Ubiquitous educational use of mobile digital devices. A general and comparative study in Spanish and Latin America Higher Education.


Introduction

Teaching-learning processes and social interaction between higher education students are no longer take place only in physical and specific spaces, but mainly inside university facilities.

Research gap: to our knowledge, no work has been done in this area to explore the role and place of digital devices and analyzing the differences and patterns of educational use of mobile digital devices among two geographical areas of the Spanish-speaking world.

Objective of the study: exploring the places and locations where Spanish and Latin American students made an educational use of digital devices. A list of three macro-categories associated with educational activities performed by means of mobile devices was proposed:

1. Informing: identifying, locating, retrieving, storing, organizing and analyzing
2. Communicating in digital environments
3. Creating and publishing new content

Method

Determination of a list of places inside and outside the classroom where Spanish and Latin American students use their digital mobile devices. A list of three macro-categories associated with educational activities performed by means of mobile devices was proposed:

Factor 1. Educational use of tablets at university facilities:
- College cafeterias (.767)
- Library (.742)
- Classrooms (.812)

Factor 2. Educational use of smartphones at university facilities:
- College cafeterias (.749)
- Classrooms (.856)
- College corridors (.806)

Factor 3. Educational use of smartphones outside university facilities:
- In means of transport (.795)
- In habitual residence (.657)
- In outdoor leisure areas (.715)
- In workplace (.549)

Factor 4. Educational use of laptops at university facilities:
- College cafeterias (.767)
- Library (.742)
- Classrooms (.856)

Factor 5. Educational use of laptops outside university facilities:
- Classrooms (.812)
- Library (.742)
- Outdoors leisure areas (.749)

Factor 6. Educational use of tablets outside university facilities:
- In means of transport (.631)
- In habitual residence (.726)
- In outdoor leisure areas (.419)
- In workplace (.501)

Data analysis: factorial analysis and psychometric as well as non-parametrical tests with SPSS 19

Participants

Students also use laptops and tablets for educational purposes outside university facilities.

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Table 1: The most often used device, utilized in university campuses and corridors, in classrooms and libraries.

<table>
<thead>
<tr>
<th>Device</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphones</td>
<td>324</td>
</tr>
<tr>
<td>Tablets</td>
<td>184</td>
</tr>
<tr>
<td>Laptops</td>
<td>162</td>
</tr>
</tbody>
</table>

Conclusions

Significant differences exist between Spain and Latin America.

In Spain, the educational use of smartphones is more frequent in classrooms and outside university facilities, whereas laptops and tablets are more prevalent inside university facilities.

In Latin America, smartphones are more often used for educational purposes outside university facilities, whereas laptops and tablets are more prevalent inside university facilities.

General conclusion: mobile learning can help to expand a limited and restricted educational environment by connecting learning inside and outside higher education environments.

Results y Discussion

Evaluation of questionnaire reliability (Bartholomew's test and KMO sample adequacy test) and factor analysis was appropriate to conduct the factorial analysis.

Six factors were obtained which could be selected.

Instrument: A new questionnaire with the possible types of questions (polythetic and polydimensional).

Procedure: Administration of questionnaires during the 2015-16 academic year.

Data analysis: factorial analysis and psychometric as well as non-parametrical tests with SPSS 19.