

Internet resources for research and learning in higher education

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ABSTRACT

This cross-sectional study examined internet usage patterns among 407 undergraduate and graduate students at the University of Shkodra, Albania, focusing on access, academic application, and challenges related to digital literacy. Data were collected via a structured questionnaire on connectivity, devices, frequency, academic activities, and perceived benefits. Results show that 96% of students access the internet daily and smartphones are the dominant device (98%). Communication was the most frequent activity (65%), while only 39% reported primarily academic use. Most respondents perceived moderate academic improvement (75%), relying mainly on scientific articles and video tutorials; however, concerns about source credibility and distractions were common. Google was the most used search engine for academic purposes (50.6%). Key barriers were slow connection speeds (34.9%), cost of online services (25.8%), and limited access to computers (22.6%). The findings highlight a gap between high connectivity and meaningful academic engagement. Universities should pair infrastructure improvements with digital literacy training and curriculum integration to increase effective academic use of internet resources.

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1. INTRODUCTION

The Internet has transformed higher education by enabling broad access to information and supporting new learning and communication practices [1]–[3]. Its integration into academic environments, including social and digital media, continues to evolve and influence engagement, learning behaviors, and critical thinking [4], [5]. At the same time, technological catch-up and digital transformation remain uneven across regions, creating contexts where high connectivity may coexist with limited academic use [6], [7]. Prior studies have examined internet use and academic performance, as well as technology-enhanced learning tools (e.g., location-based devices), yet evidence from under-studied contexts such as the Western Balkans, and Albania in particular, remains limited [8]–[10]. In parallel, research in other settings highlights patterns of web-resource use and the need to balance internet use with academic success and performance determinants [11], [12].

This study investigates how students at the University of Shkodra “Luigj Gurakuqi” utilize the internet for academic research and learning. It examines accessibility, frequency, duration, perceived

academic benefits, digital tools used, and barriers encountered. The study contributes context-specific evidence from northern Albania and informs institutional strategies aimed at strengthening meaningful academic engagement with digital resources.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Advancements in information and communication technologies have reshaped higher education by expanding access to learning resources and enabling new forms of academic work. Research demonstrates that the relationship between internet use and academic outcomes is often non-linear and contingent upon purposeful engagement [3], [12], [13]. Constructive academic benefits are more likely when students combine connectivity with effective learning strategies and digital competencies [12], [14].

From a behavioral perspective, students engage with digital environments to meet informational and social needs; motivational factors significantly shape online engagement patterns [15]. However, academic benefits require more than access. Media and information literacy, including strategic searching, credibility evaluation, and ethical use of information, is central to translating connectivity into meaningful academic engagement [14]. Smartphone-centered access enables flexible study practices but may increase exposure to distraction and fragmented attention. Evidence indicates that problematic smartphone use is associated with reduced concentration and academic performance when self-regulation strategies are weak [16]–[18].

Infrastructural constraints further limit meaningful academic use. Studies on digital inequality show that disparities in broadband access and technology maintenance contribute to educational disadvantages in higher education systems [19], [20]. Digital platforms are also widely used for professional communication and early-career networking, illustrating that student internet behaviors extend beyond coursework [21].

Accordingly, this study is grounded in digital literacy and media/information literacy perspectives. In this framework, access alone is insufficient; academic benefit depends on competencies such as strategic searching, credibility evaluation, and ethical information use. The conceptual pathway guiding this study is: digital literacy→academic engagement→academic outcomes, moderated by infrastructural constraints and digital distractions.

3. METHOD

The research was conducted at the University of Shkodra “Luigj Gurakuqi”, the first public higher education institution established in northern Albania [22]. The university comprises six faculties. The target population included all undergraduate students enrolled during the 2021/2022 academic year (N=3,658). At the national level, Albania reported 123,880 tertiary students in the same academic year [23]. The sample size was calculated using Yamane’s formula for finite populations with a 5% margin of error [24], resulting in a minimum of 361 participants. A simple random sampling method was applied to ensure equal selection probability [25]. A total of 407 valid responses were collected. The questionnaire included items adapted from prior research on internet use and academic performance [3], media and information literacy competencies [14], and smartphone-related distraction/problematic use constructs [16]–[18]. The instrument underwent expert review and pilot testing (n=20). Cronbach’s alpha was 0.70, indicating acceptable internal consistency for exploratory research [26].

4. RESULTS AND DISCUSSION

A total of 407 valid responses were collected (response rate: 96.6%). Most respondents were female (73.2%), 18-20 years old (58.7%) and lived in urban areas (57.0%). Representation by faculty was uneven: 64.1% of participants were from the Faculty of Natural Sciences, followed by Education Sciences (17.9%) and Economy (13.3%), while Social Sciences and Foreign Languages were minimally represented as in Table 1. This faculty imbalance is important for interpretation because patterns of internet use and academic engagement can differ across disciplines, and the findings may reflect the dominant faculty group. This limitation is addressed explicitly in the limitations subsection and should be considered when generalizing beyond the sample.

Internet access was nearly universal (99.5%), and 73% reported more than five years of internet experience. Home was the preferred location (92.9%), suggesting that campus infrastructure may be perceived as less convenient or insufficient. Daily use was reported by 96% of students, with high exposure time overall: 33% reported 2-3 hours/day, 26% reported 4-5 hours/day, and 29% reported more than 5 hours/day. These patterns are consistent with prior studies showing that university students in diverse settings report high levels of connectivity and frequent internet use, although academic outcomes vary depending on how online time is used [3], [12], [13].

Table 1. Socio-demographic profile of respondents (n=407)

Variable	Category	%
Gender	Female	73.2
	Male	26.8
Age	18-20	58.7
	21-23	31.2
	24-26	4.7
	27-30	2.5
	31+	3.0
Residence	Urban	57.0
	Rural	43.0
Faculty	Natural Sciences	64.1
	Education Sciences	17.9
	Economy	13.3
	Social Sciences	3.4
	Foreign Languages	2.0

Device preference strongly favored smartphones (98%) in Figure 1, reflecting the wider shift toward mobile-first access among students and the central role of mobile connectivity in contemporary online behavior [27]. Despite near-universal access and daily use, only 39.3% reported using the internet primarily for academic purposes as in Figure 2. This finding reflects a common pattern reported internationally: high connectivity does not necessarily translate into meaningful academic engagement [3], [12]. The results align with the literature suggesting that the academic value of internet use depends on purposeful engagement and the ability to balance online intensity with effective academic behaviors and competencies [12], [13]. In other words, “time online” alone is not sufficient; academic benefits require structured research and learning practices.

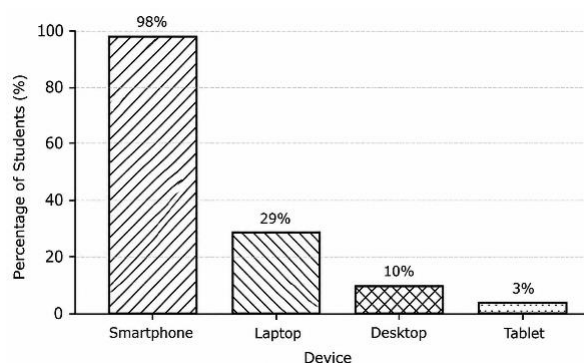


Figure 1. Devices used for internet access

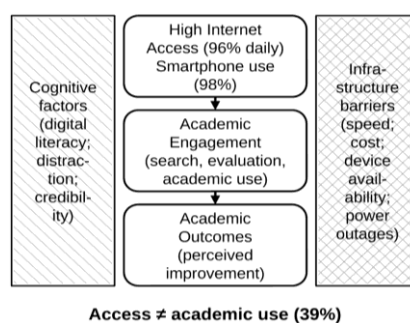


Figure 2. Paradox of high internet access and low academic use among university students in Albania

Students frequently relied on Google (50.6%) for academic purposes. While this reflects convenience and familiarity, it may lead to lower-quality information use unless students possess the skills to filter results and prioritize peer-reviewed sources. In our data, qualitative feedback indicated uncertainty in

assessing the reliability of online materials, aligning with the importance of information evaluation skills within media and information literacy frameworks [14]. This supports the argument that media and information literacy, including strategic searching, credibility evaluation, and ethical use of information, is essential for translating access into academic engagement [14]. Therefore, institutional strategies should focus not only on access, but also on building research-oriented digital literacy and information evaluation skills.

The dominance of smartphones as the main access device (98%) raises concerns about multitasking, interruptions, and distraction during academic tasks. Prior research on problematic smartphone use and related behaviors indicates risks for concentration and learning efficiency, particularly when self-regulation strategies and instructional guidance are weak [16]–[18]. In the context of our conceptual pathway (digital literacy→engagement→outcomes), smartphone-centered access can support flexibility but may undermine sustained academic engagement if students are frequently pulled toward non-academic content.

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The most common challenges were slow internet speed (34.9%), cost of online services (25.8%), lack of computers (22.6%), and power outages (16.7%) as in Table 2. These barriers are consistent with evidence showing that technology problems and unequal access to reliable broadband contribute to educational disadvantage in higher education, even when students report being “connected” overall [19], [20]. When combined with credibility concerns and distraction risks, these infrastructural constraints can help explain why high access coexists with limited academic use. Overall, the findings reveal a mismatch between high connectivity and meaningful academic engagement, consistent with prior work indicating that academic outcomes depend on use patterns, competencies, and purpose [12], [13]. The results also support the conceptual model proposed in this paper: access alone is insufficient, and academic outcomes are shaped by a chain linking digital literacy to engagement behaviors, moderated by infrastructural constraints and digital distractions [14], [19], [20].

Table 2. Main challenges in using internet resources

Challenge	%
Slow internet speed	34.9
Cost of online services	25.8
Lack of computers	22.6
Power failures	16.7

4.1. Limitations

A key limitation is representativeness across faculties: 64.1% of respondents were from the Faculty of Natural Sciences, which may bias results toward discipline-specific patterns of internet access and use. Second, the study relies on self-reported behaviors and perceptions, which may be affected by recall errors or social desirability. Third, the cross-sectional design does not allow causal inference about whether internet use improves academic performance or whether higher-performing students perceive greater benefits. Future research should apply stratified sampling across faculties, include objective academic indicators where feasible, and use longitudinal designs to test the proposed pathway (digital literacy→engagement→outcomes).

4.2. Comparative insights

Placing the findings from the University of Shkodra into a broader global perspective illustrates both converging patterns and distinct challenges affecting the Albanian context. In the European Union, a very high proportion of young people report daily internet use, indicating that ubiquitous access is increasingly common in many settings [29]. However, participation in structured online courses among young people remains lower than daily access levels, suggesting that connectivity alone does not guarantee deep academic engagement [30]. Globally, mobile broadband traffic continues to grow rapidly, reinforcing the central role of mobile connectivity in how students access online information [27]. At the same time, evidence on problematic smartphone use indicates that distraction-related mechanisms may undermine academic performance if academic use is not supported by self-regulation and instructional design [16]–[18]. These comparisons underline the importance of combining infrastructure improvements with curriculum integration

and digital literacy training rather than relying on access alone. These recommendations are consistent with international frameworks and policy evidence emphasizing digital competence as confident, critical, safe, and purposeful technology use; evidence-informed digital education; affordable and meaningful connectivity; and sustained development of digital competence in higher education [31]–[34].

4. CONCLUSION

This study revealed that while internet access among students at the University of Shkodra is nearly universal and daily use is prevalent, the proportion of academic utilization remains limited. The findings highlight a paradox observed globally: high connectivity does not automatically result in effective academic engagement. This gap is influenced by factors such as insufficient digital literacy, limited capacity to assess the credibility of online sources, and distractions from non-academic content, particularly via smartphones.

Infrastructure-related barriers, such as slow internet speeds, financial costs, and limited computer availability, further constrain the potential benefits of internet-based learning. While these issues have a local dimension, they mirror obstacles faced in other low- to middle-income countries, making the results relevant to broader international debates on digital inclusion in higher education. To address these gaps, universities should implement comprehensive digital literacy programs that train students in effective search strategies, source evaluation, academic integrity, and time management in online learning environments. Policymakers and institutional leaders could also establish partnerships with internet service providers to reduce connectivity costs for students, particularly in rural areas. Additionally, integrating the use of high-quality digital resources into the formal curriculum, for example, through blended learning models and compulsory online research components, can help ensure that students develop sustained habits of academic internet use. Universities should provide professional development for lecturers on information and communication technology (ICT) pedagogy (e.g., designing scaffolded online research tasks, teaching source evaluation, and assessing digital work) to ensure curriculum integration is implemented consistently across faculties.

Finally, sustained progress will require coordinated action between higher education institutions, government agencies, and technology providers to align infrastructure development with capacity-building initiatives. By combining investments in technology with targeted educational strategies, it is possible to transform widespread internet access into meaningful academic engagement, thereby maximizing the educational value of digital resources in Albania and similar contexts worldwide.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Edra Fresku	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	
Julian Kraja		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	
Chennyfer Dobbins		✓			✓	✓			✓	✓		✓	✓	
Abi Rached														
Daniela Lika Nakajima		✓			✓	✓			✓	✓				
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C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

Ethical approval was granted by the Ethical Committee of the University of Shkodra “Luigj Gurakuqi” (Protocol No. 31/2, dated 12/04/2021). All participants provided informed consent, and confidentiality was maintained throughout the research process.

DATA AVAILABILITY

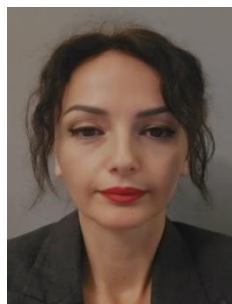
The authors confirm that the data supporting the findings of this study are available within its supplementary materials.

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