A Gender-based Typology of Determinants of Video Games Use by Primary School Children

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1 Introduction

1.1 Aim

This research examines factors which make children video games users, either incidentally (namely just preferring video games to outdoor play) or systematically (long duration). A gender-based typology of determinants is proposed. The results are expected to contribute to a more accurate understanding of conditions stimulating children to become video game users. They also suggest an understanding of the factors affecting the different reasons video games are used, either as a substitute for outdoor reality of outdoor play or as a complementary pedagogic tool. According to research findings the role of video games varies depending on factors including gender, the educational level of the family, the degree of socialization and individual integration into outdoor play activities.

1.2 Literature review

Extensive research data GEE (2003), GENTILE & GENTILE (2008), SANFORD & MADILL (2007), SQUIRE (2006), LIVINGSTONE & BOVILL (1999), LUCAS & SHERRY (2004), PROVENZO (1992), and SELNOW (1984) refer to the educational and social role of video games, with very little concern for the examination of gender relevance to the perception and use of video games. Gender as a factor affecting preference of place for play is examined in the research of FROST & KLEIN (1979) as well as PELLEGRINI & SMITH (1998). However their studies were not focused on digital landscapes.

FREITAS & NEUMANN (2009) have laid emphasis on the visual learning experiences but not on the pedagogic influence of the interactive virtual landscape of video games which may also offer such experiences. SCARFO (2007), HAMALAINEN (2008), MORENO-GER et al. (2008), VIRVOU & KATSIONIS (2008), ÜZÜN et al. (2009), KRIPPNER & MEDEL (2011), VANGSNEs at al. (in press) have pointed out the didactical usability of virtual reality and computer games. HERRINGTON & STUDTMANN (1999) and JANSSON (2010) have analyzed the pedagogic function of landscape but they did not focus on the pedagogic function of video games which are also based on digital landscapes. ORLAND et al. (2001) have emphasized the possibility of using virtual worlds as tools for perceiving landscapes but without pointing out the pedagogic framework of digital landscapes.

1.3 Innovation and applicability in Landscape Architecture

Research results concerning factors which affect the attitude of young people toward video games have not been developed until now. Thus, such a research can be considered as purposeful and innovative. In this research it is intended to develop a gender-based typology of determinants and user groups.
Landscape Architects are not only involved in design of real playgrounds. Some of them are also interested in designing virtual landscapes used in video games (Adams 2002, Pacyga 2011). Therefore, Landscape Architects should be aware of the free-time behavior and preferences of children regarding playing not only in real landscapes but also in video games. They should also be aware of certain determinants which have proven to exert important influence on this behavior and preferences such as gender, family and social environment. The knowledge of such factors can be useful for designing more attractive digital landscapes with more desirable or effective pedagogic and social influence depending on gender and the social and family environment of the users. The paper is only going to point out that users of different gender present different preferences and behavior as video game users. The exact elements they prefer on the digital landscape does not pertain to the theme of this paper but it may constitute a question for further research. Certain landscape features whose perception and preference depends on the gender of the observer have been proposed (Dowler et al. 2005, Hasanagas et al. 2007, Levi-Strauss 1969): “private” (feminine) vs “public” (masculine), “exotic” (feminine) vs “European/western” (masculine), water (feminine) vs land (masculine), “nature” (feminine) vs “culture” (masculine), while it is also research-worthy whether “wilderness” is perceived as a feminine or a masculine property of a digital (and also real) landscape. More specific features whose possible gender-related perception may be examined in future research projects could be situations of danger or risk, colors and color-related values, landscape diversity, biotic and abiotic elements, categories of fauna or flora (e.g. meso- or megafauna). Moreover, preferable combinations of these features and thereby landscape types can be proposed by future research. The applicability of findings related to digital landscape in real landscapes is also a question for future research.

This paper has basic rather than applied research orientation. Moreover, an important education-related function of this paper is to show to Landscape Architecture students that the gender as well as social and family characteristics should be taken into account in the design of digital landscapes of video games as well as of real landscapes which are expected to exert a pedagogic influence as playgrounds and this topic constitutes a challenging research issue.

2 Material and Methods

Two hundred fifty two (252) fifth and sixth-grade students constitute the sample in this study. The participants belong to different primary school classes from various geographical areas in Greece (Athens, Thessaloniki, Kastoria and Crete). The balanced synthesis that has been achieved corresponds to analytic statistics (correlation between variables) that has been used to extract results. It was a judgement sample achieving the best possible balance of basic characteristics (variety of places ranging from rural to urban areas etc). This is the most appropriate sample for analytic statistics, as it makes correlations more valid.

Standardized questionnaires were distributed to the pupils and were filled out with the help of teachers, when necessary. Pupils were asked to answer questions about their satisfaction with outdoor play time, the duration of their play time with video games and their preferred landscape elements in virtual world. In-depth interviews with pupils were conducted first to
formulate the questionnaires and to interpret the quantitative results. The correlations were extracted by using the Pearson test, after normality control (HASANAGAS 2009 and 2010). The gender-based typology was constructed considering the moderating effect of gender on the correlations.

3 Results - Determinants of Susceptibility to Playing Video Games

3.1 General determinants

Gender (Table 1) seems to be a basic factor of susceptibility to acquiring a preference for the digital experience of the imaginary world of video games (-0.226). Children who are not well integrated into groups (0.172) or are not quite satisfied with the time available to them for outdoor play (0.127) tended to use video games as an alternative. On the contrary, children who feel that they have enough time to play outdoors tended to avoid using video games (-0.210).

<table>
<thead>
<tr>
<th>252 total</th>
<th>Play (play outside =1, play video games=2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (boy=1,.girl=2)</td>
<td>-0.226(**)</td>
</tr>
<tr>
<td>Exclusion from outdoor play activities</td>
<td>0.172(**)</td>
</tr>
<tr>
<td>Inadequacy of outdoor play time</td>
<td>0.127(*)</td>
</tr>
<tr>
<td>Adequacy of outdoor play time</td>
<td>-0.210(**)</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 1: General determinants of susceptibility to playing video games

3.2 Determinants in the case of boys

The lack of outdoor play integration (0.176) (Table 2) and the inadequacy of available outdoor play time (0.186) appear to be the main factors of susceptibility to digital experience for boys. This can be attributed to the aggressiveness typically displayed in boys’ behaviour in everyday life which often leads to adventurous activity which can often make integration into play groups more difficult (GENTILE & GENTILE 2008, LUCAS & SHERRY 2004).
149 boys

<table>
<thead>
<tr>
<th>Exclusion from outdoor play activities</th>
<th>0.176(*)</th>
<th>0.153</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.031</td>
<td>0.063</td>
</tr>
<tr>
<td>Inadequacy of outdoor play time</td>
<td>0.186(*)</td>
<td>0.032</td>
</tr>
<tr>
<td></td>
<td>0.023</td>
<td>0.697</td>
</tr>
<tr>
<td>Adequacy of outdoor play time</td>
<td>-0.286(**)</td>
<td>-0.096</td>
</tr>
<tr>
<td></td>
<td>0.000</td>
<td>0.243</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 2: Determinants in the case of boys

3.3 Determinants in the case of girls

Inadequate integration or the lack of outdoor play time does not affect girls’ video game experience. Their experience with video games is typically related to the educational level of their parents (0.203, 0.261) and is a factor related both to the time they spent with video games and the type of video games chosen. Girls use videogames as a pedagogic tool rather than as an escape from a social reality. This could be explained based on research that views entertainment video games as learning experiences that offer excellent educational design with challenge, motivation, and learning principles that may even be used to improve formal educational approaches (Gee 2003, Gentile & Gentile 2008, Sanford & Madill 2007, Squire 2006).

103 girls

<table>
<thead>
<tr>
<th>Father’s studies (no=1, yes=2)</th>
<th>0.004</th>
<th>0.203(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.966</td>
<td>0.040</td>
</tr>
<tr>
<td>Mother’s studies (no=1, yes=2)</td>
<td>0.064</td>
<td>0.261(**)</td>
</tr>
<tr>
<td></td>
<td>0.524</td>
<td>0.008</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 3: Determinants in the case of girls
4 Conclusions and Outlook

Gender has a moderating effect on the variables and thus can be a sound basis of typology. In the case of boys, socialization factors, particularly the social game environment outside the home, seem to be the driving forces for their becoming mainly incidental users of video games, while girls tend to become systematic users of video games due to family-related factors. Thus, video games tend to be a means of escape for boys with socialization deficits, whereas for girls video games become an educational tool under the guidance of parents. Challenges for future research include the collection of a larger sample from a wider geographical area and a possible typology according to the place of origin or of residence. A basic question for future research is also what types and characteristics of digital landscapes the users prefer and what the determinants of this preference are.

References

Frost, J. L. & Klein, B. L. (1979), Children’s Play and Playgrounds. Boston, MA, Allyn & Bacon


Vangsnes, V., Økland, N. T. G. & Krumsvik, R. (in press), *Computer games in pre-school settings Didactical challenges when commercial educational computer games are implemented in kindergartens*. Computers & Education.