitors were included to the establishment purposes of the museums (Greenhill, 1999). Researches show that different activities presented outside of the formal education resources in informal learning environments such as museums make learning more effective (Hannu, 1993).

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Museums and Internet

The most important technological improvement emerged in twentieth century is shown as the emergence of the internet technology. Internet is a powerful environment as well as it is a popular environment. With the emergence of this technology people's life styles and learning types have changed (Young, Huang & Jang, 2000). Increasingly more establishments showed increasing interest to be in the online environment and started to develop their web sites (Pastore, 2008).

Digital technology presented various opportunities to the museums about presentation and protection of their collections. One of these presented opportunities is public's access to the collections of the museum in any time. If these collections can be digitalized they can access these collections via internet (Stephen, 2003). With spreading internet technology significant numbers of museums have started to establish their own web sites since 1995. Museums web sites can be used as a marketing device to attract potential visitors and as an education medium before or after museum visits (Pastore, 2008).

Virtual Museums

There is a new quest in twentieth century to define and for emphasized specifications of museums. Interactive media and virtual museums are introduced an alternative to maintain roles of the conventional museums (Kaplan, 2006). Virtual museums are real museums' presentation in computer and internet environment with image transfer and access technologies. Virtual museums are virtual environment collections of pieces to be presented. Digitalized pieces to be presented in virtual museums can be pictures, drawings, photographs, animations, graphics, voice records, video fragments, newspaper articles, interviews and digital databases. In other words virtual museums can contain every material that can be stored digitally (Patterson, 1997; McKenzie, 1997). With 21st century's fast developing technology museums get their shares from these change and developments and adopted themselves to virtual environment. Today any individual from his/her home and work or any student from his/her classroom can visit a museum at virtual environment actually that is at the other side of the world (Ermiş, 2010). With the sight of these definitions Horton (2006) defined the difference between the real and virtual museums as "virtual and real museums are same in large extent. The only difference between them is that the place in which gathered objects exhibited is an online area can be viewed by web explorers instead of a building made of granite or marble."

Together with electronic learning environments especially web based learning environments become widespread a seeking started to increase e-learning environments' efficiency. One of the solutions presented to increase the e-learning environments' efficiency is the integration of the e-learning environments with the educational interfaces.

Definition of the Educational Interface Agents

The need to educational interface agents had emerged with widespread e-learning environments (Moreno, Mayer, Spires and Lester, 2001). Researches in software technology go in the way to realize some of the interaction between the computer and human by means of interface agents (Maes, 1994). Interface agents are computer programs those help user to fulfill his/her duties to be made by computer. These agents, unlike the conventional computer programs, can act autonomously at the users place. In other words, without having to click enter or mouse button user's desired mission is done by the agent (Dehn & Van Mulken, 2000).

Educational interface agents are defined as graphical characters help learning as a social model in asynchronous lectures. Agents can be human, animal and even can be nonliving creatures and they can be seen at the great part of the screen in e-learning environments and can be used for different purposes. Making explanations, giving tips, providing feedbacks or taking attentions of the students to the important constituent on the screen can be included in educational interface agents' intended purposes (Clark&Lyons, 2010).

Establishing inter human interactions and not missing out efficiency of this interaction is emphasized by social representation theory (Moreno at all, 2001). According to the social representation theory inter human social relationship must be established between the computer and student at e-learning environment.

According to this theory it is emphasized that establishing a visual and verbal relationship with the learner will establish a relationship between computer and learner that resembles inter human social relationship (Atkinson, Mayer and Merrill, 2005). In e-learning environments to establish rich learning experiences with students human-like special characters were developed and incorporated into learning environments (Johnson, Rickel and Lester, 2000).

Roles and Classifications of the Educational Interface Agents

Educational interface agents are classified into different types according to their roles in the software. Chou, Chan and Lin (2003) states that the roles of the educational agents used in the software are establishing the social concept in the e-learning environment by being visually in the software or providing support within the software to develop the communication between users to advanced levels.

Chan (1995) had stated the educational interface agents as educational software and underlined that their roles are to facilitate realization of social learning environments in computers. He emphasized that in order to narrate agent’s characteristic reactions to the student texts, graphics, signs, voices, animations, multi environment or virtual reality can be used. He stated the purpose of creating a social environment by using agents in software as either transferring the information directly to the student or creating the required motivation for students to get the information.

Educational interface agents can be classified into various types according to their roles and missions and can be designed according to a specific educational aim with the inclusion social learning activities. Classification of the educational interface agents is shown at Table 1. There are two basic applications of the educational interface agents. These are defined as Intelligent Tutoring System (ITS) and Learning Companion System (LCS) (Chou, Chan and Lin, 2003). These applications can be summarized as:

- In ITS systems educational interface agent is the authorized teacher of the face to face education activity. In this case educational agent is a teacher simulant that acts as field specialist, private teacher, coach or adviser (Sleeman and Brown, 1982; Cited by Chou, Chan and Lin, 2003).
- On the other hand LCSs are as an alternative to one to one learning include learning activities based on cooperation and competition. In LCS systems “Learning partner”, companion student”, “student simulant” and “artificial student” terms are used by different researchers to indicate an unauthorized pedagogical agent created by a computer. Moreover some LCSs can include both teacher simulant and learning partner together (Chou, Chan and Lin, 2003).

Table 1: Classification of the Educational Agents (Quoted from Chou, Chan and Lin, 2003)

Educational Agent		
Pedagogical Agent		Individual Assistant
Authoritative Teacher	Learning Companion or Co-learner or Simulated student	Teacher’s Assistant Student’s Assistant
Tutor, Coach, Guide	Competitor Collaborator Tutee Peer tutor Troublemaker Critic Clone	

Although in the literature there are there are plenty of various studies in various fields related with the usage of pedagogic interface agents in e-learning environments, there are limited numbers of studies related with the usage of pedagogic interface agents in virtual museums.

Purpose

General aim of this study is by using General Directorate of Mineral Research and Exploration (MRE) Energy Park Virtual Science and Technology Museum and Battery Friend Pedagogical Interface Agent to analyze the opinions of the students about virtual museum and pedagogic interface agent who use learning environments including and don't including pedagogic interface agent. According to this aim the following study questions' answers will be researched.

1. Students who utilize Educational Interface Agent aided and not-aided MRE Energy Park Virtual Science and Technology Museum:
 - a. What are their satisfaction scores and general evaluations about Virtual Museum?
 - b. What are their appreciated characteristics of the virtual museum?
 - c. What are their disliked characteristics of the virtual museum?
2. Students who utilize Educational Interface Agent aided MRE Energy Park Virtual Science and Technology Museum:
 - a. What are their satisfaction scores and general evaluations about Pedagogic interface agent?
 - b. What are their appreciated characteristics of the Pedagogic interface agent?
 - c. What are their disliked characteristics of the Pedagogic interface agent?

Method

In this part information about the method of the study, the study group, the learning environment of The educational Interface Agent aided and not aided MRE virtual science and technology museum used in the study, the data collection tools and the data analyses are provided. This study is a qualitative research done to define elementary schools 6th year students' opinions and evaluations about the virtual science and educational interface agent who constitute the study group.

Study Group

It was decided to execute the study with 25 students from 6A and 6B classes, 24 students from 6C class and 23 students from 6E class of Prof. Dr. Erol Gngr Elementary School located in Kırehir city center in the year 2010-2011 spring semester. Experiment and control groups formed with non-biased assignment. With non-biased assignment the students from 6A and 6E classes formed experiment group and the students from 6B and 6C classes formed control group. Of the 48 students formed experiment group 3 students did not attended the study and 4 student did not attended the last test then they excluded from the study and experiment group was considered to include 41 students. In the same way the control group which was constituted by 49 students, 9 students were excluded from the study because they did not attend the study and 14 students were excluded from the study because they did not attend the last test. Accordingly when the students who did not attend the study and who did not attend the last test were excluded from the study experiment group was composed of 41 students and control group was composed of 26 students. In the Table 2 students' distribution according to the experiment-control groups and gender is shown.

Table 2: Gender distribution of the students from the experiment and control groups.

Group	Gender		Total		
	f	%	f	%	
Experiment Group	Male	25	60,98	41	61.19
	Female	16	39,02		
Control Group	Male	16	61,54	26	38.81
	Female	10	38,46		
Total	Male	41	61,19	67	100.0
	Female	26	38,81		

Learning Material

Primarily content formed when MRE Energy Park Virtual Museum learning material was being developed. Virtual museum environment was designed after formation of the content and making required corrections according to opinions of natural science teachers. Physical structure of the MRE Energy Park Museum was transferred logically to the virtual environment in the design. MRE Energy Park Museum is composed of six physical galleries. Five galleries are in indoor area and in outdoor area there are reel devices used to produce energy in the past, running realistic miniatures and models those cannot be on display at indoor areas. In order for students to utilize the virtual museum more efficiently with the visions of pedagogical technologies field specialist and natural science teachers the virtual science and technology museum was composed of one main gallery and six sub-galleries as reflecting the structure of the reel museum.

In the main gallery of the virtual museum formed to reflect the physical structure of The MRE Energy Park Museum students can move in line with the x-axis. Passages provided to the sub-galleries in which contents are displayed by the connections on the main gallery. The move line of the agent and places of the sub-galleries in the museum is shown at Figure 1.

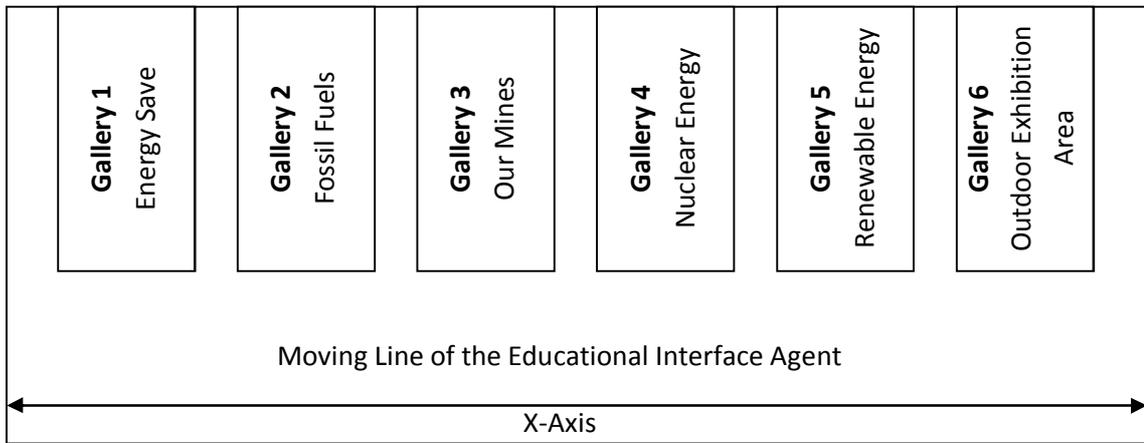


Figure 1: General Form of the MRE Energy Park Virtual Science and Technology Museum

In the design of the main gallery it was decided that movement on x-axis can be made by directional pad of the keyboard. Moreover, in the design of the main gallery it was given great importance to feel 3D by the students and be attractive for the students. The entrances of the sub-galleries are indicated by texts and striking graphics that presents content of the gallery.

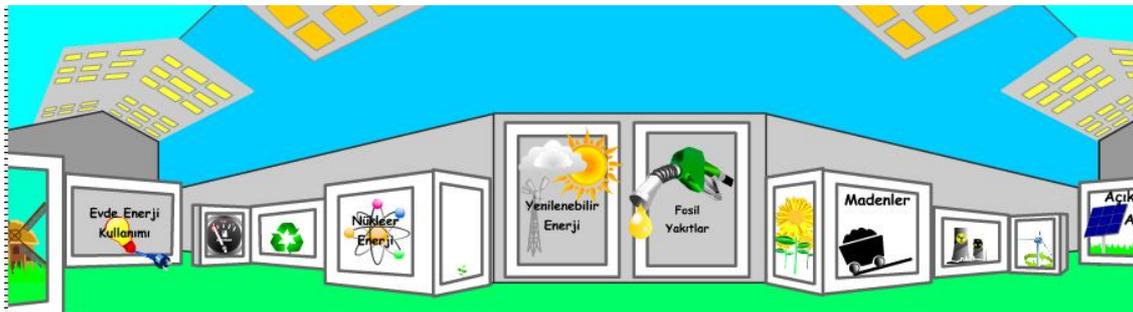


Figure 2: Main gallery of the MRE Energy Park Virtual Museum

Students are given information, guidance and feedback by means of educational interface agent in the main gallery and sub-galleries of the pedagogic interface agent aided virtual museum learning environment.



Figure 3: Main gallery of The Educational Interface Agent aided Museum

On the other hand in the virtual museum environment that does not have educational interface agent aid, informing, guidance and feedbacks are given by means of information boxes in the environment.



Figure 4: Main Gallery of The Museum Without Aid of Educational Interface Agent

Data Collection Tool

The Feedback Form to define the opinions of the elementary school's 6th year students about the Virtual Science and Technology Museum and Educational Interface Agent is developed by researcher with the opinions of specialists. The Feedback Form consists of three chapters including personal information, students' opinions about virtual museum and educational interface agent.

Data Analysis

Descriptive analysis was used to analyze quantitative data. Descriptive analyses approach enables to organize data according to the themes revealed by study questions and enables to present them by considering the asked questions and dimensions (Yıldırım & Şimşek, 2003). At this range frequency and percentage values are presented by making various coding with the data gathered by open ended questions. Moreover some student opinions are gives as sample.

Results and Discussion

1.a.Experiment and Control Group Students' Satisfactions and General Evaluations About Museum Environment

The analyses about the opinions of the students that used the virtual museums those have and haven't pedagogic interface agent is shown at Table 3.

Table 3: Satisfaction Facts of the Students about Their Study Environment

Student Opinions (Frequency and percentage of the students those reported positive opinions)	Virtual Museum Environment that has P.I.A (N=41)		Virtual Museum Environment that has not P.I.A (N=26)	
	f	%	f	%
Did you enjoy your surf in the Energy Park Virtual Museum?	39	95.12	24	92.30
Are you planning to use the Energy Park Virtual Museum again in the future?	39	95.12	24	92.30
Do you want your other lectures be in an environment like Energy Park Virtual Museum?	38	92.68	24	92.30
Do you think that studying lectures in an environment like Energy Park Virtual Museum will increase your success?	37	90.24	24	92.30

95.12 % of the students those utilized educational interface agent supported Energy Park Virtual Museum stated that they liked the environment. This situation showed that the virtual museum environment was accepted by the great majority of the students. Moreover percentage of the ones thinking to utilize this environment in the future is as high as 95.12%. 92.68% of the students want similar environments to Energy Park Virtual Museum to be used in other lectures too. 90.24% of the students think that similar environments to The Energy Park Virtual Museum will increase their success rates.

92.30 % of the students those utilized Energy Park Virtual Museum without the support of pedagogic interface agent liked the environment. Likely 92.30% of them are planning to use the environment in the future, desiring their other lectures to be studied in a similar environment like virtual museum and stating these kinds of environments will affect their success positively.

In a study made by Gulz (2005) it virtual characters' contributions to electronic learning environments and educational interface agents' advantages of the social aspect provided to electronic learning environments was analyzed. Sample of the study was composed of 90 students between the ages of 12 and 15 and attending fine arts lectures in an elementary school in Sweden. Two different environments were developed for scenario based multi learning environment. In the first one the agent took the role of the teacher and in the second one agent took the role of the learning companion namely student simulant. 80 percent of the students who asked their opinions regarding the pedagogic interface agent content of the learning environment expressed a positive opinion. Remaining ones stated relatively negative opinions. 21 percent of the students stated that the educational interface agents make the learning environment more enjoyable and interesting. 11 percent of the students stated that usage of the educational interface agent brings advantage in learning the learning content namely with the usage of the agent they will learn more they stated. Seven students expressed their opinions as usage of the agent will prevent students from becoming alone.

1.b. Experiment and Control Group Students' Favorite Museum Environment Characteristics

In Table 4 the range of the opinions of the Educational Interface Agent Supported Virtual Science and Technology Museum used students regarding the satisfactory characteristics of the environment they used is shown.

Table 4: Students’ Favorite Characteristics about the Environment of Educational Interface Agent Supported Virtual Museum

Characteristic	f	%
Giving Lectures	15	31.91
Doing tests	5	10.64
Touring in Museum	4	8.51
The sing at the dolmush	3	6.38
Giving lectures with voice	3	6.38
Generally museum	2	4.26
Giving information in an enjoyable manner	2	4.26
The topic about nuclear energy	2	4.26
Working with computer	2	4.26
The enjoyable environment	2	4.26
Battery friend educational interface agent	1	2.13
Learning the natural sciences and fuel types	1	2.13
Battery friend’s giving lectures	1	2.13
Lecturing the content visually	1	2.13
Asking questions after giving information	1	2.13
Used visuals	1	2.13
-	1	2.13

Some of the students in experiment group stated that they liked more than one characteristic of the environment; thus the sum of frequency exceeded 41. Students studied in educational interface agent supported environment stated that they liked most lectures (%31.91), test solving (%10.64), touring in the museum physically (%8.51), the sing used in the introducing animation (%6.38) and taking lectures by voice (%6.38). Some of the students’ opinions about the most liked characteristics of the museum are stated below.

- “Giving lectures nicely.”
- “I liked the sing at the bus.”
- “There are information that I didn’t know. I think it was fruitful.”
- “I liked its informing us because we are learning something and I think entering to energy park is very beneficial.”
- “It gives us information about energy.”
- “Its being educative and informative and being entertaining.”
- “I liked surfing in virtual museum very much.”
- “Everything explained visually.”
- “Hearing everything from a voice.”
- “It is very enjoyable and asks questions after he told information to us.”
- “I liked the sing very much.”
- “I liked expressions and visuals.”
- “I liked its being enjoyable for children and I liked to run it myself.”

In Table 5 the range of the opinions of the students those used Virtual Science and Technology Museum without The Educational Interface Agent support regarding the satisfactory characteristics of the environment they used is shown.

Table 5: Students’ Favorite Characteristics about the Environment of Virtual Museum without The Support of Educational Interface Agent

Characteristic	f	%
Giving Lectures	14	46.67
Touring in the museum	5	16.67
Test solving	4	13.33
Generally museum	2	6.67

Lecturing the content visually	1	3.33
Working with computer	1	3.33
It is Entertaining	1	3.33
Preparing for exams	1	3.33
It is colorful	1	3.33

The students who used the environment without the support of the educational interface agent stated their most liked things in the museum as; giving lectures (%46.67), touring in the museum (%16.67), test solving (%13.33) and generally the museum (%6.67). Some of the students' opinions about the most liked characteristics of the museum are stated below.

“Very nice, it helps me when I have difficulties to understand. I liked this site very much. I learned too many new things. There great amount of informations.”

“It helps our lectures, learning and exams.”

“All things about it are very nice, entertaining and didactic.”

“I solved tests entertainingly because it is colorful.”

“The explanations are very nice.”

“Touring the museum.”

It is seen that the opinions of the students about the museum's favorite characteristics resemble each other for both the experiment and control groups. Conveying the content of the museum has a very high enjoyment rate for both environments. Moreover test questions in the practice sessions in environments are liked too much. At the same time it was another characteristic that was liked by the students is that students can tour in the museum physically with or without the support of educational interface agent in both environments. Moreover museum's being designed with a rich visual content increased the enjoyment of the students.

1.c. The Museum's Disliked Characteristics by The Students from the Experiment and Control Groups

The range of the opinions of the students those used The Educational Interface Agent Supported Virtual Science and Technology Museum used regarding the disliked characteristics of the environment they used is shown In Table 6.

Table 6: The students' opinions about the disliked Characteristics of the Environment of the Virtual Museum with the Support of Educational Interface Agent that they use

Characteristic	f	%
None	31	75.61
It is limited	4	9.76
Battery Friend	3	7.32
Questionnaire	2	4.88
Exercises are composed of fixed questions	1	2.44

31 (%75.61) of the students those studied in the educational interface agent supported environment stated that there is not any feature that they disliked. Besides, four students stated that they disliked the limited software and three students stated that they disliked the battery friend. The questionnaire that must be filled after the experimental activity and the test questions' fixed feature those asked in application session of the museum were some of the disliked features of the museum. Some of the opinions stated by the students about the disliked features of the museum are stated below.

“There isn't any disliked characteristic but it will be better if it is more detailed and it involves more information.”

“There is nothing that I dislike. I think all the information in the virtual museum is useful.”

“We solved the same questions every time.”

“It must be more comprehensive. All lectures must be as a site like this.”

“Battery friend's slow walk.”

The range of the opinions of the students those used The Virtual Science and Technology Museum without the Support of Educational Interface Agent regarding the disliked characteristics of the environment they used is shown In Table 7.

Table 7: The students' opinions about the disliked Characteristics of the Environment of the Virtual Museum without the Support of Educational Interface Agent that they use

Characteristic	f	%
None	20	76.92
It is limited	3	11.54
Entrance to museum is difficult	1	3.85
The sing	1	3.85
The last test was difficult	1	3.85

20 (%76.92) of the students that studied in the environment without the educational interface agent stated that there wasn't anything that they disliked. Three students stated that they disliked the limited range of the museum and one each disliked "Difficult entrance to the museum", "The sing" and "Difficultness of the last test". Some of the opinions stated by the students about the disliked features of the museum are stated below.

"I liked everything."

"Nothing, everything is very nice."

"Fast ending of it."

"The test was difficult."

"The difficulty in entering the energy park museum."

75.61% of the experiment group and 76.92% of the control group students stated that there was nothing that they disliked. The limited range of the environment was constituted a disliked feature of the museum by four experiment group students and three control group students. However the limited range of the museum is related with the effort to design the virtual environment to reflect the museum and to define the effect of the agent to add the experimental environment. Diversifying the applications to enrich the environment and presenting different applications for their every entering to the environment and using different presentation forms of the content such as videos or short animations can be helpful for later studies to eliminate the deficiencies stated by the students.

2.a. Experiment Group Students' Opinions and Evaluations About Educational Interface Agent

In order to obtain the opinions of the experiment group students about educational interface agent a feedback form prepared and applied to students via web. The range of the obtained opinions after the content analysis done on obtained quantitative data is presented as frequency (f) and percentage (%) below.

The opinions of the experiment group students about the educational interface agent are shown in Table 8.

Table 8: The opinions of the experiment group students about the educational interface agent

Questions	Evet		Hayır	
	f	%	f	%
Did you like battery friend?	35	85.37	6	14.63
Did battery friend help you while you touring the museum?	38	92.68	3	7.32

35 (85.37%) of the students that used educational interface agent supported environment stated that they liked the agent and 6 of them (14.63%) stated that they disliked the agent. At the same time 38 of the students (92.68%) stated that the battery friend helped in their touring in the museum and 3 of them (7.32%) stated that the agent did not help them. This situation shows that the educational interface agent was liked by the great majority of the students. Moreover students think that educational interface agent helps them.

2.b. Battery Man Educational Interface Agent's Features Those are Liked By The Experiment Group Students

In Table 9 the range of the opinions of the students those worked with educational interface agent supported virtual science and technology museum about the features of the agent those they satisfied with.

Table 9: The Opinions of the Experiment Group Students about the Features of the Educational Interface Agent Those They Liked

Characteristic	f	%
It moves - Walks	9	29.03
It helps- It says students what to do –It makes suggestions	8	25.81
Talks nicely	6	19.35
Its look – It looks sympathetic	3	9.68
It gives information	2	6.45
It comes by dolmush	1	3.23
It is an appropriate character to energy park	1	3.23
It reads out information	1	3.23

Some of the students from experiment group stated that they liked the educational interface agent but they did not give an explanation about which characteristic of the agent that they like. Thus sum of the frequency is less than 41.

29.03% (n=9) of the students studied with educational interface agent stated that they liked its moving - walking, 25.81% of them (n=8) liked its helping to them – saying them what to do – making suggestions, 19.35% of them (n=6) liked its nice talk, 9.68% of them liked its sympathetic appearance and 6.45% of them (n=2) liked its giving information. Moreover one each student stated that they liked its coming to museum with dolmush, its being an appropriate character to the energy park and its reading out the information.

The analysis showed that students liked to tour the character in the virtual museum. This situation may increase the admiration of the students towards the environment by making the museum more enjoyable. As it is seen on the table the students were very pleased by the agent's making explanations to them.

2.c. Battery Man Educational Interface Agent's Features Those are Disliked By The Experiment Group Students

In Table 10 the range of the opinions of the students those worked with educational interface agent supported virtual science and technology museum about the features of the agent those they disliked with.

Table 10: The Opinions of the Experiment Group Students about the Features of the Educational Interface Agent Those They Disliked

Characteristic	f	%
Walks Slowly	2	28.57
Talks too much	2	28.57
It must help more	1	14.29
It doesn't look nice	1	14.29
Its talks must be more explanatory	1	14.29

Most of the students stated there isn't any feature of the agent that they disliked. Two each students (28.57%) its slow walk and talking a lot and one each students stated that they disliked (14.29%) it's not being more helpful, its unpleasant look and its speech not being more explanatory.

Conclusion and Suggestions

The Energy Park Virtual Museum that was developed under the concept of this study and can be reached via internet was designed Flash based for visual attractiveness to be high by utilizing the real

pictures of the museum in line with the content of The Energy Park Museum. The “Battery Friend” educational interface agent that is included by the working environment in which the experiment group students studied is designed as an asexual cartoon character. Battery friend educational interface agent provides information to students in learning environment about how can they utilize the learning environment, can vocalize the content optionally, gives reinforce and companions them while they are touring the museum.

This study showed that the students those utilized The Energy Park Virtual Museum with or without the support of educational interface agent both they liked The Energy Park Virtual Museum, planned to utilize again and thought that utilizing these kinds of environments in learning process will affect their successes positively. Moreover it is found that most of the students those utilized educational interface agent supported environment expressed their positive opinions regarding utilization of educational interface agents in learning environments. The conclusions obtained according to the study evident are shown below:

1. It was seen that opinions of the students those utilized virtual museum environment with or without the support of educational interface agent regarding the learning environment were generally positive. The students those studied in either learning environments stated that they liked to tour in the virtual museum, they were planning to utilize the museum again, they asked the designation of the environments like this for other lectures too and they thought these kind of environments will affect their successes in a positive manner. In Kızılkaya's (2005) study done with the sixth year students, the students stated that they are happy with studying in educational interface agent supported learning environment and this environment is very enjoyable. However on the other hand the students those studied in the environment without educational interface agent underlined that the environment was boring and routinized. Lester et al. (1997) in an experimental study involving an environment in which a plant design will be done with an educational interface agent named “Herman the Bug” stated that the students’ studying with educational interface increased their motivations. However they also underlined that studying in interactive environments those did not contain educational interface agent have also positive effects on the motivation of the students too. In the same study it is stated that well designed educational interface agents have positive effects on affective behaviors. Maldona and Nass (2005) state that educational interface agents make learning environments more enjoyable and it has a positive effect on the performances of the students. Both of the learning environments those has and has not newly designed battery friend educational interface agent are interactive and include different characters providing social concept along with the educational interface agent. In a study on 14-15 years old 90 primary school students by Gulz (2005) 80% of the students stated that it is a good idea for pedagogic programs to include educational interface agents. The results obtained from this study show consistency with the previous studies. 95.12% of the students those utilized the e-learning environment that include “Battery Friend” educational interface agent stated that they liked touring in energy park virtual museum and they are planning to utilize the energy park virtual museum in the future and also 92.68% of them stated that they want their other lectures to be done in an environment like Energy Park Virtual Science and Technology Museum. Obtained results showed that students are satisfied with The Virtual Science and Technology Museum Including educational interface agent and their general evaluations are positive. The students utilized both environments stated that they are very satisfied with the environment. This situation may be resulted from the fact that in the environment that doesn't include the Battery Friend educational interface agent there are different characters resembling the one in the environment including agent. This situation may be resulted with the close resemblance of the satisfaction levels of the environment with and without the agent. It can be said that the satisfaction levels of the students those utilized e-learning environments those are pedagogically convenient, well designed and supported with the educational interface agent will be high. It can also be said that utilization of the multi and single educational interface agents may have a contribution on the satisfaction levels of the users and usage of the convenient interface agents in e-learning environments to be designed may increase the student satisfaction and consequently may have a positive effect on the success of the students.
2. Most of the students (75.61%) those studied in the educational interface agent supported virtual museum environment said that they are satisfied with the learning environment. This result coincides with the

previous similar studies (Sanghoon, 2005; Gulz, 2005; Kim, 2007; Kim&Baylor, 2006). Some of the most liked features were its lecturing, test feature, touring in the museum virtually, the sing at the entrance and its teaching the lecture vocally. These defined features by the students coincide with the underlined features of the previous similar studies (Mısırlı, 2007; Kale, 2003). Students show its limited range as the feature that they disliked (9.76%).

3. The students those studied with the virtual museum environment without educational interface agent stated similar satisfaction levels with the experiment group students. This situation overlaps with the study of Mısırlı (2007). 76.61% of the control group students stated there isn't any feature that they aren't satisfied with. Lecturing and touring in the museum were the features those are liked most by the students of control group. Students of the control group stated the limited content of the virtual museum as the disliked feature similarly as the experiment group students did. It can be said that the features stated by the students coincided with the results obtained by Mısırlı (2007).
4. Most of the students those studied in the virtual science and the technology museum with the educational interface agent support stated that they liked the educational interface agent and it helped them in their tour in the museum. This result coincides with the previous studies done with the e-learning environments in which educational interface agents used (Gulz, 2005; Moreno et al., 2005; Moundridou&Virvou, 2002 and Moreno, 2001). Some of the most liked features of the educational interface agent were sated as its moving – walking, helping – saying what to do – making suggestions, nice talking and looking beautiful. The features those were disliked by the students presented primarily as its slow walk and its too much talking.

The results of the study showed that utilization of the educational interface agents in e-learning environments have positive effects on the satisfaction levels of the students. This fact coincides with the other studies done in the field. With this concept utilization of educational interface agents can be suggested for e-learning environments or virtual museums to be designed. Moreover more comprehensive content of the virtual museums to be designed will have positive effects on the satisfaction levels of the students. Regarding with the educational interface agent design, designation of the agents those have more human-like features, those look like as if they were alive and those move naturally will affect the satisfaction levels of the students about the agents.

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