Ease and utility of Internet use: Implications for educational innovation

Facilidad y utilidad del uso de Internet: implicaciones para la innovación educativa

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Abstract:
The use of the Internet, indicated by the degree of perception of usefulness and ease, has been observed as an antecedent of educational innovation. As it is a meaningful teaching-learning sequence, the adoption of technology, devices and networks imply accessibility and diversity of content that the perceptual dimensions determine. Consequently, a confirmatory, psychometric, and correlational study was carried out with a sample of 340 students, considering their participation in social networks and educational platforms. A structure was found that explained 29% of the total variance, suggesting the extension of the study to other scenarios and samples.
Keywords: Internet, ease, usefulness, use

Resumen:
El uso de Internet, indicado por el grado de percepción de utilidad y facilidad, se ha observado como un antecedente de innovación educativa. Al tratarse de una secuencia significativa de enseñanza-aprendizaje, la adopción de tecnología, dispositivos y redes implica accesibilidad y diversidad de contenidos que determinan las dimensiones perceptivas. En consecuencia, se realizó un estudio confirmatorio, psicométrico y correlacional con una muestra de 340 estudiantes, considerando su participación en redes sociales y plataformas educativas. Se encontró una estructura que explicaba el 29% de la varianza total, sugiriendo la extensión del estudio a otros escenarios y muestras.
Palabras claves: Internet, facilidad, utilidad, uso

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1. INTRODUCTION

Until the moment this work is written, the SARS CoV-2 pandemic and the Covid-19 disease have claimed the lives of 140 thousand people in Mexico and infected more than a million, although a sub-registry of cases is recognized. asymptomatic or those who do not access a test (WHO, 2021). In this scenario, the policies to mitigate and contain the pandemic have focused on the distancing and confinement of people, promoting the intensive use of the Internet for education and the teaching-learning process.

Before the pandemic, the use of the Internet for school purposes had been limited to sporadic experiences, didactic rehearsals or remote systems experiments (Chayomchai, 2020). Today it is a fundamental instrument for teaching-learning not only as a platform. In addition, the production of knowledge is in repositories such as Academica, Copernicus, Dialnet, Ebsco, Frontiers, Latindex, Redalyc, Scielo, Scopus, WoS, Zenodo or Zotero.

However, studies on the Internet were limited to the rejection or acceptance, risks, and benefits of using the information system without considering the differences and similarities with traditional, classroom or synchronous educational systems (Camillery & Falzon, 2020). In this way, the investigations prior to the pandemic dealt with the barriers to the adoption of electronic technologies, devices and networks without assuming them as tools for the management, production and transfer of knowledge, reducing them to consultation sources.

The difference between the use of the Internet as an extension of the school library and the use of the Internet as an instrument for the management, production and transfer of knowledge is substantial (Guo et al., 2020). The teaching and learning process in the traditional classroom consider the Internet as a repository of information or technology for searching, processing, and disseminating data. The virtual classroom system assumes the Internet as an intelligent repository. That is, an algorithm for tracking the needs, preferences, and expectations of users to link and integrate the entire user footprint when browsing the network. In this way, digital trail analysis warns and predicts the decisions and actions of that user.

In the case of the virtual classroom, it will be possible to anticipate the learning of content from the Internet user searches for information, as well as the central categories in their communication with other Internet users (Raza et al., 2020). In other words, learning a topic will now be part of an Internet identity and a personalized browsing style.

Consequently, the present work set out to analyze the subjective dimensions of users, such as compatibility. It is a process of adjusting the user's needs and preferences with their learning expectations. This is the case of those who seek information about a product and service whose satisfaction culminates when the data is related to a learning topic.

Are there significant differences between the dimensions of Internet use compatibility reported in the literature with respect to the dimensions observed in the present study?

The premise that guides this research assumes significant differences between the traditional classroom with respect to the virtual classroom (Siron et al., 2020). Consequently, the dimensions of compatibility between users' information search needs and preferences may be different from their knowledge expectations. In this sense, significant differences are expected between the compatibility dimensions with respect to the dimensions to be observed in the present work.

2. INNOVATION EXPERIENCE

Sample. A non-experimental study was carried out with a non-probabilistic selection of 340 (M = 21,2 SD = 1,2 age and M = 7'821,12 SD = 123,21 USD) students from a public university in central Mexico.

Instrument. Given that the studies on compatibility between Internet use and personal information needs or preferences have been approached from the dimensions of ease and usefulness of use, we proceeded to observe the differences between these dimensions with respect to those to be observed in the study sample. Internet Use Scale (IUS-14) was built, which included dimensions related to information processing such as search and data selection. It includes two dimensions related to the ease ("I can find any subject at www.scopus.com") and usefulness ("I will find specialized findings at www.scopus.com") of the Internet as a system compatible with academic needs and preferences. All the items are answered with one of five options: 0 = "not likely" until 5 = "quite probable".

Analysis. Confidentiality and anonymity were guaranteed in writing. the information was processed in IBM-SPSS-AMOS version 25.0 considering the normality, reliability, and validity from exploratory factor analysis of principal axes with promax rotation.

3. RESULTS

The statistical properties of the instrument in which it is possible to appreciate that they comply with the requirement of consistency, as well as the convergence of factors in two constructs (see Table 1).

Table 1. Instrument description.

R	M	SD	A	F1	F2
r1	4,32	1,02	,762	,564	
r2	4,56	1,43	,761	,563	
r3	4,76	1,26	,763	,632	
r4	4,13	1,03	,726	,489	
r5	4,58	1,02	,709	,689	
r6	4,63	1,67	,743	,532	
r7	4,45	1,13	,785	,509	
r8	4,98	1,56	,774		,452
r9	4,12	1,14	,742		,562
r10	4,58	1,02	,709		,408
r11	4,67	1,43	,763		,561
r12	4,21	1,37	,742		,598
r13	4,46	1,28	,763		,432
r14	4,89	1,31	,709		,560

Source: Elaborated with data study; Adequacy (KMO = ,752), Sphericity (X^2 = 124,23 (34gl) p = ,000). Extraction: Main axes, Rotation: Promax. F1 = Search perception (18% total variance explained and alpha of ,780), F2 = Perceived Selection (11% total variance explained and alpha of ,775). All the items are answered with one of five options: 0 = "not likely" until 5 = "quite probable"

Once the factors that explained 29% of the total variance had been established, we proceeded to observe their relationships through the analysis of correlations and covariances in order to be able to see the structure of relationships (see Table 2).
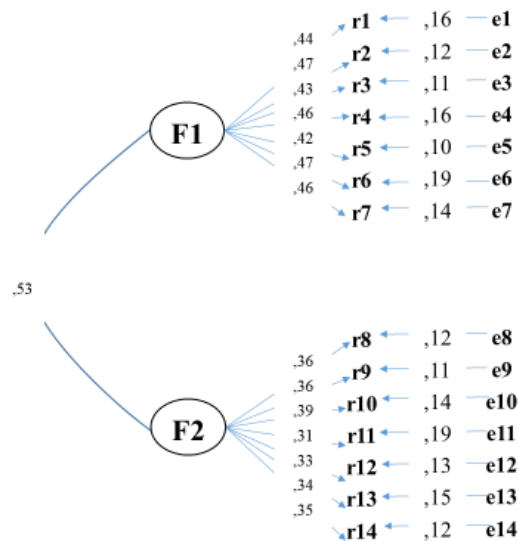
Table 2. Relations between factors

	M	SD	F1	F2	F1	F2
F1	23,21	15,46	1,000		1,978	,632
F2	24,35	16,32	,653	1,000		1,879

Source: Elaborated with data study; M = Mean, SD = Standard Deviation, F1 = Ease of Use, F2 = Usefulness; * p < ,05; ** p < ,01; *** p < ,001

The structure of correlations and covariances suggest axes and trajectories of relationships between these factors with their respective indicators. It is a composition of factors that reveal a system of determinants of Internet use and therefore anticipate educational innovation through this information and communication technology, as well as knowledge assimilation technology (see Figure 1).

Figure 1.
Structural Equation Modelling.

F1 = Ease of Use, F2 = Usefulness, R = Indicator, e = Error measurement indicator; ←→ relation between factors, ← relation between error and indicator, → relation between factor and indicator.

Source: Elaborated with data study.

The adjustment and residual parameters $\lceil X^2 = 456,34$ (34gl) p = ,008; GFI = ,990; CFI = ,995; RMSEA = ,009$\rfloor$ suggest the null hypothesis of the null hypothesis relative to the adjustment of the theoretical dimensions of the perception of Internet use with respect to its observed factors and inducers.

4. CONCLUSSION

The contribution of this work lies in the validity of the Internet Use Inventory, which includes two dimensions related to perceived utility and ease. The findings of the present work corroborate the results reported by Rizun & Strzelecky (2020) who tested a model in which both variables were significantly related. Such a finding means that two samples from different countries reflect two dimensions related to Internet use. Cabero et al., (2016) point out a third factor that would mediate utility and ease. It is about satisfaction, which is proposed as a dimension that would increase the total percentage of explained variance. Research lines concerning this third factor referring to satisfaction will allow anticipating differences between Internet users without compatibility between needs, preferences and expectations and those who satisfy their information demands using the Internet.

In relation to educational innovation, the results of this work suggest that the adoption of technology anticipates the use of the Internet for content planning purposes in the virtual classroom. These are two factors that would explain the rejection or acceptance of pedagogical sequences mediated by some technology, device or network.

Policies of confinement and social distancing, as well as distance or technology-mediated educational programs can be supported by diagnosing the usefulness and ease of use of technology. That is, if the parties involved accept and adopt information and communication technology, then they will assimilate the content mediated by an application or software in a way that is more compatible with their use of the Internet. The didactic sequences could consider these findings in order to be able to incorporate the indicators of the adoption of technology into their contents.

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