

The Educational MOO—User Profile

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This article attempts to investigate the social and educational potential of the **Multi User Dimension Object Oriented** (MOO) environment, with emphasis on the educational MOO. This is accomplished through a close examination of the profile of MOO users. One hundred sixty one MOO users of both social and educational MOO environments completed an anonymous online survey on their MOO experience which examined their demographic characteristics, motivation for frequenting the MOO, use of the MOO, perception of the MOO, and the way they viewed their membership there. Findings regarding the demographic characteristics of users are consistent with the literature. Respondents were mainly native English speakers, computer competent, and had a high level of education. They grasp the environment as both social and educational and used it mainly for sharing ideas and professional tips. The elements found favored by most users were the sense of community and the intercultural contact. A typological classification of MOO users revealed three prototypes: (a) the highly academic teacher, (b) the student seeking company, and (c) the young programmer. In light of these findings, this article suggests that the MOO be viewed as a learning environment that encourages learning in a social setting and can enhance the development of real professional communities based on communal interest for collaborative work.

The rapid development of the Internet network brought many changes to our daily life and presented new challenges to the education system. The new channels of communication also offer an alternative to the place-based community—a virtual community, based on mutual interest.

Virtual communities, formed in cyberspace, vary from asynchronous, such as newsgroups and discussion forms, to synchronous, such as Chat, IRC, and the MOO. This research will concentrate on the MOO environment, since of all synchronous environments, the MOO provides the strongest resemblance to the traditional community (Falk, 1995). The MOO environment provides various activities in addition to chat and, unlike chat and IRC environments, does not cease to exist once all users log out. Users revisiting the MOO will find the same rooms and objects they remember from prior visits. This gives the MOO a sense of permanence so important to the development of a long lasting community (Rheingold, 1994; Reid, 1994).

The MOO environment is an Internet based textual virtual world in which people from all over the world meet in real time to converse, interact with textually described objects, and with each other in synchronous and asynchronous ways. MOO visitors, expand the environment by building textually described rooms and objects, and thus become contributors and not just passive recipients.

MOOs can be divided into Social and Educational. Social MOOs serve as a gathering place for friendly, social interaction. Educational MOOs are usually centered on an academic theme and enable teacher-student and student-student communication during and after school hours.

The Social Potential of the MOO

The MOO environment fits Oldenburg's (1991) definition of "third place." According to Oldenburg the first place is where we live, the second place is where we work and the third place exists on neutral ground and guarantees all members social equality. People come to third places on a voluntary basis and the main activity there is conversation among the regular clientele. The MOO environment, which is open to everyone and offers equality, may serve as a third place for people with shared interest.

The Educational Potential of the MOO

A literature review of current pedagogical theories revealed that all share some common features. All emphasize the importance of collaborative

learning and learning in a social setting, the inseparable bond between intellectual learning and the learner's emotional world and the need to combine the learning process with the community life in which it takes place (Oren, 1997). Vygotsky (1978) claimed that learning is best done in a social setting and that a "caretaker" is needed to help the learner into the zone of proximal development—the area of new knowledge. New pedagogical theories also emphasize the importance of autonomous learning—students' responsibility to the content and pace of their learning and active learning—constructing knowledge through active involvement (Papert, 1991).

The MOO environment offers the opportunity for collaborative learning for the students as well as collaborative instruction and collaborative professional development for the teachers. The variety of interactive tools offers a wide range of opportunities to students and teachers with different styles of learning and teaching and make it impossible for users to stay passive (Backer, 1998).

Research Problem and Questions

In an age where virtual communities are created daily and act as an addition or substitute for the place-based communities, it is worth examining the social potential of such environments. Since learning is also a social process and should take place in a social setting, there is room to study the educational potential of such environments as well.

Sarason (1997) claimed that for learning to be meaningful, one must focus on the learner: his/her interests, attitudes, and motivation, and design instruction to enhance them. In light of this approach, this research aims to examine the potential of the MOO by focusing on the MOO users for whom the environment is designed.

Curtis (1992) argued that despite the availability of personal computers and free access to the Internet to all university students and the easy access to MOO environments not all are attracted to it. Serpentelli (1991) admitted that not all find interest in the MOO not even those who could have benefited from it.

This research aims to describe the profile of those users attracted to the MOO through the following questions:

- What are the demographic characteristics of the MOO user?
- What characterizes the MOO user's consistency in the environment?
- For what purposes does the MOO user use the environment?

- How does the MOO user view the environment and what does it mean to him?
- What elements of the environment attract the MOO user?
- How does the MOO user view his/her identity in the MOO environment?
- Do MOO users from Social MOOs and Educational MOOs differ in the above respects?
- Do MOO users with different background variables (gender, mother tongue, occupation and age) differ in the above respects?

THEORETICAL BACKGROUND

MOO Population

Earlier studies provided data on the demographics of people who used the MOO. According to these studies, the MOO population is portrayed as an "Elite group." Moo users are most often above the norm in terms of educational background and socioeconomic status. They are people with passable proficiency of English who have access to the Internet. (Luke, 1993; Fernback & Thompson, 1995; Curtis, 1992; Serpentelli, 1991; Roberts, Smith, & Pollock, 1996; Sempsey, 1997). Serpentelli explained that the reason the MOO population is more exclusive than that of other virtual environments lies in the fact that the MOO environment is more complex to handle (Serpentelli, 1991).

Roberts, Smith, and Pollock (1996) interviewed 54 MOO users. The picture emerging was of a predominantly male, young, highly educated group of North Americans. Out of the 54 interviewees 69% were male, 23% female, and 3% described their gender as indeterminate. Sixty-four percent of interviewees resided in the United States of America. All but four (93%) of the interviewees had completed, or were currently enrolled in, tertiary education.

Curtis, who observed the population of the Lambda MOO, claimed that 90% of the MOO population are college undergraduate students. Bruckman, who surveyed the population of the MediaMOO, found that 84% were male. Serpentelli, predicted that the communicative aspect of the MOO may contribute to breaking this gender gap by attracting more woman (Serpentelli, 1991).

Perception of the MOO

The MOO may be grasped in many ways. Curtis (1992) called the MOO environment a “social outlet” and compared the random encounters occurring on the MOO to those taking place on a shipboard. Suler (1996) described the MOO as an “ongoing party” and Bruckman and Resnick (1993) as an “endless conference reception.”

Reid (1994) explained that the MOO user is simultaneously in two worlds: real and virtual, and sometimes the boundaries are not clear. Cherny (1995) distinguished between two perspectives: viewing the MOO as an extension of real life and viewing the MOO as an escape from it. Cherny explained that users who belong to the first group tend to choose their own name for their persona and initiate offline meetings with friends from the MOO community. Members who view the MOO as a whole new world will prefer a false name and engage more in role play games and gender swapping.

Elements of the MOO

Different researchers viewed different aspects of the MOO as a main attraction. Many considered the social contact and the close friendships formed on the MOO as its best reward (Turbee, 1997; Roberts, Smith, & Pollock, 1996; Rheingold, 1994). Bruckman and Resnick (1993) studied the population of the MediaMOO and found that the most meaningful interaction is that among regulars who by their constant presence give the MOO its sense of consistency. This is why it is considered important for users to frequent the MOO on a daily basis (Suler, 1996; Turkle, 1995). Since the population of the MOO is international, MOO users have a chance to meet other users from different cultures. This sense of “global village” is one more reward the MOO (Roberts, Smith, & Pollock, 1996).

Another important element is the ability to expand the environment. Turbee (1997) claimed that the ability to build objects and own them gives users a feeling of consistency and encourages users to revisit the MOO. Building objects, and thus helping develop the MOO also strengthens the user’s sense of belonging (Bruckman, 1997; Roberts, Smith, & Pollock, 1996). Programming skills help users climb up the hierarchy level. Status and influence are, then, another element (Bruckman, 1997; Reid, 1994).

In addition to the realistic elements, the MOO has also some unrealistic features: anonymity and the ability to maintain more than one identity. Turkle (1995) explained that the MOO is a laboratory where the user can

test various aspects of his/her personality, free her/himself from physical limitations and psychological inhibitions and be anything he/she wants to. This freedom leads to gender swapping. Gender swapping may result from the wish to undergo new experiences or avoid unpleasant ones (Serpentelli, 1991; Curtis, 1992; Rheingold, 1994). Finally, since users may appear under different titles the MOO population is egalitarian. Real life status does not exist in the MOO. Status in the MOO results from users' contribution.

Suler's Taxonomy

Suler (1998) explained people's addiction to virtual worlds such as Palace and MOO based on Maslow's hierarchy of human needs. Suler claimed that people become preoccupied with an activity if that activity satisfies their needs. Suler explained how the MOO environment satisfies human needs starting at the bottom.

The most basic human needs are the biological ones. The MOO is emotionally safe due to the anonymity it allows and therefore users feel more open, bold and experimental. By biological Suler included not only the phenomenon of Cybersex but also the playful flirting. Next comes the need for interpersonal contact, social recognition, and a sense of belonging—the need for a place where everybody knows your name. The fact that all MOO users have something in common—their interest in computer technology enhances the feeling of belonging. The third need is “the need for learning, accomplishment, mastery of the environment and the self esteem that arises from such achievement.” The MOO is not a static environment and the process of mastering its technical and social structure is a never-ending process. The fourth need is the need for “self-actualization—fulfilling one's intellectual and artistic needs.

Bartle's Typology

Trying to find out what people want out of a Multi User Domain (MUD), Bartle (1996) conducted discussions on bulletin boards. Out of the hundred postings he came up with four things people typically enjoyed about MUDs and inferred four types of MUD users: (a) *the achiever*—is interested in doing things to the game—setting goals, achieving them, and climbing up the level hierarchy; (b) *the explorer*—likes to explore the virtual world and learn as much as possible about it; (c) *the socialiser*—is interested

in socializing with other users, find out about them and get to know them; and (d) *the killer*—interested in doing things to other players and demonstrate his/her superiority over them. Most users drift between all four depending on the situation.

According to Bartle the Achiver views the MOO as a game, the Explorer as a pastime, the Socialiser as an entertainment, and the Killer as a sport. Bartle noted that these types are not typical only to the MUD environment and that we can encounter such types also on educational MOOs.

METHODOLOGY

Research Population

One hundred sixty one respondents, from 49 different MOO environments, took part in this research. Eighty eight of them were from Educational MOOs and 78 from Social ones. Probability sampling was not possible since no updated list of all MOO environments is yet available and the exact number of MOOs is unknown. Moreover, MOO administrators keep users' real name and e-mail addresses confidential. Therefore, participants were sampled by way of convenience and quota sampling. Sampling took place through three channels:

1. *News board and discussion lists within the MOO*—A few popular public-access MOOs were selected and an invitation to take part in it was posted on their internal news board and their *general discussion list, with approval of the MOO administrators. In this way an appeal could be made to a large audience.
2. *External discussion lists*—An announcement about the research and a call to take part in it was also posted in some newsgroups outside the MOO.
3. *Personal appeal*—Since recruiting participants through MOO news board and external discussion lists could cause biases, participants were also recruited randomly from within the selected MOOs by personal address.

Materials

A survey consisting of two parts was developed for this research. The first part contained demographic items and the second related to MOO experience.

Since MOO users tend to frequent more than one MOO and their attitude and behavior may vary from MOO to MOO, participants were asked to relate to the MOO that they call their Home MOO - the place most significant to them.

Variables

Demographic measures. Out of the 11 demographic measures, 7 referred to background: gender, age, origin, mother tongue, education, and marital status, and four to computer competence: time spent on computers, and on the Internet and the applications mastered.

Consistency. The consistency variable was measured by four measures: the way the respondent learned about the MOO, his/her command of the MOO, his/her plans for the future and the nature of his/her visits—in terms of length, number of visits per-day, and seniority in the environment.

Activity. To assess respondents' use of the environment, a 5-point Likert scale consisting of 24 items was designed. Each item described a possible activity based on the literature, personal experience, and initial interviews with random MOO participants. Items related to both social activities and educational/professional ones. Respondents were asked to rate how often they are engaged in the activities on a scale ranging from Never to Always.

Perception of the MOO. The way respondents view the MOO was measured by two 5 point Likert scales. Respondents were asked to assess how true each given statement describes the way they feel. The first rating scale referred to the way the MOO is viewed and contained items such as; a game, a pastime, a sport, entertainment, a social environment, or learning environment. The second scale concentrated on the realistic and unrealistic elements of the MOO and the extent to which they may attract participants to the MOO. Respondents were asked to state how much they like elements such as; sense of community, anonymity, equality, cross-cultural relationships, and so forth.

Player's perception of him/herself. The way participants view themselves in the MOO was measured by three items. Participants were asked whether or not their MOO name, gender, and personal traits are identical with those they have in reality.

Procedures

The questionnaire was written in a format that allowed respondents to fill it out through a Java-enabled browser and submit it anonymously. Yet, respondents were given the option to mention their e-mail address in case they wish to be informed about the results of the research. The idea behind this option was to encourage participants by intriguing their interest and rewarding them for their trouble. Confidentiality was promised to those choosing this option.

Data collection in the three sampling fashions mentioned earlier lasted about two months. In the course of this period a total of 166 valid forms was gathered. About 12-15 hours per week were devoted to wandering around MOO environments and randomly addressing MOO users.

Descriptive statistics were used to analyze the data obtained. To examine differences among respondents who vary on the independent variables three tests were used. A Chi square test of independence (χ^2) and a Spearman correlation coefficient were used to test statistical correlation between variables. A *t*-test was used to compare mean scores of two separate groups of one variable.

RESULTS

In principle, the picture of educational MOO users resembled that of MOO users in general. Bearing in mind that the potential of the educational MOO is of more interest to the educational field, findings described in this article concentrate on the users of educational MOOs only.

Users of Educational MOOs

Out of the 161 respondents, a total of 88 (54.7%) respondents regard an Educational MOO as their home MOO. The vast majority of respondents are male (64.8%), the average age is 31.8 and 63.6% are over the age of 25. The sample was international but most respondents were from the United States (42%), the Far East (17%) and Canada (14.8%). Most respondents are native English speakers (62.5%). The vast majority of respondents have had a higher education; 39.2% have a B.A. degree or are about to graduate from a university and 39% have an M.A. or Ph.D. Respondents were composed

mainly of University teachers (39.8%) and students (35.2%). The third group of respondents was from computer related domains (10.2%). Almost all respondents are computer competent and reported good mastery of most common computer and Internet applications. The average amount of time respondents spend on computers is 35.32 hours per week ($SD=20.96$), out of which an average of 22.57 hours per week ($SD=17.08$) are spent on the Internet. Answers ranged from 4 to 83 hours per week. Most respondents (92%) access the Internet from home. They also access the Internet from the workplace (69%), University (30.7%), and school (26.1%).

Respondents became acquainted with the MOO in various ways, but mostly by word of mouth (45.5%). Only less than a third of them (27.1%) learned about it from a classroom announcement. The amount of time respondents spend in the MOO ranged from 1 to 80 weekly hours ($M=12.66$ hours, $SD=15.10$) and the length of each visit ranged from two minutes up to seven hours. Respondents reported visiting the MOO about twice a day. The average amount of time respondents spent in the MOO since they had first visited a MOO was 27.38 months which is a little bit more than two years.

The most common player category in the hierarchy of authority levels is that of members only (36.4%) and programmers (28.4%). About a third (34.1%) expressed a wish to climb higher on the hierarchy ladder in the future.

The activities respondents are most frequently engaged in are: chatting with friends from the MOO community, sharing ideas, reading/writing messages, helping new members, exchanging professional tips, and building objects.

The help and assistance reported by respondents is both technical and emotional. Respondents reported a lot of collaborative work, collaborative writing, research, and teaching. Respondents are also engaged in programming and gain a lot of satisfaction from it. Those who program objects enjoy watching people interact with them. Table 1 shows the distribution (in percentage) of 24 activities. Activities are ranked from the most frequent to the least.

Respondents view the MOO as both a learning (86.4%) environment and a social (80.7%) one and less as a game (21.6%) or a sport (5.7%). Most respondents (64.8%) consider the MOO as a supplement that enriches their real world and only 8% view the MOO as a new and better world.

The elements of the MOO found most favorite by respondents are the ability to meet people from different cultures (85.2%), the sense of belonging to a community (69.3%), and equality (71.6%). Table 2 shows the elements favored by users from the most important to the least.

Table 1
Frequencies (in percentage) of MOO Activities ($N=88$)

Activity	Seldom- Never 1	Some- times 2	Often Always 3	M
Chatting with MOO friends	10.2%	27.3%	62.5%	2.52
Sharing ideas	8.0%	34.1%	58.0%	2.50
Reading and writing MOO messages	25.0%	38.6%	36.4%	2.11
Helping new members	23.9%	42.0%	34.1%	2.10
Exchanging professional tips	30.7%	34.1%	35.2%	2.05
Chatting with occasional members	22.7%	52.3%	25.0%	2.02
Interacting with objects	37.5%	34.1%	28.4%	1.91
Building/programming objects	42.0%	30.7%	27.3%	1.86
Lurking/idling	44.3%	27.3%	28.4%	1.84
Chatting with occasional guests	28.4%	48.9%	22.7%	1.94
Learning different subjects	44.3%	29.5%	26.1%	1.82
Chatting with pre-MOO friends	48.9%	26.1%	25.0%	1.76
Participating in MOO newsgroups	45.5%	30.7%	23.9%	1.78
Participating in MOO projects	48.9%	26.1%	25.0%	1.76
Wandering around exploring the MOO	43.2%	40.9%	15.9%	1.73
Teaching students	46.6%	21.6%	31.8%	1.85
Participating in organized gatherings	44.3%	27.3%	28.4%	1.83
Conducting research	53.4%	17.0%	29.5%	1.76
Teasing other members	62.5%	21.6%	15.9%	1.53
Flirting	77.0%	16.1%	6.9%	1.30
Playing board games	67.0%	17.0%	15.9%	1.50
Searching for friends for off-line friendship	73.9%	15.9%	10.2%	1.36
Looking for job possibilities	89.8%	6.8%	3.4%	1.14
Role play	76.1%	17.0%	6.8%	1.30

Table 2
Frequencies (in percentage) of Elements Favored by Users ($N=88$)

In the MOO I like....	Disagree 1	Uncertain 2	Agree 3	M
Meeting people from different cultures	6.8%	8.0%	85.2%	2.78
Sense of belonging to a community	12.5%	18.2%	69.3%	2.57
Being equal to others	10.2%	18.2%	71.6%	2.61
Owning objects	18.2%	26.1%	55.7%	2.38
The ability to influence others	20.5%	30.7%	48.9%	2.28
Being anonymous	50.9%	22.7%	27.3%	1.77
Having more than one identity	51.1%	23.9%	25.0%	1.74

Respondents prefer to use their real name on the MOO (55.7%). A vast majority of the respondents prefer to identify themselves by their own gender (92%) and 88.6% claim their characteristics in the MOO are quite similar to those they have in real life. Respondents who cling to their name do that for various reasons but mostly because this is the requirement in some Educational MOO environments. Other reasons reported are their choice not to hide their own identity or just lack of imagination. Those who prefer to appear under a different name explained that they wanted to convey a certain message by their names or hint on their field of interest. Another reason reported is the consent that this is an important element of the environment and therefore should be made use of. Technical reasons mentioned are the fact the real name was already taken by another participant, was too long or too common.

Do MOO users with different background variables (gender, mother tongue, occupation and age) differ in the above respects in the Educational MOO? Out of the four independent variables: gender, mother tongue, age and occupation, mother tongue played the most statistically significant role. Gender didn't produce any statistically significant differences. Out of the total of 88 respondents, 55 (62.5%) were native English speakers and 33 (37.5%) were nonnative English speakers.

The vast majority of respondents from the group of native English speakers are teachers (52.7%) and high school students (27.3%). The group of nonnative English speakers consists mostly of university students (48.5%) and people who work in the computer related field (15.2%). This difference was found statistically significant ($\chi^2=14.77$, $p<0.05$). Table 3 presents the distribution of the demographic variables among Native and Nonnative English speakers.

Respondents from the group of native English speakers are more motivated to climb up the hierarchy ladder and gain power and influence than respondents from the group of nonnative English speakers ($\chi^2=7.28$, $p<0.02$).

Though both groups favor the activities of chatting with friends from the MOO community and sharing ideas, findings indicate that respondents from the group of native English speakers assist new members, exchange professional tips, program and manipulate objects, and participate in MOO projects significantly more often than their nonnative counterparts ($p<0.05$). Nonnative speakers of English, on the other hand, tend to use the MOO more in order to look for friends for off-line friendship ($\chi^2=12.21$, $p<0.05$).

Table 3
The Distribution (in percentage) of Demographic Variables Including χ^2

Variable	Value	Native Speakers N=55	Nonnative Speakers N=33	χ^2
Gender	Male	67.3%	60.6%	0.40
	Female	32.7%	39.4%	
Age	13-18	25.5%	6.1%	33.06***
	19-24	1.8%	45.5%	
	25-40	32.7%	39.4%	
	41+	40.0%	9.1%	
Education	K12	27.8%	12.1%	6.34
	College-B.A.	31.5%	51.5%	
	M.A.+	40.7%	36.4%	
Occupation	Student	27.3%	48.5%	14.77**
	Teacher	52.7%	18.2%	
	Computer field	7.3%	15.2%	
	Others	12.7%	18.1%	
Marital status	Married	45.5%	33.3%	8.47*
	Not married	54.5%	66.7%	
* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$				

The group of native English speakers like the elements: sense of belonging to a community ($\chi^2=11.53$, $p < 0.01$), equality ($\chi^2=7.81$, $p < 0.05$), ownership ($\chi^2=7.13$, $p < 0.05$), and the ability to influence others ($\chi^2=9.14$, $p < 0.01$) significantly more than the group of nonnative English speakers.

The two groups of teachers ($N=35$) and students ($N=31$) varied significantly in their use of the environment. Teachers tend to share ideas ($\chi^2=11.70$, $p < 0.01$) and professional tips ($\chi^2=17.57$, $p < 0.01$), participate in MOO projects ($\chi^2=18.27$, $p < 0.01$) and organized gathering ($\chi^2=11.48$, $p < 0.05$) significantly more often than the group of students. Teachers also assist new members ($\chi^2=18.2$, $p < 0.01$) and teach online ($\chi^2=16.52$, $p < 0.01$) significantly more often than students, though it should be noted that students also reported assisting new members and teaching. Students, on the other hand, tend to flirt ($\chi^2=8.21$, $p < 0.05$) and look for friends for offline friendship ($\chi^2=12.64$, $p < 0.05$) significantly more often than teachers, though these activities are rated low for them as well.

Students and teachers also vary in the way they grasp the MOO. 80.6% of the students view the MOO as an entertainment ($\chi^2=8.45, p<0.05$) and 54.8% as a pastime ($\chi^2=15.22, p<0.01$). The sense of belonging to a community is stronger for the group of teachers, 85.7% of the teachers reported feeling a sense of community as opposed to 58.1% among the group of students ($\chi^2=6.88, p<0.05$). Teachers also like owning objects (74.3%) significantly more than students (45.2%) ($\chi^2=6.67, p<0.05$). Finally, 64.5% of the students tend to choose a different name for themselves in the MOO while teachers tend to retain their own name (68.6%) ($\chi^2=7.26, p<0.01$).

Out of the 88 respondents 18.2% ($N=16$) were in the high school ages of 13-18, 18.2% ($N=16$) were in the ages of 19-24, 35.1% ($N=31$) in the ages of 25-40, and 28.4% 41+. The first group (13-18) consists of high school students, mostly male (75%) and native English speakers (87.5%).

The second group (19-24) consists mainly of college/university students (68.8%). Respondents divide into male (56.3%) and female (43.7%) and the vast majority (93.8%) are nonnative English speakers.

Respondents from the third group (25-40) are mainly teachers from the academy (51.6%) or students (16.1%). More than half of them (53.3%) have a degree of M.A. or higher. 74.2% are male and 58% are native English speakers.

The vast majority of the last group (41+) comes from the academic world. Seventy six percent are teachers/lecturers and have an M.A. or Ph.D. degrees. Most respondents from this group are native English speakers (88%) and they divide almost equally between male (52%) and female (48%).

Some significant differences were found in regard to the use of the environment. Respondents from age 13-18 tend to do the following activities significantly more frequently than members of other age groups: (a) helping new members (43.8%), (b) writing and reading MOO messages (50%), and (c) interacting with objects (68.8%). They also like programming and building (37.5%) although no statistically significant difference was found regarding this item.

Respondents from age 19-24 make less use of the environments than their counterparts from the other age groups. The only activities they do significantly more frequently are looking for friends for offline friendship (31.3%) and flirting and romances (18.8%).

Respondents from age 25-40 take part in MOO projects (41.9%), conduct research (54.8%), and spend their time sharing ideas (83.9%) significantly more often than respondents from other groups.

Respondents from the age 41+ use the MOO for teaching and exchanging professional tips significantly more than members of other age groups.

Fifty six percent reported teaching students frequently/always in the MOO ($R_s=0.45$, $p<0.001$).

Respondents from different age groups also vary in their perception of the MOO. In the ages 13-18 the MOO is viewed more as a pastime and entertainment than it is viewed in the ages 25-40 and 41+. Respondents in the ages of 19-24 tend to think of the MOO as a game more than respondents from other age groups ($R_s=0.28$, $P<0.01$). All respondents resemble each other in their preference of elements except for the element—sense of belonging to a community. Respondents from the age groups 25-40 and 41+ feel more sense of community than their counterparts.

In terms of identity, only one significant difference was found. Whereas in the age groups 13-18 and 19-24, respondents prefer to choose a new name for themselves, respondents from the age groups 25-40 and 41+ prefer to cling to their own name and identity ($\chi^2=10.39$, $p<0.01$). Figure 1 presents users preference of name among the four age groups.

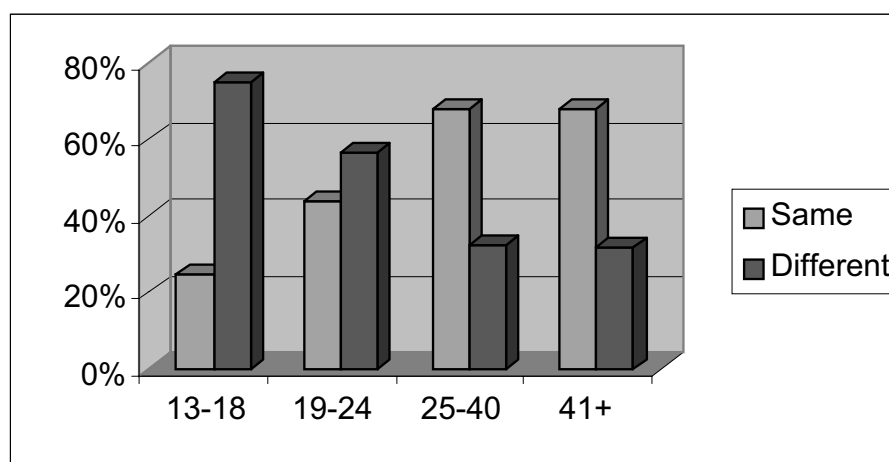


Figure 1. Users' choice of name among the various age groups

DISCUSSION

What are the demographic characteristics of the MOO user? As far as the demographics of MOO users was concerned, data were consistent with the literature. Most users can fit the definition of “computer elite” (Fernback & Thompson, 1995; Curtis, 1992; Serpentelli, 1991; Roberts, Smith, & Pollock, 1996; Sempsey, 1997). Most come from the US and are native English speakers. Male users' numerical dominance (Serpentelli, 1991;

Bruckman, 1992; Curtis, 1992; Roberts, Smith, & Pollock, 1996) was evident in this research also but the gap between the percentage of male and female users seems to be on the decrease—64.8% male users versus 35.2% female users. However, it must be borne in mind that it is possible that female users were more willing to participate in the research than male users and this data does not reflect their real percentage in the MOO population. The educational MOO's population, inconsistent with the literature, is composed mostly of University teachers and not college and University students.

What characterizes the MOO user's consistency in the environment?

Most users come to the MOO on a voluntary basis and not due to an academic obligation. They devote to the MOO almost half the time they devote to the Internet and the MOO, hence, takes a significant portion of their on-line time. A third of the respondents would like to climb higher on the hierarchy ladder and reach the level of programmer or wizard. This may indicate that they consider their membership in the MOO community as important and plan to stay there.

For what purposes does the MOO user use the environment? Out of the 24 activities presented to respondents the most frequent one was chatting with friends from the MOO community. Chatting with occasional characters was ranked only sixth and chatting with occasional guests ranked eleventh. This suggests that it is the interpersonal relationship that attracts users and not the chat itself. This finding is consistent with the literature (Bruckman & Resnick, 1993) and confirms the claim about the importance of consistent presence in the MOO (Turkle, 1995; Suler, 1996).

Other frequent activities were exchanging tips and sharing ideas and assisting new members. Native English speakers assist other members more often than nonnative English speakers perhaps due to the fact that it is easier for them to express themselves. The last confirms that help and assistance are rooted in the MOO culture. Activities that involve a large audience, such as organized gatherings and MOO projects, seem less popular than the more intimate activities that do not demand many participants.

The technical elements of the environment: building objects and interacting with them attract the younger respondents at the ages of 13-18. Since only 12.5% reported participating in MOO projects, there is ground to assume that they do that of their free choice. This finding is consistent with the literature (Bruckman, 1997) and suggests the MOO's potential to serve as a platform for teaching programming for children.

Relating to Suler's (1996) taxonomy, it appears that the needs that the MOO most satisfies are in the following order: (a) the need for interpersonal contact (talking with friends from the MOO community), (b) the intellectual needs and the need for self actualization (exchanging ideas and professional tips), and (c) the need to learn and to master the environment (building and interacting with objects). Biological needs (flirting) were ranked very low in the educational MOO.

How does the MOO user view the environment and what does it mean to him? Most MOO users grasp the MOO as being both a social (80.7%) and learning (86.4%) environment and are engaged in activities of both social and educational values. As to the definitions of the MOO as a game, pastime, entertainment and sport, derived from Bartle's (1996) typology, it turns out that respondents agree more with the definitions "entertainment" and "pastime." Only the group of college/university students view the MOO as a game. It should be noted, however, that Bartle addressed MOO users of MUD environments based on combat role plays and this might account for the definitions of the MOO as sport and game, definitions that do not suit the educational MOO according to the findings of the current research.

What elements of the environment attract the MOO user? The realistic elements: sense of community and intercultural experience were most favored by most respondents. Eighty five and two tenths percent of the respondents like the intercultural contact and 69.3% like the sense of belonging to a community. This finding is consistent with the findings of Roberts, Smith, and Pollock (1996) who studied the sense of community among MOO users and found that 78.8% believe they belonged to a community and consider the intercultural contact as one of the most attracting elements of the MOO. The sense of community is stronger among respondents from the native English speakers group. Though no significant differences in terms of amount of time spent on the MOO and seniority in the environment were found, it appeared that native English speakers managed to develop a higher sense of belonging to a community than their nonnative speaker counterparts during the same time span. The unrealistic elements, such as, anonymity and the possibility to have multiple identities described in the literature (Turkle, 1995; Suler, 1996; Curtis, 1992) were found less important. Yet, equality, a by-product of anonymity, is important to 71.6% of the respondents.

How does the MOO user view his identity in the MOO environment? The way respondents view their identity in the MOO depends on their age.

The younger the user is the more he/she is likely to choose a false name for his/her character. Still, most users of educational MOOs appear to prefer to appear under their own name (55.7%). It should be pointed out, however, that some educational MOO environments require that users use their own name, and therefore this finding doesn't necessarily reflect users' preference. Most respondents report that the characteristics of their persona in the MOO reflect their characteristics in real life. Some even feel that in the MOO they are more true to who they are and feel more free to be so. The phenomenon of gender swapping, reported in the literature, (Serpentelli, 1991; Curtis, 1992; Bruckman, 1992; Rheingold, 1994) was found negligible (only 8%). It must be kept in mind, that the findings are based on self-report, and may be subject to social desirability bias. Choosing a false name does not necessarily imply that users grasp the MOO as a new world since only a small group (8%) views the MOO as a different world and most regard it as an extension of real life.

TYPOLOGY

A typological classification of MOO users, based on the frequencies of independent and dependent variables, revealed three prototypes: The highly academic teacher, the student seeking company and the young programmer.

The highly academic teacher—is a native English speaker, with a secondary or higher degree. He/she visits the environment for professional and academic purposes, or as Suler (1996) defined “the need to satisfy one’s intellectual needs.” The teacher takes part in organized gatherings and projects and likes exchanging ideas and professional tips. He/she also uses the environment for experimental instruction. The teacher resembles the “Explorer” according to Bartle’s (1996) typology, a user who is derived by the need to learn more. The teacher tends to stay in public places, mostly classrooms, more than other users. The teacher likes the sense of community, equality, and the possibility to meet people from different cultures. He/she also enjoys the feeling of ownership of objects he/she has built and maybe this partially explains their strong sense of belonging to a community. The teacher also prefers to appear in her/his real identity, which may suggest that she/he views the MOO as an expansion of his academic world.

The student seeking company—is a nonnative English speaker, aged 19-24, studying for her/his first degree. He/she visits the environment for social

purposes; chatting with MOO friends or looking for new ones for offline friendship. The environment is used also as a chat channel with friends that he/she is geographically far away from. The environment is used mainly for the “need for interpersonal contact” according to Suler’s taxonomy. The student views the environment as a social environment and an entertainment, but though he/she doesn’t do much learning there it is also viewed as a learning environment. He/she doesn’t care about the technical aspects of the environment and mostly stays at the category of member only. The student feels less sense of belonging to a community probably due to the fact that she/he doesn’t take part in social events and prefers intimate friendships and, therefore, does not contribute to it. The aspects of the environment most important to the student are the possibilities to meet people from different cultures and the equality. The reason equality is important may explain why he/she prefers to appear under a different name. The student seeking company resembles the “Socialiser” according to Bartle’s typology.

The young programmer—is a native English speaker, a high school student aged 13-18 who likes the technical aspects of the environment and enjoys building, programming, and manipulating objects. The MOO is mainly viewed as an entertainment, pastime, and social environment, and less as a learning environment. Yet, a close examination of the most frequent activities reveals that she/he does a lot of learning there. The student likes reading and writing messages and interacting with objects. For this reason she/he likes to reach the category of builder/programmer and, like the teacher, enjoys ownership of objects he/she built, feels a sense of community, and enjoys the intercultural experience and the equality. According to Suler’s taxonomy the young programmer uses the MOO to fulfill the need “for learning and mastery of the environment” and resembles the “Achiever” according to Bartle’s typology, a user who wants to contribute and gain esteem and status. The young programmer makes use of the anonymity the MOO provides and prefers to appear under a new name.

CONCLUSIONS

The current research attempted to advance the knowledge about the social and educational potential of the MOO by examining the MOO users. The current research supports Oldenburg’s definition of the MOO as a “third place” (Oldenburg, 1991). MOO users come mainly on a voluntary

basis, and interact mainly with “regulars.” It may be assumed that a community is formed there.

From the fact that MOO users grasp the MOO environment as both educational and social, there is ground to assume that the learning that occurs on the MOO takes place in a social setting. Since assisting other members ranked high on users’ list of activities, there is also ground to assume that the MOO encourages mutual help and the “caretaker” relationship that Vigotsky (1978) considers crucial to the realization of one’s learning potential.

The activities of building objects and interacting with them, which ranked high on young MOO users’ list, indicate that the MOO also encourages active learning. This learning of constructing knowledge by performing may be suitable to different learners with different learning styles according to Papert (1991). Moreover, the fact that young members consider the MOO also as an entertainment may indicate its potential to attract and motivate young students to use its learning possibilities.

The sense of community was stronger among the group of teachers, drawn to the environment for professional needs, and less among the group of students coming to the MOO for social needs. This may suggest that the MOO enhances the development of professional communities and may be of a benefit to such communities.

Finally, of all the background variables (gender, mother tongue, age, and occupation) the user’s mother tongue seems to have the greatest impact on performance. Being a native speaker of the target language of the MOO strengthens one’s sense of belonging to a community, the wish to contribute to it, and the extent to which use is made of it.

- Some possible implications for further use of the MOO can be made based on this research:
- Since the MOO has an educational potential and since the language has the greatest impact on the user’s performance, it is worth considering creating MOOs with different target languages.
- Relatively few high school students come to the MOO, but those who do, make very good use of it. More effort should, therefore, be made to bring the MOO to the student's’ awareness at this level.
- College/University students, on the other hand, come to the MOO but do little learning there. Efforts should be made to take advantage of the fact they are already there to engage them also in academic activities.

This research suffers from the usual limitation of self-report, including potential social desirability bias. The fact that respondents were sampled in

a nonrandomized way should also be taken into consideration. Moreover, the method of collecting data through an online questionnaire is relatively new and its reliability hasn't been tested enough. One recommendation for further research stemming from the limitations of the current research is to examine the learning reported by respondents by way of observations or in-depth interviews. This research doesn't address users' cognitive abilities or personality traits. It might be interesting to examine these components as well in the description of MOO users. Finally, there is need for research aiming to examine the implications of the verbal activities reported by users on their writing and reading skills or academic achievements.

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