DIGI-Key Training Needs Analysis

National Reports

Project

Key to Information Treasure in Digital World- Digital Literacy in Higher Education

Grant Agreement Number

2021-1-BG01-KA220-HED-000031164

September 2022

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ISBN: 978-954-338-211-8 (pdf)
ISBN: 978-954-338-212-5 (CD)

The publication has received financial support from the European Commission under Erasmus+ programme. The publication is a reflection of its authors' views only and the European Commission shall not be held liable for its contents.

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Introduction

Digital literacy means having the skills you need to live, learn, and work in a society where communication and access to information is increasingly through digital technologies like internet platforms, social media, and mobile devices. However, reading and writing are still central to digital literacy. Given the new and ever-changing ways we take information and deliver it to the masses today, digital literacy also encompasses a wider range of skills. Information literacy, shortly, is the ability to feel the need for information, to define that information, to reach that information and to evaluate, organize and use that information. In today's world, there are all kinds of resources and information in the internet environment and it is obligatory to have the skills of knowing the types of sources, evaluating the means of access to information, analyzing the need for information, and reorganizing the information. Being information literate in the digital world forms the basis of the lifelong learning process. The university youth, who lack information literacy and who use the digital world only for chatting, social communication and listening to music, proved once again that they lack digital information literacy with their performances in homework preparation and exams during the pandemic process in 2019-2021. In recent years, it has been observed that students have not been able to Adequately use the digital resources, which universities have subscribed to by spending thousands of euros. In addition, they lack knowledge about the possibility of free access to information, programs and resources known to be accurate. The pandemic process experienced all over the world has once again demonstrated the importance of digital literacy in order to be successful in higher education as well. This project objectives to prepare a course curriculum to implement in all faculties and departments for dijital information literacy courses under the cooperation and the experiences of universities in partner countries. The principal goal is to design an innovative, guiding and competitive curriculum corresponding to present day digital information literacy and to design an e-learning course for university students. The project targets to provide for partners the knowledge, the experience and the applications of the partners related with digital information literacy and this will contribute to the determination of the frames of the curriculum for university students. In summary, in this project, the key to student success in higher education and post-business life is digital literacy.

In university education, it is a necessity to teach digital literacy in the first year and first semester of all faculties and all departments. In the project, it was aimed to develop the international digital education curriculum, digital education modules and distance education portal, and to popularize the digital literacy course as a compulsory course or elective course in higher education.

In the second year of the project, the project will be implemented as an elective course in some of the partner universities as a sample application, and it will be made widespread.

In order to realize the targeted events in the project, it will be carried out simultaneously in all of the project partner countries. The evaluation of Literacy in Higher Education surveys will provide us with clear information on digital literacy skills in higher education.

Bulgaria

Introduction

General Overview of Digital Processes and Territorial Balance in Bulgaria

In an optimistic scenario, the growth of digital competencies and the application of artificial intelligence will strengthen economies, optimize the use of productive resources, and improve the quality of life of those employed in the sector and the community. At the same time, the real social, economic, and environmental effects of digitization at regional level are still not well known both from a scientific and a practical point of view. New in nature interconnections and expected effects form complex relationships between different layers of interaction within regions, which have a high potential to generate risk and instability, as well as resulting inequalities from different rates of regional development. For example, the differences between well-served urban areas and the real constraints facing rural areas are growing, leading to a spatial digital divide[1]. These areas may become even more unstructured ecosystems due to global digitization processes, including the lack of defined basic governance structures, stakeholder roles and value chains, lack of interoperability and data sharing, difficulties in the selection and implementation of digital technologies. In support of the abovementioned, the ENRD analyzes data, according to which in Bulgaria the lowest levels of Internet use are observed in sparsely populated areas[2].

Digitization, as *"the structuring of many and varied areas of social life around digital communications and media infrastructures"* (Brennen & Kreiss, 2016, p. 560) and the advent of artificial intelligence offer both new and little-known opportunities and real challenges. As digital information is accessible from different points and locations, the choices for locating industries, businesses and workforces are becoming more flexible and adaptable. Value chain systems are becoming data-rich and data-defined/even data-dependent ecosystems that require a rethinking of their social, market, territorial and institutional paradigms. However, there are concerns that economic development will be concentrated in certain areas with better developed digital infrastructure and pre-existing innovation hubs. In COM (2018) 322 of the European Commission it is clearly defined that the modernization of the Common Agricultural Policy is directly dependent on the processes of stimulating and sharing knowledge, innovation and digitization and promoting their use to a greater extent, the development of digital technologies in agriculture and rural areas and the use of these

[1] Townsend, L., Sathiaseelan, A., Fairhurst, G., Wallace, C. 2013, "Enhanced broadband access as a solution to the social and economic problems of the rural digital divide," Local Economy, vol. 28, no. 6, pp. 580-595.
[2] Smart Villages – how to ensure that digital strategies benefit rural communities https://enrd.ec.europa.eu/sites/enrd/files/enrd_publications/smart-villages_orientations_digital-strategies.pdf

technologies to improve the effectiveness and efficiency of strategic plan interventions[3]. The trend is to maintain a close interaction of strategic measures with climate and environment policies, food safety and health-related issues, the rural digital agenda and the bioeconomy, knowledge and innovation, enlargement and neighborhood policy, trade policy and development policy[4].

For all the efforts available to increase the level of digitization in agriculture at every stage of the value chain, one central and compelling argument is missing, namely the ability to calculate and predict what impact artificial intelligence and digital technologies will bring and for whom. Therefore, for many stakeholders outside the urban centers the questions arise:

- How can regions keep pace with digitization?
- How could the opportunities of the digital age be used to develop new products/services, increase employment, and promote innovation and thus counteract unfavorable demographic and economic trends for development?

Beyond sectoral policies, more broadly, the legitimacy of the welfare state rests on several pillars, which include:

- Generally available social services, health care, care for disadvantaged people.
- Social inclusion through universal education, progressive tax systems and transfer payments to reduce income inequality
- Balance of power between trade unions and employers.

Digitalization directly or indirectly affects all three mentioned pillars. And although the usual interpretations refer more often to the change in consumption behavior because of digitalization, the more significant changes affect the labor market.

As in previous years and in 2021 with the highest relative share of households with internet access are the Southwest and South-Central regions, with 86.2 and 85.5% respectively. Compared to previous years, a more dynamic development can be noted in terms of coverage in the North-Eastern region, which reached 85.2%. Households from the South-Eastern and North-Central regions lag behind the national average, where 81.7% and 82.7% of households respectively have access to the Internet. The trend of significant lagging behind the North-West region continues, where only 73.5% have access to the Internet.

According to NSI data, the main reason for not using the Internet is "No need for the Internet (it is not useful, interesting, etc.)" - over 12% and "Lack of Internet skills" over 10%. Significantly less

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018PC0322
[4] ICT in Agriculture: Connecting Smallholders to Knowledge, Networks, and Institutions, World Bank https://www.openknowledge.worldbank.org/handle/10986/27526 (21 March 2018)

than 1% is a reason related to the lack of broadband Internet supply. Another important point is the way the internet or device security is used. The main share of users, about 71%, use a mobile phone or smartphone, and 67% of them have a desktop computer, laptop or tablet (10.8%). Individuals most often use the global network for the purpose of communication and entertainment, with 58.5% conducting telephone or video conversations over the Internet (using applications such as Viber, WhatsApp, Skype, Facetime), and 54.7% participating in social networks (Facebook, Twitter , Instagram, Snapchat, etc.). Almost the same share of those who used the global network to find information about goods or services (50%) and those who sent/received e-mail (43.5%). The relative share of individuals who use "cloud services" to store documents, photos, music, video or other files is 24.2%, with 25.7% of men and 22.7% of women using cloud services . The most active users of this type of service are young people between the ages of 16 and 24 - 43%. Every third between the ages of 16 and 74 (31.2%) listen to music online, and 28.8% search for information related to with health. They used the internet the least to make an appointment with a doctor via a website or app – 6.5%. There are significant differences in regular internet users by education – 89.6% of persons with higher education and 37.7% of persons with primary or lower education regularly use the global network. Employment status also affects the population's activity on the Internet. It is most often used by students (unemployed), 98.6% of whom "surf" regularly, and for workers (employed and self-employed) the relative share is 80.8%. Almost half of the unemployed (45.1%) also use the Internet regularly.

The integration of digital technologies in enterprises Bulgaria ranks last among the EU countries. Only 33% of small and medium-sized enterprises (SMEs) have at least a basic level of digital intensity (while in the EU this is an average of 60% of SMEs).

The activity of the companies is also not characterized by a high intensity of the use of new and innovative technologies, as far as online trade is concerned - 11.8% of the companies offer goods and services on the Internet. On the other hand, the consumers of this service do not show much interest. The share of people who shop online for personal purposes is 15.6%, with 15.4% buying goods and 6.7% - digital products and services. The most active in buying goods and services on the Internet are persons with higher education with a relative share of 31.7%, as well as young people in the age groups 16 - 24 years (25.5%) and 25 - 34 years (25.4 %). Women shop online more than men - 16.2 and 15% respectively.

Labor Market and Labor Migration– Trends and Effects of Digitalization

Urban versus rural income and employment trends, especially in low- to middle-income countries, can be described as incommensurable at best. In general, it is challenging to isolate the direct effects of digital technologies on rural incomes, and analyzes are mostly based on indicators such as rural-urban migration, social assistance programs targeting rural populations, etc.

Undoubtedly, digitization has brought important improvements in the quality of life in rural areas, including access to online markets, social/cultural services, streaming entertainment, which have somewhat narrowed the gap between the daily life of urban and rural populations. However, this conclusion cannot be applied to productivity or economic indicators. Nearly half of the decline in the wage share of national income is due to technology. Labor markets are becoming more polarized, inequality is increasing, and income insecurity is more pronounced. In this regard, the interpretations regarding the impact of digitalization on the labor market are polar. Critics point out that changes in the labor market tend to happen more gradually than changes in consumer behaviour, largely because of the pace at which young people enter the labor market, older people retire, and others move to new jobs or change jobs qualification. The impact of technology and digitization on the labor market comes from the accumulated changes in these dynamics. The main impact of technological change and digitization is an increase in polarization, which mostly affects middle-class workers. Incomes are becoming more volatile and job market uncertainty is increasing. A general effect of digitization on the labor market is a reduction in the market/bargaining power of workers. Similar pressures exist in banking, insurance, and retail.

In substantive terms, the nature of work is also changing Innovations and technological advances result in a process favoring people with higher skills in terms of cognitive or social abilities, the so-called "biased technological change". For this category of people, the dynamics in wages have been positive and the share of their work has increased as a contribution to the economy. In contrast, routine work is in decline. At the same time, the real opportunities through which digital technologies and artificial intelligence can overcome the economic divide between cities and rural areas are not overlooked:

1) Creation of new, higher-paid jobs in rural areas, mainly through the development of digital infrastructure that enables remote work and the development of technological ecosystems. In the last decade, one of the most remarkable transformations in the world of work has been the emergence of digital work platforms. In this way, the problem of "brain drain" of highly qualified persons who must move to urban centres is also limited.

2) Increasing profits from economic activity in rural areas, by balancing competition in pricing, access to market information, attracting public and private sector investment or even entering global markets.

3) Facilitating access to social service systems - education, health care; access to financial resources.

Digitalization has a significant impact on labor migration. And if these processes in the long term can lead to a decreasing demand for low-skilled labor, in the short and medium term, the opposite effect can be observed. Indeed, for occupations most at risk of automation and looking less and less attractive to new entrants to the labor market, recruitment difficulties may arise even as overall employment declines. This conclusion is part of OECD analyses in the context of deindustrialization in some countries. New forms of "digital labor migration" are also being created with the availability of digital platforms for online-based work. Questions arise when analysing all forms of labor migration and whether this "digital labor migration" should be included to assess potential unfair competition and social dumping. Thus, on the one hand, we perceive the digitized economy as the rise of robotization and artificial intelligence in production with the real potential to increase productivity and, in a sense, replace human labor, and affect employment in various services in the economy. On the other hand, new sectors such as e-commerce and other digital business models have emerged in the role of intermediaries between market demand and supply and therefore generating new market opportunities.

With technological progress, the classical definition of social capital is also undergoing a transformation, mainly because both the general tangible and intangible social infrastructures are changing / adapting to the pace of digitalization. In this regard, the characteristic features of digital social capital are present:

- Virtual communities – digital platforms are an online space for sharing based on trust, mutual interests, civic engagement and sharing.
- Transparency and free access and dissemination of information.
- Sharing of knowledge, experience, and capabilities.

In the general perspective, processes towards digital transformation in agriculture and rural areas lead to the evolution of both technology and society. When assessing this mutual adaptation between technological factors, users and institutions, economic/technological changes are usually in focus, and social changes remain in the background (Table 1).

Table 1. Impact of Digital Technologies on Rural Development

Impact	Description
Digital technologies are changing society in rural areas	• Digital technologies develop knowledge through open access platforms for training and qualification; promote the transfer of knowledge and skills; allow the organization of trainings by location. • Digital technologies support social connections - they provide communication and access to information for people in a disadvantaged position or located in remote areas; strengthen ties within the local community; maintain traceability within the product chain; unite communities of different interest groups and stimulate social ties and relations of solidarity. • Digital technologies promote the specifics and resources of rural areas - support migration processes, attract specific labor resources, provide new economic opportunities for the development of territorial marketing. • Digital technologies improve the standard of living in rural areas - they help businesses find new markets without having to physically reorganize production facilities and resources. Digital technologies provide new or improve existing services - develop services such as telemedicine; promote sustainable use of natural resources and climate change management; facilitate the application/use of databases.
Digital technologies create new opportunities for rural development	• Sharing economy and Industry 4.0 give rise to innovation at all levels, including technological, social, human, cultural and economic. Digital technologies ensure the return of manufacturing activity to local areas; new forms of industry/industry are emerging that depend on and participate in the digital transition. • Create added value for rural areas - digital technologies can stimulate economic growth, create new jobs and add value for the benefit of rural areas. • Digital technologies more fully realize local strategies and infrastructure.
Digital technologies are causing a change in work process organization practices	• Digital technologies are transforming the way we work, forcing public and private stakeholders to change their established workflow practices. • Digital technologies lead to an increase in mobility, where professional commitments can be fulfilled remotely. • As the application and complexity of digital technologies increase, so does the need for new skills and competencies.

Education in Digital Technologies and Artificial Intelligence

With decision No. 72 of the Council of Ministers dated 12/16/2020 the Bulgarian government adopted a National Strategy for Artificial Intelligence (Bulgaria, 2020). The strategy is based on a framework created by scientists from the Bulgarian Academy of Sciences (BAS) and further developed by experts of the Ministry of Transport, Information Technologies, and Communications (MTITK), after public consultation with state institutions and stakeholders. The final version entitled Concept for the Development of Artificial Intelligence in Bulgaria by 2030 has been published on the portal of the Council of Ministers. The strategy offers a comprehensive policy vision for the development and use of AI in Bulgaria and identifies key areas of impact such as infrastructure and data availability, capacity for research and innovation, knowledge, and skills, and building trust in society. The main goal of the Concept for the development of AI in Bulgaria 2020-2030. (AI BG) is to focus efforts on the development and implementation of AI systems by creating scientific, expert, business and management capacity, supporting the coordination of measures and activities prioritized in relevant National Strategic Documents, including "Vision, goals and priorities for the National Development Program: Bulgaria 2030". AI-BG is expected to have an important role in the implementation of the development policies laid down in "Bulgaria 2030" in the following directions:

- Science and scientific infrastructure.
- Education and skills.
- Smart industry.
- Electronic public administration.
- Sustainable agriculture.
- eHealth.

All the strategy papers point to the need for education reforms at all levels, as well as a greater emphasis on vocational training and lifelong learning, to enable people to acquire and improve their digital and AI-related skills. The Ministry of Education and Science (MES) undertakes the following initiatives to actively increase knowledge and skills in the field of AI:

- Application of AI-based tools in education to increase the quality, attractiveness and efficiency of the learning process.
- Improving students' competencies in ethical issues related to the use of information technology.

- Planning measures to increase student participation in STEM (science, technology, engineering and mathematics) subjects.
- Expanding undergraduate and graduate programs with AI-related courses not only limited to computer science but targeting multidisciplinary fields. This may also include courses with a specific focus on the legal, ethical and social aspects of AI.
- Creating adequate conditions for increasing the number of PhD students in the fields of AI.
- Enhancing teacher competencies in teaching and working with digital and AI-based technologies.

Policies related to vocational training, retraining and lifelong learning include, among others:

- Offering short-term training and internships aimed at acquiring and upgrading digital skills in programming and data analysis.
- Develop and implement lifelong learning programs to increase the number of IT professionals with AI-related skills.
- Creation of specialized (re)qualification schemes for professional profiles in danger of being lost due to automation. The activity will be carried out in cooperation between business, trade unions, higher education institutions and state authorities.
- Creating more opportunities for 'recognition' of non-formal learning to enable more flexible labor mobility.
- Building an education and AI platform with online AI courses, education policies and best practices for AI in education.

Methodology

The project partners developed a two-part survey instrument. The first part of the study concerns the information literacy practices of the participants, their behaviour, and habits in searching and using online information along with the digital tools they use. The second part is in the form of a test, which aims to examine the actual level of knowledge and skills of the participants. This will help to understand the gaps in their knowledge and skills, and on this basis to prepare a curriculum to fill the missing ones. The study was conducted between May and September 2022 at Trakia University, Stara Zagora, Bulgaria and included students and teachers from various majors and courses. The questionnaire was distributed by sending a link to the Google forms emails to students and teachers. A total of 55 students and 18 faculty members took part in the study.

Skill Gap Analysis

Digital literacy is considered on two main levels:

1) the ability to use digital technologies, devices and social networks to find, organize, process, evaluate and communicate information appropriately and,

2) the accompanying need to observe and apply specific security rules , as well as norms related to the ethical and legal use of information.

Digital literacy refers to a set of competencies that enable one to function and participate fully in a digital world.

Students today are generally considered digital - able to use technology effectively and easily. However, it is equally important to learn how to act appropriately and ethically in an online environment. They must be able to resolve conflicts, mine materials ethically, and interact with the world in a responsible manner.

The main purpose of this part of the report is to present the results of a study that examines the level of digital information literacy skills of students and teachers in Bulgaria. The analysis aims to show the strengths and weaknesses as well as the potential needs that should be taken into account in the content of the digital information literacy curriculum that will be developed within the framework of this project.

Findings From the Student Survey

Part 1: Information Literacy Practices

The first part of the survey consists of three questions, which are based on a 5-point scale according to the frequency of the action: Always, Often, Sometimes, Rarely and Never.

The first question that was asked to the students was: how often do they use certain sources of digital information (table 2). The most frequently used tools for accessing information are secondary sources of information - search engines. The majority of students (about 54%) always use general search engines such as Google, 33% often use them, and 13% sometimes use them. The frequency of use of other information access tools that lead to higher quality, scholarly, and reliable content, such as Google Scholar, library catalogs, and library databases, is declining significantly. Only 4.2% of students always use Google Scholar, and 6.3% - library catalogs.

Those who frequently use Google Scholar are 10.4%, the same percent is for those who use library catalogs. A very high percentage of students never use Google Scholar, library catalogs, and library databases (58.3%, 22.9%, and 47.8%, respectively).

Table 2: How Often Do They Use Certain Sources of Digital Information

	Always %	Often %	Sometimes %	Rarely %	Never %
General search engines (e.g., Google, Bing, Yahoo!, Ask.com)	54.0	33.0	13.0	0.0	0.0
Google Scholar	4.2	10.4	14.6	12.5	58.3
Library catalogs	6.3	10.4	27.1	33.3	22.9
Wikipedia	14.6	33.3	39.6	10.4	2.1
Other encyclopedias (e.g., Britannica, either online or printed)	12.5	12.5	31.3	22.9	20.8
Governmental Websites (.gov sites)	8.3	12.5	25.0	27.1	27.1
Library databases (e.g., WoS, EBSCO, JSTOR)	6.3	4.2	16.7	25.0	47.8
Blogs	4.2	18.8	29.2	20.8	27.0
Social networking sites (e. g. Facebook)	19.7	25.0	20.8	12.5	2.5
Video sharing sites (e.g., YouTube) TeacherTube, etc.)	37.5	29.2	20.8	8.3	4.2
Slide sharing sites (e.g., Slideshare)	4.2	18.8	18.8	12.5	45.7
Online forums	8.3	18.8	33.3	25.0	14.6

Primary sources of information are always used by 14.6%, with the highest percentage of those answering Sometimes. When using the other encyclopedias (online or printed), the answer Sometimes is also the largest - 31.3%.

While about 33.3% of participants use Wikipedia often, only 12.5% use other encyclopedias always or often. Those who never use Wikipedia are only 2.1%, and for other encyclopedias they are 20.8%. About 21% of the participants (8.3% always and 12.5% often) use government websites that are considered reliable sources of information, on the other hand 27.1% rarely or never use these sites. Less reliable sources of information such as social networking sites are always used by 16.7% of participants. A quarter (25%) often use these sources, and overall more than half of participants (62%) use social networking sites to gather information. Video sharing sites are also among the frequently used sites by more than half of the participants (always 37.5%, often 29.2%). The data on the answers

to the first question show that students tend to use less reliable sources of information more often. The second question in the first part of the survey concerns the trustworthiness of web sources, which concerns which features of a website participants check before using it (table 3). The most frequently checked feature is how up-to-date the website is, with 52% of participants always paying attention to this, while another 29.2% do so sometimes. Only 2% of students never check the website for updates. Author's credentials is the second most frequently checked feature by students – 31.3% always check it, while 25% check it often. The URL, presentation of different points of view, links to other web sources, and the availability of a bibliography or reference list were other features frequently checked by about half of the participants. The third question in the first section is about how often students use certain digital tools that can be used in the preparation of various tasks (table 4). Presentation tools such as PowerPoint, document sharing programs such as Google Documents, and spell checking were the most used digital tools by participants. These three tools, according to students, are the most necessary tools when performing various tasks in their studies. This is most likely due to the fact that students are expected to work in a team, which requires sharing documents and preparing presentations on assigned tasks. Teamwork, review presentations and spelling are among the factors that are considered when students are evaluated by the professors.

Table 3: Trustworthiness of Web Sources, Which Concerns Which Features of a Website Participants Check Before Using It

	Always	Often	Sometimes	Rarely	Never
How current the Website is	52.1	14.6	29.2	2.1	2.0
Author's credentials (e.g., title, degrees, affiliation)	31.3	25.0	20.8	18.8	4.1
Whether the Website content acknowledges different viewpoints (i.e., not biased)	20.8	20.8	41.7	6.3	10.4
What the URL (i.e., .edu, .org, .gov) is and what it means	12.5	16.7	29.2	14.6	27.0
Whether the Website has links to other resources on the Web	16.7	27.0	25.0	18.8	12.5
Whether the Website has bibliography/reference list	16.7	18.8	27.0	14.6	22.9

Among the least used tools are Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content), Social Bookmarking and Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress) - respectively 45.8; 43.8 and 43.7 of the participants never use them. Track-changes feature of word processors are the second least used (41.7% never and 8.3% rarely use them). The highlighting and tracking functions of word processors are always or often used by about half of the students. Sticky notes, alert services, Wiki providers and blog servers are also less commonly used tools by the majority.

Table 4: How Often Students Use Certain Digital Tools That Can Be Used in the Preparation of Various Tasks

	Always	Often	Sometimes	Rarely	Never
Highlighting feature of word processors	20.8	29.2	22.9	12.5	14.6
Track-changes feature of word processors	12.5	14.6	22.9	8.3	41.7
Spell checkers	29.1	16.7	29.2	8.3	16.7
Digital "sticky notes" (e.g., Post-It digital notes)	14.6	16.7	12.5	22.9	33.3
Citation management tools (e.g., RefWorks, EndNote, EasyBib)	10.4	14.6	14.6	22.9	37.5
Social bookmarking (e.g., digg, delicious)	12.5	8.3	10.4	25.0	43.8
Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)	12.5	12.5	14.6	14.6	45.8
Document sharing programs (e.g., Google Documents)	20.8	35.4	12.5	20.8	10.5
Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint-other than Wikipedia)	8.3	18.8	20.8	16.7	35.4
Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)	6.3	10.4	22.9	16.7	43.7
Presentation tools (e.g., Power point, Prezi, etc.)	39.6	33.3	20.8	2.1	4.2

Part 2: Digital Information Literacy Test

The second part of the study is a test composed of twelve questions, each with five alternative answers, among which the participants had to mark the correct one in their opinion (table 5).

With the most correct answers - 83.3%, the second question (2) is distinguished, which concerns the reliability of information on the web, 8.4% did not answer correctly and the same number indicated that they had no idea about the topic. The second question with the most correct answers - 60.4% is the question about Google search results ranking (9), with 29.2% of students marking the wrong answer and 10.4% answering that they had no idea. 47.9% of students are aware of the reliability of different types of information sources (1), while 37.5% did not answer this question correctly and 14.6% answered that they had no idea at all. Using the sources of secondary information (library catalogs) makes it difficult for students - only 2% answered the question about the content of library catalogs (3) correctly, 66.6% - incorrectly and 31.3% of the participants had no idea. Only 12.5% of students answered the Academic Databases question correctly, with 54% having no idea and 33% not giving the correct answer. These results are in line with those obtained from the first part of the survey, where Library Catalogs and Databases were found to be the least used sources of information.

Table 5: Opinions of Students According to Themselves.

	Correct	Wrong	No idea
Reliability of information sources (1)	47.9	37.5	14.6
Credibility of information on the web (2)	83.3	8.4	8.3
Contents of the library catalog (3)	2.1	66.6	31.3
Statements about Academic Databases (4)	12.5	33.3	54.2
Search query in a database (5)	20.8	64.6	14.6
Appropriate search strategy (6)	14.6	52.1	33.3
Search strategy Google (7)	22.9	64.6	12.5
Search strategy specific files on Google (8)	12.5	75.0	12.5
Google search results (9)	60.4	29.2	10.4
Using and citing information from the Internet (10)	20.8	64.6	14.6
Using images from the Internet (11)	35.4	54.2	10.4
How to avoid plagiarism (12)	50.0	33.3	16.7

The next four questions in this section (5 to 8) are about search strategies that are important for performing effective online searches of the web or various databases. The highest percentage of correct answers is for question 5, and the highest percentage of wrong answers is for question 8.

In accordance with the first part of the research, students use the most general search engines like Google, but their strategy for proper search turns out to be ineffective. 20.8% know how to cite information (10) from the Internet when using it, and only 35.4% know how images from the Web should be used (11). Data show that about 50-80% of students do not know how to cite Internet sources and what the concept of plagiarism is. According to the survey, half (50%) of the participants have a clear idea of what plagiarism is and how to avoid it (12), and the other half of the participants either do not know how to avoid plagiarism or have no idea about it.

Study of the Digital Literacy of Doctoral Students, Teaching Assistants, Teachers and Technical Staff in Higher Education Institutions

Part 1: Information Literacy Practices

Identical to the student survey, the first part of the survey, the digital literacy of doctoral students, teaching assistants, lecturers and technical staff in higher education institutions, was composed of three questions, all of which were based on a 5-point scale according to the frequency of action: Always, Often , Sometimes, Rarely and Never. The most frequently used tools for accessing information (usually considered secondary sources of information) (table 6) by educators are also search engines. The majority of teachers (94.4%) use general search engines such as Google always or often, while only 5.6% use them rarely and 0% never use them. . The use of other information access tools that provide higher quality and reliable content, such as Google Scholar, library catalogs and library databases, is less practiced, this is most evident in the use of library catalogs as opposed to the use of Google Scholar.. Faculty use of library catalogs is about 20% higher than student use, although occasional faculty use remains high at 44%. The percentage of professors who never use library catalogs is low (5.5%), which means that although all professors have access to scholarly publications for their scholarly work, not all take advantage of this opportunity. In terms of primary sources of information, the data show that almost 94% of educators use Wikipedia as a source of information to varying degrees. Only 5.6% never use it as a source of information in their scientific work. The difference between the rate of use of Wikipedia and other encyclopedias (online or printed) is that only 33.3% use other encyclopedias often and 16.7% never. About one-third of participants frequently use

government websites that are considered reliable sources of information, another one-third use them sometimes, and one-third use them rarely.

Less reliable sources such as social networking sites are used frequently by about a third of participants - 33.3%. A large percentage of educators never use slide sharing sites (44%), while video sharing sites are more popular. In general, faculty tend to use more reliable secondary sources such as library databases, library catalogs, and Google Scholar compared to students.

Table 6: The Most Frequently Used Tools for Accessing Information

	Always	Often	Sometimes	Rarely	Never
General search engines (e.g., Google, Bing, Yahoo!, Ask.com)	61.0	33.4	5.6	0.0	0.0
Google Scholar	33.3	50.0	16.7	0.0	0.0
Library catalogs	5.6	16.7	44.4	27.8	5.5
Wikipedia	5.6	27.7	38.9	22.2	5.6
Other encyclopedias (e.g., Britannica, either online or printed)	0.0	33.3	22.2	27.8	16.7
Governmental Websites (.gov sites)	11.1	27.8	27.8	33.3	0.0
Library databases (e.g., WoS, EBSCO, JSTOR)	27.8	33.3	16.7	22.2	0.0
Blogs	0.0	5.6	16.7	22.2	55.5
Social networking sites (e. g. Facebook)	27.8	5.5	5.6	38.9	22.2
Video sharing sites (e.g., YouTube, TeacherTube, etc.)	11.1	22.2	33.3	22.2	11.2
Slide sharing sites (e.g., Slideshare)	0.0	27.8	22.2	5.6	44.4
Online forums	0.0	16.7	33.3	16.7	33.3

The second survey question concerns the trustworthiness of web sources—which features of a website participants check before using it (table 7). How current the Website is is the feature that is always checked by 72.2% and sometimes checked by 22.2% of teachers. The next most common checks are the URL, Author's credentials, references, and availability of a bibliography. The data show that faculty pay more attention to authority, references, and the presentation of diverse perspectives than students do.

Table 7: Trustworthiness of Web Sources, Which Features of a Website Participants Check Before Using It

	Always	Often	Sometimes	Rarely	Never
How current the Website is	72.2	5.6	22.2	0.0	0.0
Author's credentials (e.g., title, degrees, affiliation)	33.3	22.2	16.7	11.1	16.7
Whether the Website content acknowledges different viewpoints (i.e., not biased)	22.2	44.4	16.7	11.1	5.6
What the URL (i.e., .edu, .org, .gov) is and what it means	44.4	11.1	27.8	11.1	5.6
Whether the Website has links to other resources on the Web	33.3	11.1	38.9	16.7	0.0
Whether the Website has bibliography/reference list	33.3	22.2	22.2	16.7	5.6

The third survey question was about how often educators use certain digital tools while using and communicating information (table 8). Presentation tools such as PowerPoint and Spell Checkers are the most used digital tools by educators. Just over 90% of educators use presentation tools to varying degrees, and just as many use spell checkers always or often. This is quite natural, in view of the correct use of grammar when writing scientific publications. Another frequently used tool is document sharing programs – 33.3% of teachers often use them, which is normal considering the need to share documents, especially when working on different projects. Among the least used tools, both by students and by teachers, are Wiki server providers for creating and sharing Web content, Social Bookmarking and Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress) - respectively 27.7 ; 44.4 and 44.4 of participants never use them. Citation management tools and Alerting services are the second least used (22.2% never use them). Citation management is necessary to monitor the effective and efficient use of references by faculty in their scholarly work. The highlighting and tracking features of word processors are always or often used by about one-third of educators.

Table 8: How Often Educators Use Certain Digital Tools While Using and Communicating Information

	Always	Often	Sometimes	Rarely	Never
Highlighting feature of word processors	22.2	50.0	22.2	5.6	0.0
Track-changes feature of word processors	38.9	16.7	16.7	11.1	16.6
Spell checkers	55.6	33.6	5.6	5.6	0.0
Digital "sticky notes" (e.g., Post-It digital notes)	11.1	5.6	38.9	27.8	16.6
Citation management tools (e.g., RefWorks, EndNote, EasyBib)	5.6	22.2	22.2	27.8	22.2
Social bookmarking (e.g., digg, delicious)	0.0	11.1	22.2	22.2	44.4
Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)	5.6	22.2	16.7	33.3	22.2
Document sharing programs (e.g., Google Documents)	11.1	33.3	27.8	16.7	11.1
Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)	5.6	11.1	16.7	38.9	27.7
Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)	0.0	5.6	22.2	27.8	44.4
Presentation tools (e.g., Power point, Prezi, etc.)	50.0	27.8	11.1	5.6	5.5

Part 2: Digital Information Literacy Test

Similar to the students' survey, the second part of the teachers' survey was organized as a test composed of multiple-choice questions, each with five alternative answers, among which they had to mark the correct one (Table 9) . The faculty survey included two additional questions. These two questions (10 & 11) were about the order of the components of a scientific paper and distinguishing between statements of opinion and facts. A high percentage of teachers answered two of the questions correctly (94.4%). These are the questions related to the credibility of information on the web and elements in a research paper. Both students and teachers have serious gaps in their knowledge of the contents of library catalogs - 66% of the answers are wrong, and 27.8% have no idea about them. Similarly, half of the faculty are not familiar with or have no idea about the scope of academic databases. A large number of wrong answers are registered regarding the search strategies (especially for the specific files) which are very important for retrieving relevant online information. Almost half of the teachers are also not aware of the correct citation of information from the Internet, which may be due to the fact that the survey was also distributed among doctoral students who are in a different phase of their studies. A little over half of the participants gave a correct answer about plagiarism - 55.6%, while of course the relatively high percentage of incorrect answers - 44.4% should be noted.

Table 9: Opinions of Teachers According to Themselves.

	Correct	Wrong	No idea
Reliability of information sources (1)	44.4	44.5	11.1
Credibility of information on the web (2)	94.4	0.0	5.6
Contents of the library catalog (3)	5.6	66.6	27.8
Statements about Academic Databases (4)	50.0	22.2	27.8
Search query in a database (5)	11.1	72.2	16.7
Appropriate search strategy (6)	11.1	66.7	22.2
Search strategy Google (7)	38.9	50.0	11.1
Search strategy specific files on Google (8)	11.1	83.3	5.6
Google search results (9)	55.6	38.8	5.6
Author's personal opinion (10)	55.6	22.2	22.2
Elements in a research article (11)	94.4	0.0	5.6
Using and citing information from the Internet (12)	55.6	38.8	5.6
Using images from the Internet (13)	88.9	5.5	5.6
How to avoid plagiarism (14)	55.6	44.4	0.0

The results of the research, both among students and teachers, show large gaps in digital literacy among both types of participants, which once again confirms the need to create a curriculum that can fill the knowledge and skills of students.

Resources for Digital Literacy Skill Development

The strategic measures for digital education are part of the Strategic Framework for the Development of Education, Training and Learning for 2021-2030. To support the continuity of learning during the pandemic, around 7.2 million has been earmarked in the 2020 state budget euro to finance the provision of laptops to schools for temporary use by any student or teacher who does not own a computer, as well as for use during normal teaching. In this way, the modernization of school equipment was supported. An additional 55 million EU structural funds are directed to the initiative "Equal access to school education in conditions of crises" for the purchase of equipment for pedagogical specialists and students in order to support education during the crisis and conduct

training for the acquisition of practical skills for remote work with electronic access. For preschool and school education, within the framework of the National ICT Plan, it is planned to purchase innovative hardware and give priority to schools that have not received equipment in the last 3 years, as well as to schools with profiles in the field of ICT. In 2020, the Ministry of Education and Science implemented SIAMU — a user identity management system to provide secure access to all educational platforms and services. An important prerequisite for sustainable growth, innovation and the provision of a wide range of digital services based on the rapid exchange of large volumes of data is the availability of modern infrastructure. This infrastructure must be able to support rapidly increasing traffic, providing coverage with sufficient capacity and the ability to transmit data at the volume, speed and reliability necessary to meet the needs of modern life. In January 2021, the Council of Ministers of Bulgaria adopted rules for launching a national procedure for the selection of potential European centers for digital innovation within the framework of the "Digital Europe" program. After the completion of the national selection procedure, the Council of Ministers approved a list of 17 candidates for such centers, which will be located in the six regions of the country in accordance with the regional specialization part of Bulgaria's smart specialization innovation strategy. Bulgaria is one of the founding members of the EuroHPC High Speed Computing Joint Venture. In 2020 the procurement contract for a new petaflop EuroHPC supercomputer was awarded between the EuroHPC joint venture and the Petascale Supercomputer - Bulgaria consortium. Bulgaria has also signed the declaration for EuroQCI7 in 2020.

In the field of informatics and ICT, a project called "QUASAR" is being implemented, which is expected to lead to the creation of patents for innovative products. It is important to note that it includes research and development in the field of quantum communication. The expertise of the scientists and specialists who participate in the Competence Center (CC) will allow the creation of an innovative space in the object area of the CK with new ideas, patents for inventions and prototypes of original products and systems. The competence center uniting the cutting-edge topics of quantum communication, sensorics and risk management through intelligent systems is of utmost importance. It will be a generator of new approaches and solutions that will be brought to inventions and subsequently transferred to industry as concrete engineering-technical products with a clear market effect. Digital innovation hubs (digital innovation centers) are another important component of the overall national research and innovation ecosystem, which will enable the development and wide spread of intelligent systems and digital transformation of business through the implementation of AI technologies. The innovation hubs will provide a wide range of services to businesses, public administration and citizens, laboratories for conducting tests and experiments to realize the idea of

"testing before investing", as well as secure shared spaces for public and private data and will be particularly useful for SMEs and start-ups who will have the opportunity to test applications and services based on the latest technologies, including AI and robotics.

In summary, Bulgaria has launched a number of successful initiatives in the field of several innovative technologies. However, the integration of digital technologies is uneven across regions, and small businesses are experiencing significant lags in digital integration and innovation. Policies for digitization of businesses supporting the regional balance as well as all SMEs are key and must continue to be worked on.

Recommendations

The globalization and digitization of society is becoming not a trend, but a reality that is inevitable. Acquiring digital skills for working in an interactive environment also improves efficiency in terms of educational activity related to analysing and combining information from the Internet, discussing different ideas and viewpoints that can be found on the web. In general, young people in Bulgarian conditions rate their digital skills highly. Despite this, and according to the analysis of the study, we cannot say that the students at Trakia University have enough skills and knowledge concerning their digital literacy. The study was carried out within the DIGI-Key project to investigate the level of digital information literacy skills and knowledge of students, PhD students and teachers to identify strengths and weaknesses and whether additional training is needed.The results of the Bulgarian study indicate that students most often use search engines to access information, and significantly less use other information access tools that can direct them to quality and reliable content, such as Google Scholar, library catalogues and library data base. The use of library catalogues and academic databases is a problem - more than half of the students and a large part of the teachers use them extremely rarely. This is something that needs to be addressed, especially by educators. The most frequently checked feature is how up-to-date a website is, with more than half of responding students doing so, as opposed to other important features that will give them an idea of how trustworthy the site they decide to use is. The majority of students are aware of Google search ranking (algorithm features) and reliability issues regarding web sources. The analysis of the obtained data shows that the students hardly use social bookmarks and warning services, which can be useful for the effective use of the network. These identified weaknesses – poor use of library catalogues and academic data, as well as social bookmarking and alert services – could be addressed in the project's digital literacy curriculum. In terms of search strategies that are very important for conducting valuable online searches of the

Web or databases and library catalogues, the results reported by the survey are disappointing. Although students use search engines to access information, they do not possess functional search skills, which is another factor supporting the curriculum being created. The processed data show that students use less reliable sources of information more often than reliable ones, because they lack the knowledge to establish the reliability of information sources. As for digital tools, the most commonly used are presentation programs and spell checkers. The remaining tools are used extremely rarely or never due to the lack of sufficient information about their use. Survey data shows that about 50-80% of students do not know how to cite Internet sources and what the concept of plagiarism is, which is another area where students need to acquire the necessary knowledge and skills.

The analysis of the needs of the surveyed students shows several subject areas that should be addressed in the development of a digital information literacy curriculum: use of different sources of information, search strategies, intellectual property rights and ethical use of information, digital tools, which may be used in the use and transmission of information. The most frequently used tools for accessing information by teachers are also search engines. The use of other information access tools, such as Google Scholar, library catalogues, and library databases, is less practiced, and this is most evident in the use of library catalogues as opposed to the use of Google Scholar. Faculty use of library catalogues is higher than that of students. Regarding the main sources of information, the data show that almost all of the teachers use Wikipedia as a source of information to varying degrees, and a third of them use other encyclopaedias. In general, faculty tend to use more reliable secondary sources such as library databases, library catalogues, and Google Scholar compared to students. Survey data show that faculty pay more attention to the authority, references, and representation of diverse viewpoints on relevant sites than students. As with students, teachers use presentation tools like PowerPoint and Spell Checkers the most. Another commonly used tool is document sharing programs, which is normal given the need to share documents, especially when working on different projects. Among the least used tools, both by students and teachers are Wiki server providers for creating and sharing Web content, Social Bookmarking and Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, and Wordpress). Both students and faculty have serious gaps in knowledge of the contents of library catalogues. Similarly, half of the faculty are not familiar with or have no idea about the scope of academic databases. A large number of wrong answers are registered regarding the search strategies (especially for the specific files) which are very important for retrieving relevant online information. Almost half of the teachers are also not aware of the correct citation of information from the Internet, which may be due to the fact that the survey was also distributed among doctoral students

who are in a different phase of their studies. The analysis of the digital skills survey of doctoral students and teachers showed that the difficulties for them were mostly related to the use of the library catalogues and academic databases; the application of various search strategies, as well as the correct citation of information from the web. It turns out that the gaps in digital literacy among undergraduates, PhD students and faculty are quite similar. This testifies both to the need to provide digital literacy courses to university professors at Trakia University and to create a curriculum for students in terms of digital information literacy.

Italy

Introduction

The so called “Digital Information Literacy” is a set of abilities through which individuals can access, evaluate, and use digital information in an autonomous, proper, and effective way. Today, this kind of skills is rapidly becoming essential both in the labour market and in the field of education. In particular, students need to acquire these competences to be able to do homework, researching, writing and, afterwards, to enhance their employability and chances of success when entering the labour market. Consequently, and at the same time, teachers should develop the competences that enable them to transfer these knowledge and abilities to the students. In Italy, a look at the data concerning the relationship between citizens and digital skills reveals that there is still a considerable improvement that must take place. Indeed, as stated in the last DESI Report (Digital Economy and Society Index) of the European Union in 2021, in the area of human capital and digital competences Italy ranks 25th among the 27th EU Member States. Just the 42% of the population between the age of 16 and 72 possesses basic digital skills, and only the 22% of it has digital skills beyond the basic ones (DESI 2021).

Relating to these findings, it is no case that in July 2020 a coalition of Ministries, Regions, Provinces, Municipalities, Universities, Research Institutes, businesses, professionals, associations, and public sector bodies developed and signed a “National Strategy for Digital Competences” accompanied by an operational plan to eliminate the gap with other European countries and to contrast the “digital divide” between areas of the country (Strategia nazionale per le competenze digitali 2021). Finally, it is to note that the specific issue concerning universities was identified and put in evidence by the Italian University Deans Conference (CRUI) in 2018, with the publication of the “*Guidelines for the attainment of information competence of Italian universities' graduates*”. The starting point of this document is the acknowledgment of the existence of a problem regarding students' abilities to relate to information sources and the need for special programmes to teach a conscious and effective use of available information inside universities. Taking all these elements into consideration, the objective of this report is to investigate the level of digital information literacy skills possessed by Italian university teachers and students. Through a “Digital literacy skills” questionnaire submitted to them and the analysis of its results, it is possible to highlight their strengths and weaknesses, and also the potential needs that could be met through *ad hoc* learning programmes and courses about digital information literacy.

Part 1: Teachers

A total of 32 teachers, mostly coming from the Italian region of Veneto, participated to the questionnaire. Their personal information (such as age, gender, location, etc.) was not collected since it was not relevant for the final purposes of the study. All of them were university teachers, belonging to different departments and courses of study. The responses to the questionnaire were collected between May and June 2022.

Methodology

The methodology used to collect data about the topic of Digital Information Literacy was based on the creation of a specific questionnaire, directed to a specific target group (teachers), and divided in two distinct parts. The first part of the survey concerned "Information Literacy practices" and it was meant to collect data about the teachers' online habits and the tools used when surfing the Internet and searching for information. Differently, the aim of the second part was to understand the degree to which the teachers participating to the questionnaire were "digitally competent", or not. To reach this objective, the second part or the "Digital Information Literacy test" was structured more as a quiz rather than a normal survey, with each question having its corresponding correct answer.

In this way, by looking at the number of correct/wrong answers, it was possible to objectively judge the level of competencies possessed by the respondents, and to acquire a more realistic idea about teachers' knowledge and potential needs in the field of information literacy.

Skill Gap Analysis

The data collected from the survey helped us to develop an analysis of the actual teachers' skills gap in digital information literacy.

Information Literacy Practices

This first part of the survey "Information Literacy practices" was composed of three questions, and for each of them the answer was divided in five possible alternatives. According to their frequency of action, the respondents could choose one option between Always, Often, Sometimes, Rarely, and Never. The starting question of the survey was: "How often do you use these sources for your course-related studies?", referring to digital kinds of sources, used to search for information. A summary of the findings is reported in the table below.

Table 10: Question: “How Often Do You Use These Sources for Your Course-Related Studies?”

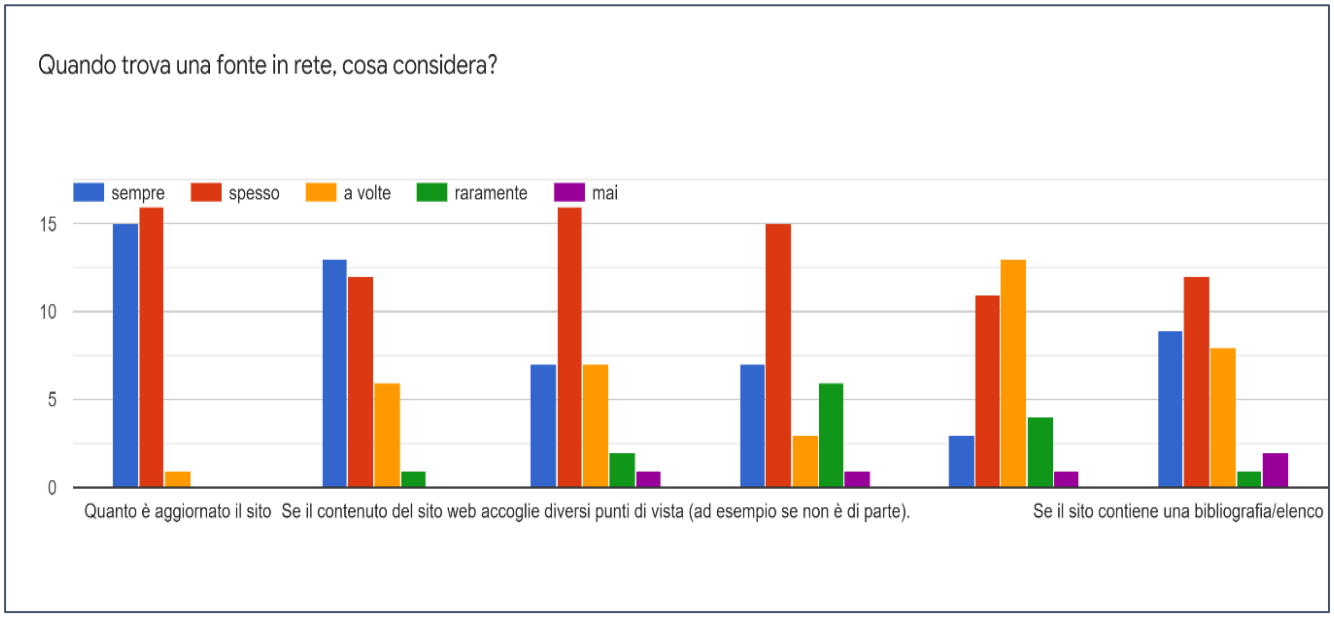
	Always	Often	Sometimes	Rarely	Never
General search engines (e.g., Google, Bing, Yahoo!, Ask.com)	71.9%	25%	/	3.1%	/
Google Scholar	/	15.6%	21.9%	15.6%	46.9%
Library catalogs	/	15.6%	31.2%	37.5%	18.7%
Wikipedia	21.9%	46.9%	25%	9.4%	/
Other encyclopedias (e.g., Britannica, either online or print)	6.2%	21.9%	46.9%	12.5%	12.5%
Governmental Websites (.gov sites)	9.1%	30.3%	54.5%	6.1%	/
Library databases (e.g., WoS, EBSCO, JSTOR)	3.1%	9.4%	31.25%	25%	31.25%
Blogs	/	12.5%	43.8%	31.2%	12.5%
Social networking sites (e. g. Facebook)	12.5%	34.3%	21.9%	21.9%	9.4%
Video sharing sites (e.g., YouTube, TeacherTube, etc.)	12.1%	39.4%	36.4%	12.1%	/
Slide sharing sites (e.g., Slideshare)	6.3%	12.5%	37.5%	18.7%	25%
Online forums	3.1%	15.6%	34.4%	28.1%	18.8%

The second question concerned the characteristics to take into consideration when using a web source. The query said: “When you find a source "out on the Web", do you consider…” and a summary of the answers can be found in the following table.

Table 11: Question: “When you find a source “out on the Web”, do you consider…”

	Always	Often	Sometimes	Rarely	Never
How current the Website is	46.9%	50%	3.1%	/	/
Author's credentials (e.g., title, degrees, affiliation)	40.6%	37.5%	18.8%	3.1%	/
Whether the Website content acknowledges different viewpoints (i.e., not biased)	21.2%	48.5%	21.2%	6.1%	3%
What the URL (i.e., .edu, .org, .gov) is and what it means	21.9%	46.9%	9.4%	18.7%	3.1%
Whether the Website has links to other resources on the Web	9.4%	34.4%	40.6%	12.5%	3.1%
Whether the Website has bibliography/reference list	28.1%	37.5%	25%	3.1%	6.3%

Graphic 1: Results of the question: “When you find a source “out on the Web”, do you consider…” from the teachers’ survey



The third and last question of the first part of the survey was: “How often do you use each of these tools for preparing course-related assignments?”. The results are reported below.

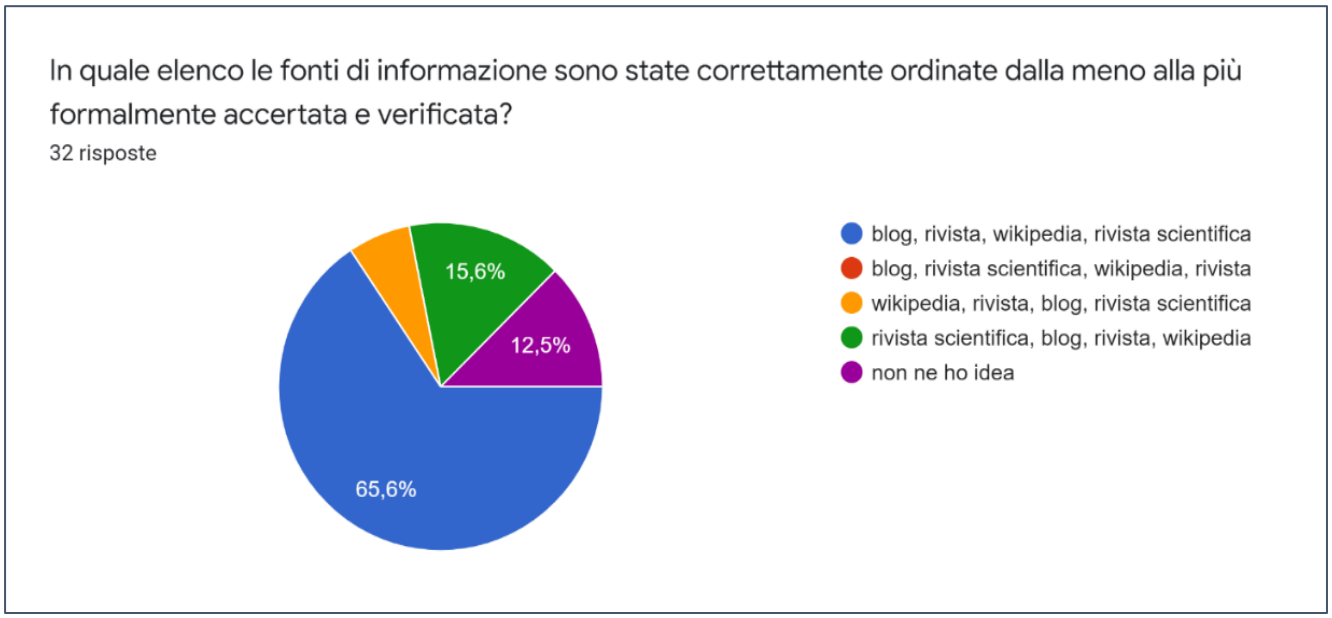
Table 12: Question: "How often do you use each of these tools for preparing course-related assignments?"

	Always	Often	Sometimes	Rarely	Never
Highlighting feature of word processors	9.4%	12.5%	31.3%	18.7%	28.1%
Track-changes feature of word processors	/	25%	25%	21.9%	28.1%
Spell checkers	30.3%	27.2%	30.3%	6.1%	6.1%
Digital "sticky notes" (e.g., Post-It digital notes)	3.1%	15.7%	34.4%	28.1%	18.7%
Citation management tools (e.g., RefWorks, EndNote, EasyBib)	/	6.2%	21.9%	31.3%	40.6%
Social bookmarking (e.g., digg, delicious)	/	/	21.9%	18.7%	59.4%
Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)	3.1%	9.4%	15.6%	34.4%	37.5%
Document sharing programs (e.g., Google Documents)	33.3%	27.3%	27.3%	/	12.1%
Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)	/	12.5%	21.9%	28.1%	37.5%
Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)	/	9.4%	34.4%	25%	31.2%
Presentation tools (e.g., Power point, Prezi, etc.)	45.5%	33.3%	15.2%	3%	3%

Digital Information Literacy Test

As previously mentioned, the second part of the survey called "Digital Information Literacy test" was a quiz test, composed of fourteen questions each with five alternative answers, between which the respondents were expected to guess the correct one. The first question was: "In which list have the information sources been correctly ordered from the least to the most formally established and verified?" and the correct answer was "blog, magazine, Wikipedia, scholarly journal". The 65.6% of the teachers was able to guess the right option, the 21.9% selected a wrong answer, and a 12.5% said to have "No idea" about the answer.

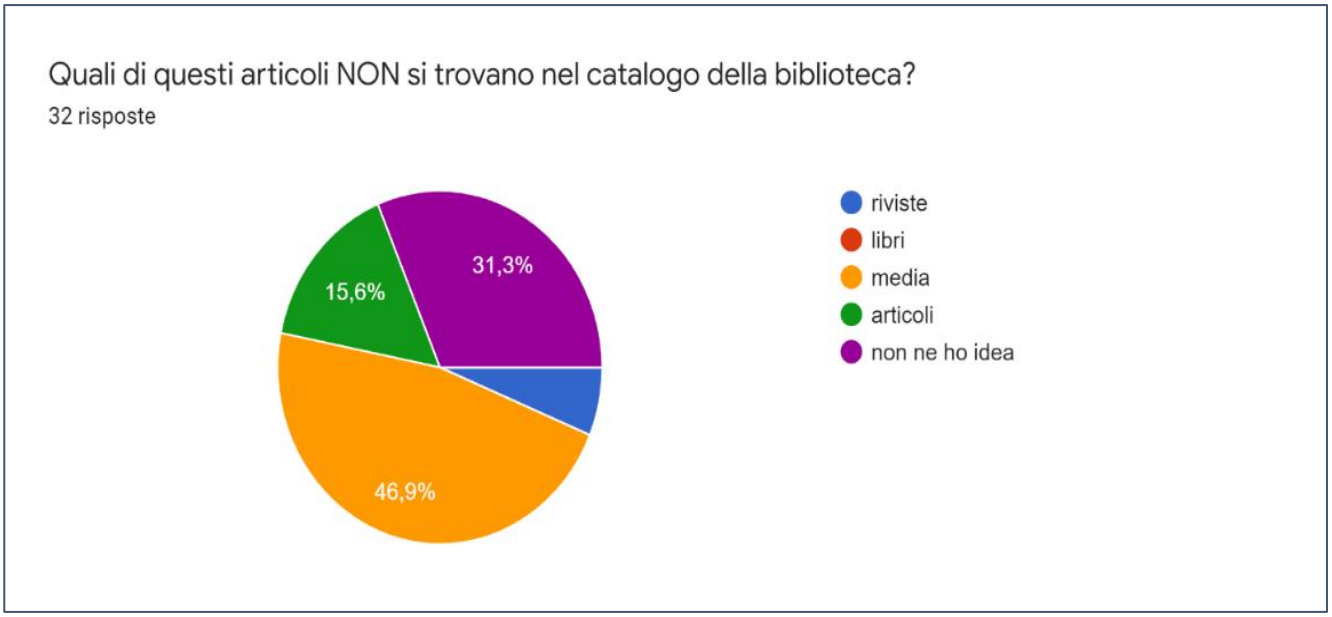
Graphic 2: Results of the question: "In which list have the information sources been correctly ordered from the least to the most formally established and verified?" from the teachers' survey



Secondly, in the following query the participants were asked to complete the sentence "Information of the web…" indicating the most appropriate one. The correct alternative ("Can sometimes be valuable but must evaluated carefully") was chosen by the totality of the teachers (100%). The third question was about libraries and was: "Which of these items can NOT be found in the library catalog?". Between journals, books, media, articles, and no idea at all, the right answer was "Articles", and it was selected by only a 15.6% of the respondents. The most clicked option was "Media" (46.9%), followed by a 31.3% of teachers stating they have no idea at all.

The answer "Books" was not chosen, while "Magazines" was ticked by a 6.3%.

Graphic 3: Results of the question "Which of these items can NOT be found in the library catalog?" from the teachers' survey

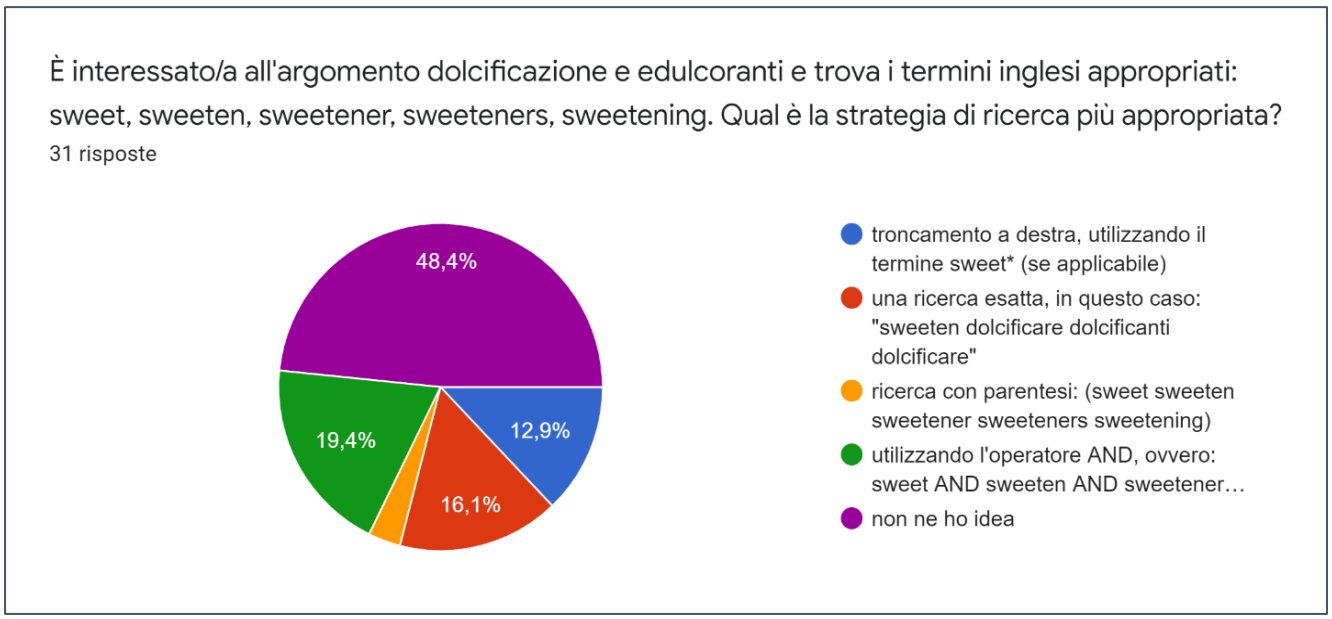


A question about Academic databases then followed and the results were quite differentiated. By answering the query: "Which one of these statements about Academic Databases is *not* true?", only a 50% of the respondents was able to choose the right alternative, which was "They only index items owned by your university library". It is to note that a 34.4% of them answered "No idea at all", and the other respondents (15.7%) selected a wrong option ("They always contain citations and sometimes also include abstracts and full text" 9.4%; "They often specialize in subject or type of material" 6.3%).

The fifth question of the test was: "You want to find information on the medicinal plant oregano, which is also known as wild marjoram in traditional herbal medicine. Its scientific name is Origanum Vulgare. What is the most appropriate search query in a database?". The 18.8% of the total stated to have no idea about the topic, the 43.8% chose an incorrect option, and just the 37.5% of the teachers selected the right one ("oregano" OR "wild marjoram" OR "Origanum vulgare"). The next three queries concerned the same topic of the sixth, that is how to search for digital contents in a proper way. This time, the question was: "You are interested in the topic of sweetening and sweeteners, and you find the appropriate English terms: sweet, sweeten, sweetener, sweeteners, sweetening. What is the most appropriate search strategy?" and it resulted to be the most difficult one of the entire test for the teachers. Indeed, only a 12.9% indicated the correct option "Right-hand truncation, using the term sweet* (if applicable)", whereas the 48.4% of the respondents had no idea at all about it, and the rest chose wrong alternatives ("Using the operator AND, i.e.: sweet AND sweeten

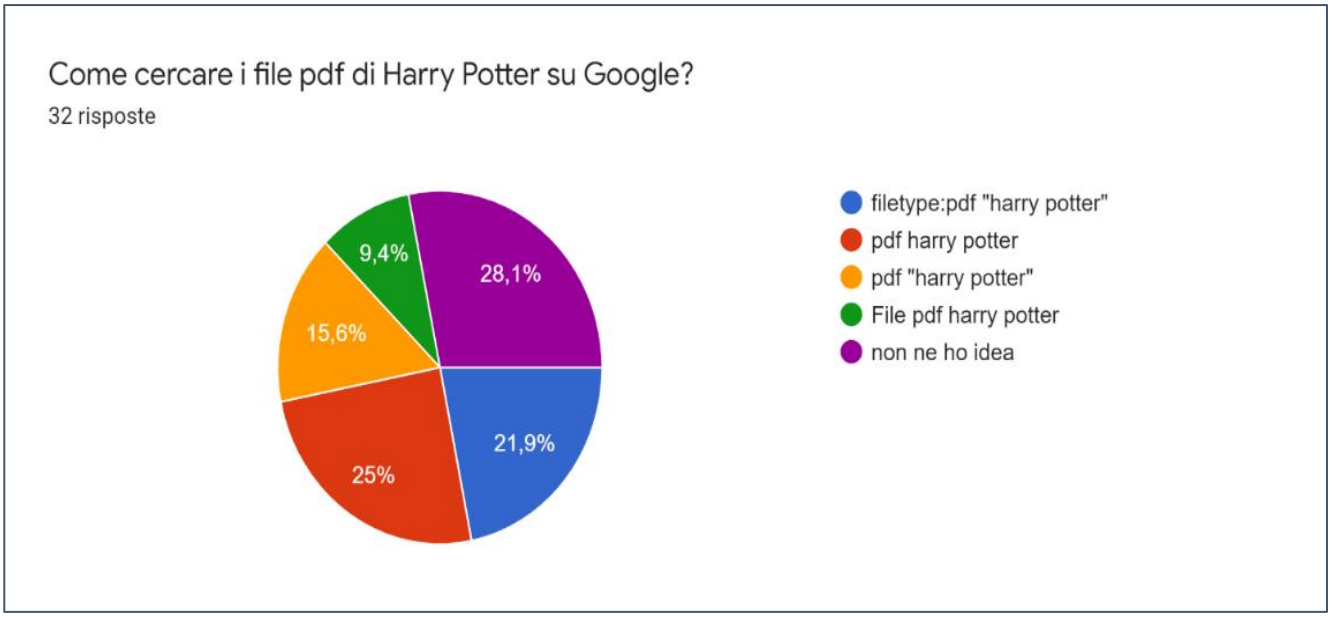
AND sweetener AND sweeteners AND sweetening" 19.4%; "An exact search, in this case: "sweet sweeten sweetener sweeteners sweetening" 16.1%; and "Searching with parenthesis: (sweet sweeten sweetener sweeteners sweetening)" 3.2%).

Graphic 4: Results of the question "You are interested in the topic of sweetening and sweeteners, and you find the appropriate English terms: sweet, sweeten, sweetener, sweeteners, sweetening. What is the most appropriate search strategy?" from the teachers' survey



In the seventh question, the teachers were asked what the most appropriate search strategy is if they want to search for competitive intelligence on Google. The proper way to do it is to write the object between inverted commas ("competitive intelligence") and the 40.6% of the participants chose this option. The same percentage of teachers selected the alternative of competitive intelligence with no punctuation signs, the 6.3% "+competitive +intelligence", and the 12.5% stated to have no idea about it. The last question about this topic was: "How do you search for pdf files of Harry Potter on Google?" and the corresponding answer was "filetype:pdf "harry potter"". Just a 21.9% of the respondents guessed the correct option, and a 28.1% indicated "No idea at all". Between the incorrect alternatives, the most selected was "pdf harry potter" (25%), followed by "pdf "harry potter"" (15.6%) and "File pdf harry potter" (9.4%).

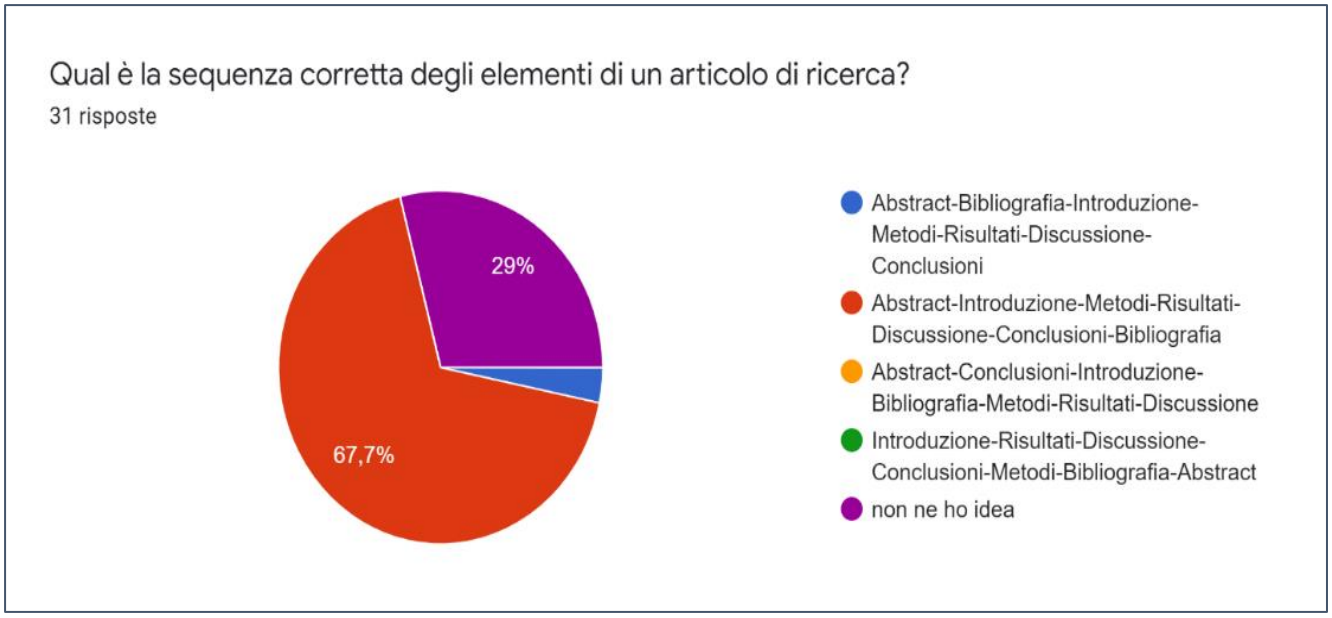
Graphic 5: Results of the question “How do you search for pdf files of Harry Potter on Google?” from the teachers’ survey



Changing the argument of questioning, the following query of the test concerned the functioning of the Google search engine. “Which of the following is correct about Google search results?” and, between the various definitions, the right one was “Search results are manipulated by algorithms which are based on search history, location, etc.”. This question appeared to be easier than the previous one since the 75% of the teachers could select the correct answer. A 9.4% of the respondents chose “Everybody who conducts the same search gets exactly the same results”, the same percentage of 6.3% ticked the options “Hits on top are the best” and “Ranking of the results is arbitrary”. The participants who had no idea about the topic were the 3.1% of the total. Ten, the question was about opinions and facts. The text was: “Which statement on GMO (Genetically Modified Organisms) is not the author’s personal opinion?” and the clue was “According to inventories, 15 new GMOs were registered in the EU in 2013.”. The 65.6% of teachers answered correctly, nonetheless there was a surprising 28.1% of them who selected the option “No idea at all”, and a 6.3% that chose “GMO experimentation should be banned.”. This means that almost the 35% of the respondents could not distinguish between the expression of a personal opinion and an objective assertion. Afterwards, it was asked to the participants what is the correct sequence of the elements in a research article, referring to the different parts in which it is normally divided. As it is well-known, the common structure of a research article is Abstract-Introduction-Methods-Results-Discussion-Conclusions-Bibliography, but, apparently, only the 67.7% of the teachers was sure about it, one

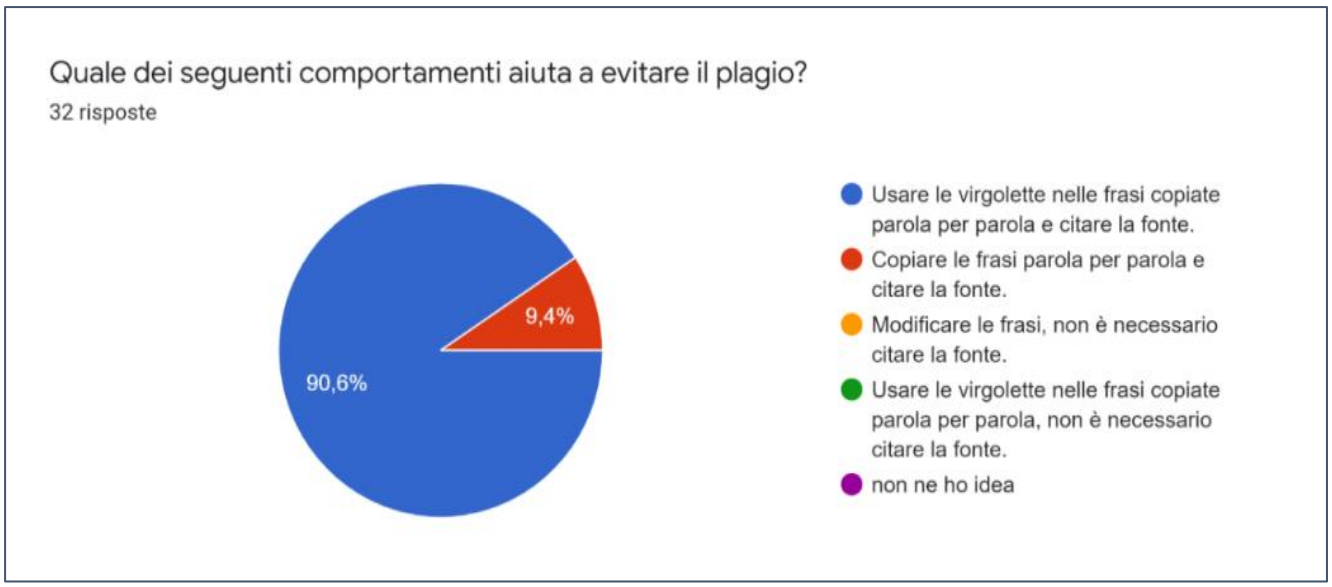
respondent (3.2%) selected the alternative "Abstract-Bibliography-Introduction-Methods-Results-Discussion-Conclusions", whereas a 29% stated to have no idea of the correct answer.

Graphic 6: Results of the question "What is the correct sequence of the elements in a research article?" from the teachers' survey



The twelfth question focused on the appropriate procedure for using information from the Internet. A 62.5% of the respondents indicated the right alternative, which was "You have to cite all the information taken from the web". The 18.8% of the teachers selected the option "You only cite information which has a copyright sign ©". The remaining ones affirmed to have no idea about it (12.5%) or chose a wrong answer ("You do not have to cite information from the Web, unless Website has an author" 6.3%). As shown by the results, the next challenge was less complicated for the teachers. Indeed, the 96.9% of them was able to guess that, when you want to use a photo you have found on Internet, you should check its license attribution and use it accordingly. Only one respondent (3.1%) thought the photo can be used freely. The final question as well seemed commonly understood by the participants. The query was "Which of the following helps you to avoid plagiarism?". The corresponding answer was "Use quotation marks around the sentences you copied word-by-word and cite the source" and there was an agreement about it between the 90.6% of teachers. The rest of them chose an incorrect alternative ("Copy the sentences word-by-word and cite the source").

Graphic 7: Results of the question “Which of the following helps you to avoid plagiarism?” from the teachers’ survey



Part 2: Students

The total number of students participantig to the questionnaire was 103. As for the teachers, the survey did not collect their personal information since it was not relevant for its objectives. The respondents were university students, belonging to different faculties. The responses to the questionnaire were collected between May and June 2022.

Methodology

The methodology used to collect data about the topic of Digital Information Literacy was similar to the one used with the teachers. A specific questionnaire directed to university students was created and divided in two distinct parts. The first part of the survey concerned “Information Literacy practices” and it was meant to collect data about the students’ online habits and the tools used when surfing the Internet and searching for information. Differently, the aim of the second part was to understand the degree to which the students participating to the questionnaire were “digitally competent”, or not. To reach this objective, the second part or the “Digital Information Literacy test” was structured more as a quiz rather than a normal survey, with each question having its corresponding correct answer. In this way, by looking at the number of correct/wrong answers, it was possible to objectively judge the level of competencies possessed by the respondents, and to acquire a more realistic idea about students’ knowledge and potential needs in the field of information literacy.

Skill Gap Analysis

The data collected from the survey helped us to develop an analysis of the actual students' skills gap in digital information literacy.

Information Literacy Practices

This first part of the survey "Information Literacy practices" was composed of three questions, and for each of them the answer was divided in five possible alternatives. According to their frequency of action, the respondents could choose one option between Always, Often, Sometimes, Rarely, and Never. The starting question of the survey was: "How often do you use these sources for your course-related studies?", referring to digital kinds of sources, used to search for information.

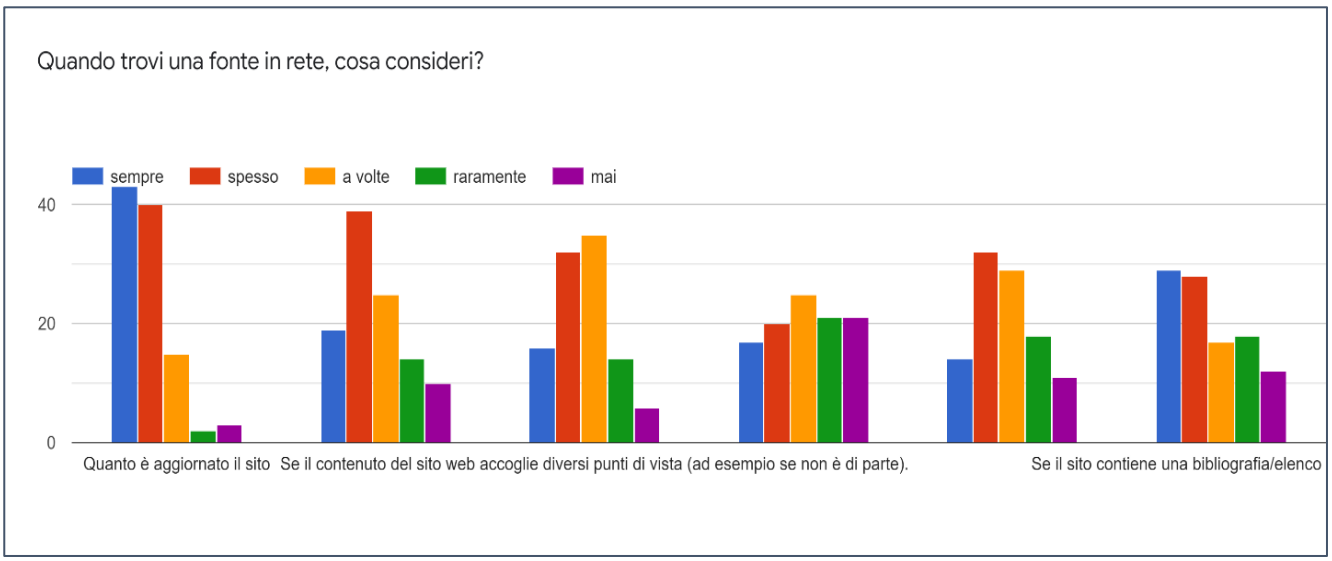
Table 13: Question: "How often do you use these sources for your course-related studies?"

	Always	**Often**	**Sometimes**	**Rarely**	**Never**
General search engines (e.g., Google, Bing, Yahoo!, Ask.com)	73.6%	24.5%	1.9%	/	/
Google Scholar	11.3%	12.3%	17.9%	17%	41.5%
Library catalogs	6.4%	11.1%	21.1%	22.9%	38.5%
Wikipedia	15.1%	44.3%	25.5%	11.3%	3.8%
Other encyclopedias (e.g., Britannica, either online or print)	9.8%	22.3%	26.2%	19.4%	22.3%
Governmental Websites (.gov sites)	3.8%	22.1%	32.7%	25%	16.4%
Library databases (e.g., WoS, EBSCO, JSTOR)	8.7%	11.5%	9.6%	26%	44.2%
Blogs	1.9%	10.4%	27.4%	29.2%	31.1%
Social networking sites (e. g. Facebook)	9.3%	9.3%	27.1%	22.5%	31.8%
Video sharing sites (e.g., YouTube, TeacherTube, etc.)	15.2%	34.3%	24.8%	20%	5.7%
Slide sharing sites (e.g., Slideshare)	1.9%	15%	18.9%	25.5%	38.7%
Online forums	3.8%	15.2%	19.1%	24.8%	37.1%

Table 14: Question: “When you find a source “out on the Web”, do you consider…”

	Always	Often	Sometimes	Rarely	Never
How current the Website is	41.8%	38.8%	14.6%	1.9%	2.9%
Author's credentials (e.g., title, degrees, affiliation)	17.8%	36.4%	23.4%	13.1%	9.3%
Whether the Website content acknowledges different viewpoints (i.e., not biased)	15.5%	31.1%	34%	13.6%	5.8%
What the URL (i.e., .edu, .org, .gov) is and what it means	16.4%	19.2%	24%	20.2%	20.2%
Whether the Website has links to other resources on the Web	13.4%	30.8%	27.9%	17.3%	10.6%
Whether the Website has bibliography/reference list	27.9%	26.9%	16.4%	17.3%	11.5%

Graphic 8: Results of the question “When you find a source “out on the Web”, do you consider…” from the students’ survey



The third and last question of the first part of the survey was: “How often do you use each of these tools for preparing course-related assignments?”.

Table 15: Question: "How often do you use each of these tools for preparing course-related assignments?"

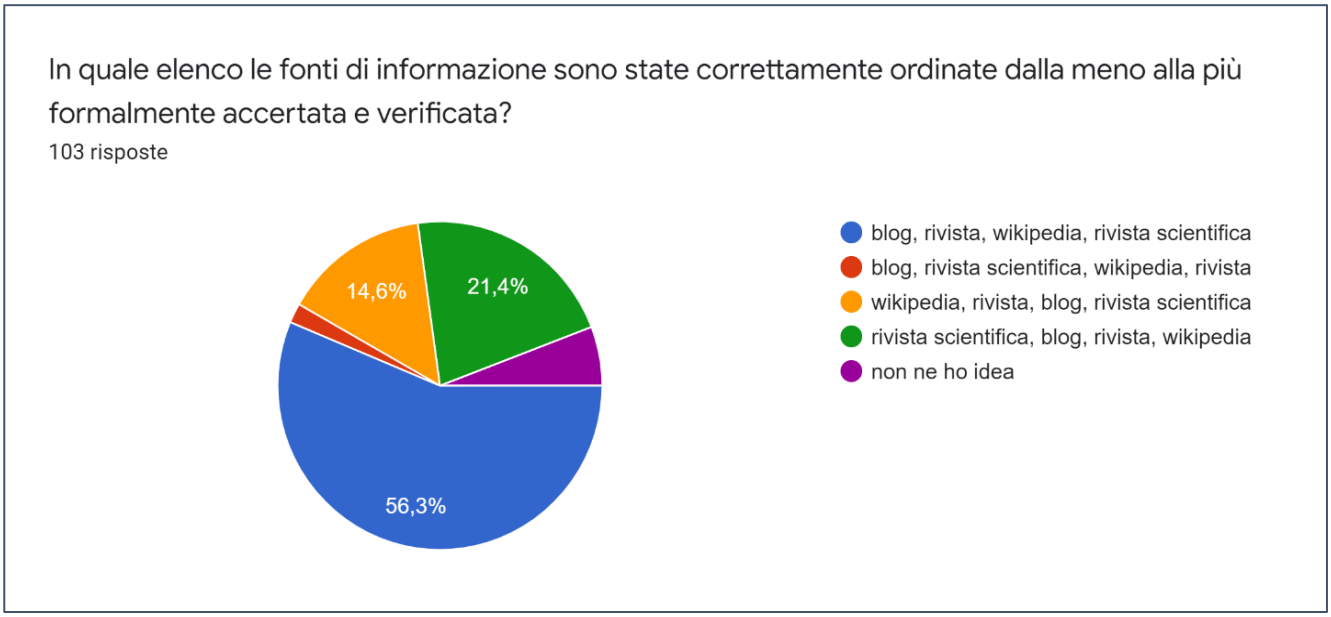
	Always	Often	Sometimes	Rarely	Never
Highlighting feature of word processors	11%	15.6%	15.6%	14.7%	43.1%
Track-changes feature of word processors	6.6%	5.7%	22.6%	19.8%	45.3%
Spell checkers	28.8%	26%	26%	10.6%	8.6%
Digital "sticky notes" (e.g., Post-It digital notes) 104	10.6%	19.2%	23.1%	15.4%	31.7%
Citation management tools (e.g., RefWorks, EndNote, EasyBib)	7.7%	6.7%	10.6%	22.1%	52.9%
Social bookmarking (e.g., digg, delicious)	1%	2.9%	5.8%	19.4%	70.9%
Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)	/	3.9%	11.6%	21.4%	63.1%
Document sharing programs (e.g., Google Documents)	21.7%	45.3%	20.8%	4.7%	7.5%
Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)	2.8%	7.3%	19.3%	17.4%	53.2%
Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)	/	5.7%	18.3%	18.3%	57.7%
Presentation tools (e.g., Power point, Prezi, etc.)	24.5%	28.2%	33.6%	7.3%	6.4%

Digital Information Literacy test

As previously mentioned, the second part of the survey called "Digital Information Literacy test" was a quiz test, composed of fourteen questions each with five alternative answers, between which the respondents were expected to guess the correct one.

The first question was: "In which list have the information sources been correctly ordered from the least to the most formally established and verified?" and the correct answer was "blog, magazine, Wikipedia, scholarly journal". The 56.3% of the students was able to guess the right option, the 37.9% selected a wrong answer, and a 5.8% said to have "No idea" about the answer.

Graphic 9: Results of the question "In which list have the information sources been correctly ordered from the least to the most formally established and verified?" from the students' survey

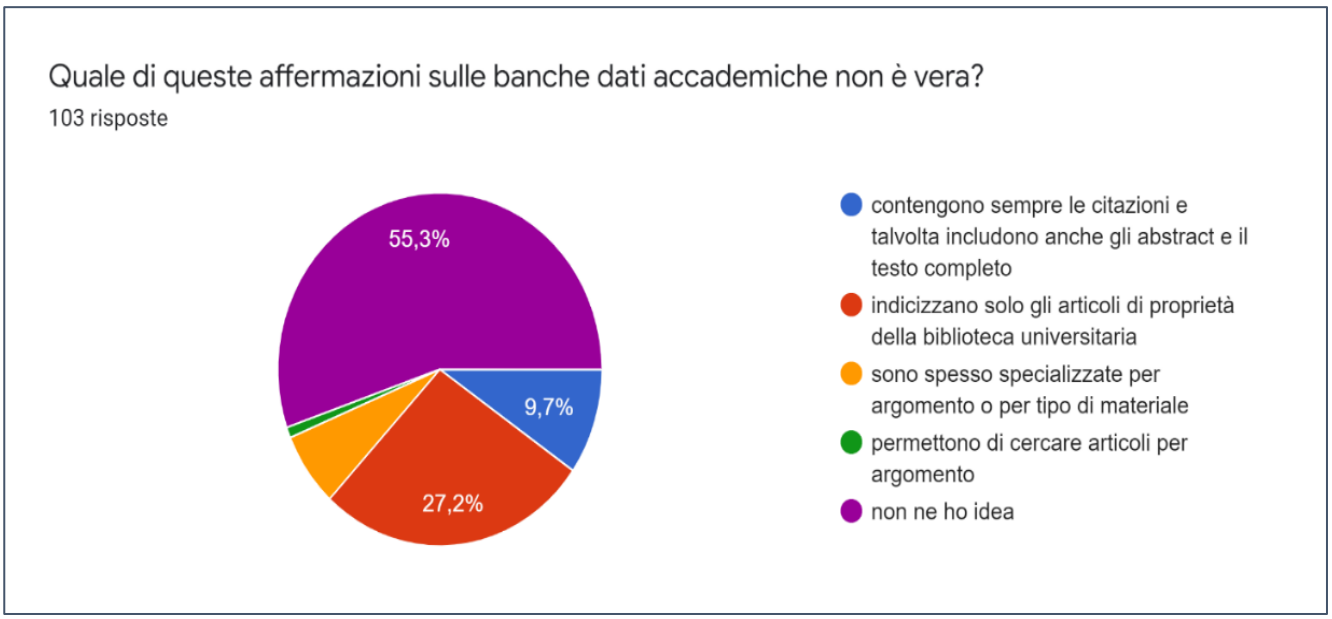


Secondly, in the following query the participants were asked to complete the sentence "Information of the web…" indicating the most appropriate one. The correct alternative ("Can sometimes be valuable but must evaluated carefully") was chosen by the 99% of the students, and one student (1%) selected "Is almost always trustworthy".

The third question was about libraries and was: "Which of these items can NOT be found in the library catalog?". Between journals, books, media, articles, and no idea at all, the right answer was "Articles", and it was selected by only an 8.7% of the respondents. The most clicked option was "Media" (53.4%), followed by a 26.2% of teachers stating they have no idea at all. The answers "Magazines" and "Books" were chosen respectively by an 11.7% and 0% of the respondents.

A question about Academic databases then followed and the results were quite differentiated. By answering the query: "Which one of these statements about Academic Databases is *not* true?", only a 27.2% of the respondents was able to choose the right alternative, which was "They only index items owned by your university library". It is to note that the majority of students (55.3%) answered "No idea at all", and the other respondents (17.5%) selected a wrong option ("They always contain citations and sometimes also include abstracts and full text" 9.7%; "They often specialize in subject or type of material" 6.8%; "They allow you to search for articles by subject" 1%).

Graphic 10: Results of the question "Which one of these statements about Academic Databases is *not* true?" from the students' survey



The fifth question of the test was: "You want to find information on the medicinal plant oregano, which is also known as wild marjoram in traditional herbal medicine. Its scientific name is Origanum Vulgare. What is the most appropriate search query in a database?". The 29.1% of the total stated to have no idea about the topic, the 22.3% chose an incorrect option, and the 48.5% of the students selected the right one ("oregano" OR "wild marjoram" OR "Origanum vulgare").

The next three queries concerned the same topic of the sixth, that is how to search for digital contents in a proper way. This time, the question was: "You are interested in the topic of sweetening and sweeteners, and you find the appropriate English terms: sweet, sweeten, sweetener, sweeteners, sweetening. What is the most appropriate search strategy?" and the 30.1% of the students indicated the correct option "Right-hand truncation, using the term sweet* (if applicable)", whereas the 41.7% of the respondents had no idea at all about it, and the rest chose wrong alternatives. ("An exact search, in this

case: “sweet sweeten sweetener sweeteners sweetening” 14.6%; “Using the operator AND, i.e.: sweet AND sweeten AND sweetener AND sweeteners AND sweetening” 11.7%; and “Searching with parenthesis: (sweet sweeten sweetener sweeteners sweetening)” 1.9%).

In the seventh question, the students were asked what the most appropriate search strategy is if they want to search for competitive intelligence on Google. The proper way to do it is to write the object between inverted commas (“competitive intelligence”) and only the 25.5% of the participants chose this option. The 48% of students selected the alternative of competitive intelligence with no punctuation signs, the 3.9% “+competitive +intelligence”, and the 22.5% stated to have no idea about it.

Graphic 11: Results of the question “You want to search for competitive intelligence on Google, what is the most appropriate search strategy?” from the students’ survey

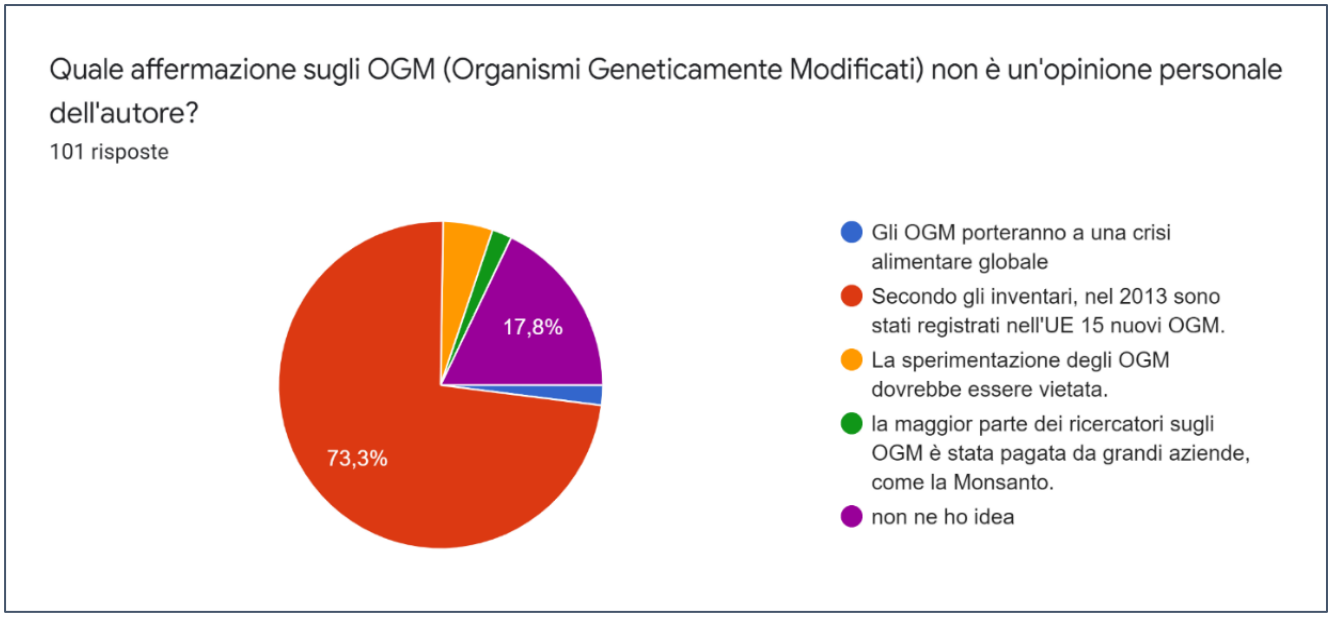
The last question about this topic was: “How do you search for pdf files of Harry Potter on Google?” and the corresponding answer was “filetype:pdf “harry potter””. The 33.3% of the respondents guessed the correct option, and a 15.7% indicated “No idea at all”. Between the incorrect alternatives, the most selected was “pdf harry potter” (32.4%), followed by “pdf “harry potter”” (9.8%) and “File pdf harry potter” (8.8%).

Changing the subject of questioning, the following query of the test concerned the functioning of the Google search engine. “Which of the following is correct about Google search results?” and, between the various definitions, the right one was “Search results are manipulated by algorithms which are based on search history, location, etc.”. This question appeared to be easier than the previous one

since the 78.4% of the students could select the correct answer. A 5.9% of the respondents chose “Hits on top are the best”, the 4.9% ticked the option “Everybody who conducts the same search gets exactly the same results”. The participants who had no idea about the topic were the 10.8% of the total.

Ten, the question was about opinions and facts. The text was: “Which statement on GMO (Genetically Modified Organisms) is not the author’s personal opinion?” and the clue was “According to inventories, 15 new GMOs were registered in the EU in 2013.”. The 73.3% of students answered correctly, nonetheless there was a surprising 17.8% of them who selected the option “No idea at all”. The 5% chose “GMO experimentation should be banned.”, the 2% answered “Most GMO researchers have been paid off by large corporations, such as Monsanto.” and another 2% “GMO will bring about a global food crisis.”. This means that more than the 25% of the respondents could not distinguish between the expression of a personal opinion and an objective assertion.

Graphic 12: Results of the question “Which statement on GMO (Genetically Modified Organisms) is not the author’s personal opinion?” from the students’ survey



Afterwards, it was asked to the participants what is the correct sequence of the elements in a research article, referring to the different parts in which it is normally divided. As it is well-known, the common structure of a research article is Abstract-Introduction-Methods-Results-Discussion-Conclusions-Bibliography, but, apparently, only the 67.3% of the students was sure about it, the 7.9% selected the alternative “Abstract-Bibliography-Introduction-Methods-Results-Discussion-

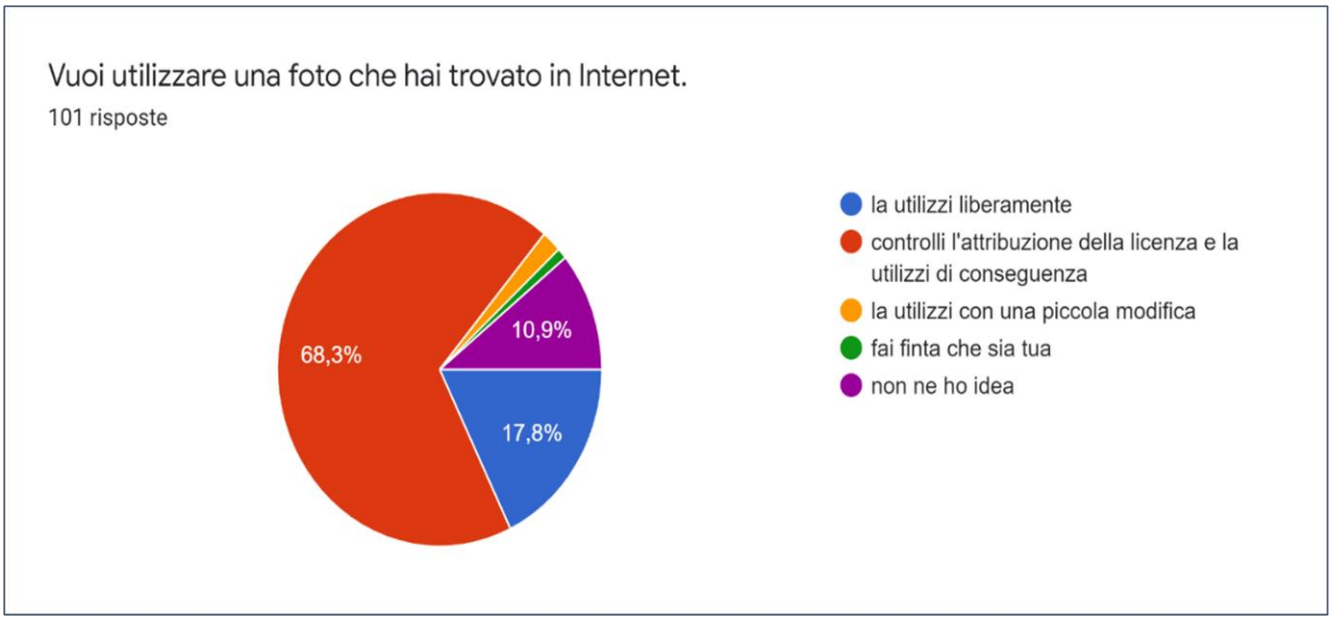
Conclusions”, whereas a 21.8% stated to have no idea of the correct answer. The 2% of students ticked “Introduction-Results-Discussion-Conclusions-Methods-Bibliography-Abstract” as an

answer, and one student (1%) chose “Abstract-Conclusions-Introduction- Bibliography-Methods-Results-Discussion”.

The twelfth question focused on the appropriate procedure for using information from the Internet. A 66% of the respondents indicated the right alternative, which was “You have to cite all the information taken from the web”. The 7% of the students selected the option “You only cite information which has a copyright sign ©”. The remaining ones affirmed to have no idea about it (18%) or chose a wrong answer (“You do not have to cite information from the Web, unless Website has an author” 5% and “ You do not have to cite information from the Web, as such information is freely available” 4%).

As shown by the results, the next challenge was much more complicated for the students compared to the teachers. Indeed, the 68.3% of them was able to guess that, when you want to use a photo you have found on Internet, you should check its license attribution and use it accordingly. The 17.8% of the respondents thought the photo can be used freely, the 2% believed to be able to use it with a small modification, another 1% selected “You pretend like it is yours”, and the 10.9% of the total stated to have no idea about it.

Graphic 13: Results of the question “You want to use a photo you have found on Internet.” from the students’ survey



The final question as well seemed commonly understood by the participants. The query was “Which of the following helps you to avoid plagiarism?”. The corresponding answer was “Use

quotation marks around the sentences you copied word-by-word and cite the source" and there was an agreement about it between the 79.2% of students.

Nevertheless, the 7.9% of respondents chose the option "Copy the sentences word-by-word and cite the source", a 4% "Use quotation marks around the sentences you copied word-by-word, no need to cite", another 2% picked "Change the sentences, no need to cite the source", and the rest of them said to have no idea of the answer (6.9%).

Resources for Digital Literacy Skills Development

As mentioned at the beginning of this work, the data taken from the DESI Index show that between European countries Italy ranks in the last positions for the diffusion of digital skills among the population. One of the reasons behind this lack of competences might be the absence of standards to assess people's digital literacy skills level, both inside and outside school. Currently, the only recognised certification that assesses digital competences in general is the ICDL (International Certification of Digital Literacy), which is still not mandatory to achieve for students or workers. Digital information literacy represents a specific module between those composing the ICDL Prime certification. Indeed, digital information literacy does not yet represent a self-standing field in Italian education, and standards to assess it are still absent in national programmes.

In 2019, one effort towards digital literacy in lower education was made by the Italian government, that promulgated a law (law 20th August 2019, n. 92) called "Insertion of civic education into teaching programmes". With this law, civic education becomes part of education at all levels, but only as a cross-cutting subject. Schools should reach a minimum of 33 hours of teaching per year, but the way of doing it remains quite flexible and unspecified. In the list of subjects that compose civic education, figures the topic of "Digital citizenship education", which according to the law includes arguments such as: digital information literacy; digital communication; use of public and private digital services; digital opportunities for personal growth and participatory citizenship; behavioural norms in the use of digital technologies and interaction in digital environments; digital identity, privacy and data protection; digital risks for health and well-being; cyberbullying. However, one current issue related to this law is that a national council to monitor the implementation of civic education in schools was supposed to be formed, but it has still not been created.

Regarding higher education, university students do not seem to be given specific regulations about digital information literacy, nor in its acquisition or assessment. Some universities such as the University of Padova and the University of Bologna have proposed some personal initiatives to their

students, like online or in-person courses about information literacy, but there is not a common framework to follow. About digital resources, for university students the academic databases and libraries of the universities they belong to are accessible and free, totally at their disposal during the time they are enrolled in university.

The same is for university teachers, who can access the university digital libraries and databases anytime and freely. Nevertheless, as seen through the questionnaire of this project, having access to digital contents does not correspond to be aware about it or be able to find and use information properly.

Recently, some specific courses about digital information literacy were provided to teachers. For instance, in summer 2022 the Italian Authority for Children and Adolescents launched a course directed to primary school teachers, aimed at displaying to them an educational kit about the digital world ("Geronimo Stilton. Discovering the digital world") to be used with the students. Another course was implemented by the “Italian Libraries Association” (AIB) between October 2020 and December 2021, and it was called “Libraries for digital and information welfare”. It consisted of a project to train the librarians in order to acquire the competences to subsequently support the growth of citizens' digital competence. After some training, the librarians were asked to formulate some proposals of activities and courses for the citizens to be implemented in libraries. The final objective was to disseminated the principles of creating a digital and information welfare, as expressed in the AIB Manifesto about information literacy. Moreover, in February-March 2022 the AIB, in collaboration with the Italian Ministry of Education, promoted a course for teachers, librarians and educators called “Civic Education and Information Literacy at School and in the Library”. The course was specifically about information literacy, with the aim of improving levels of use of information sources in teaching practices, online and in presence.

Finally, one digital platform and e-learning course is going to be implemented by the Italian government before the end of 2022. This course is created in the framework of the “Digital Republic”, a national strategic initiative promoted by the Minister of Technological Innovation and Digital Transition of the Italian government and aimed at reducing the digital divide and promoting education on future technologies. The project consists in the set up of an online platform called “ACCEDI - Environment for Aware Citizenship through Digital Education”, which will be opened to all citizens and will provide them with an online self-assessment and learning environment in which to follow digital competence development paths.

Recommendations

At the end of this work, it seems necessary to summarise the findings of the digital literacy skills questionnaire and to draw some final recommendations in accordance with them.

The results from the Italian teachers' survey revealed that the digital sources they use the most for their course-related studies are general serach engines (Google, Bing, Yahoo, etc.), Wikipedia, and governmental webistes; contrarily, they do not use much Google Scholar, library catalogs, and library databases. About the effective use of Web sources, when they find a Web source they do not really consider if the page contains useful links to other Web sources and a bibliography or references list. Furthermore, the tools they mostly use to prepare course-related assignments are presentation tools, document sharing programmes and spell checkers; they do not really use citation management tools, social bookmarking, alerting services and Wiki server providers for creating and sharing Web content.

The teachers' digital skills test highlighted that the most difficult arguments for them are those related to: identification of formally established and verified information sources; items to be found in the library catalogs; academic databases; search strategies (how to search for information on search engines). On the other hand, they seem quite knowledgeable about how to use information taken from the Web.

The Italian students' answers to the survey reveal that the digital sources they seem to use the most are general serach engines (Google, Bing, Yahoo, etc.), Wikipedia, and video sharing sites; they do not frequently use Google Scholar, library catalogs, library databases, social networking sites, and slidesharing sites. In Internet navigation, when they find a Web source they do not pay attention to what the URL is and what it means. Moreover, the tools they mostly use to prepare course-related assignments are presentation tools, document sharing programmes and spell checkers; they do not use much highlighting feature of word processors, track-changes feature of word processors, citation management tools, social bookmarking, alerting services, Wiki server providers for creating and sharing Web content, and blog server providers for creating and sharing Web content.

The students' digital skills test highlighted that the most difficult arguments for them are: identification of formally established and verified information sources; items to be found in the library catalogs; academic databases; search strategies (how to search for information on search engines). On the other hand, they seem quite knowledgeable about how to use information taken from the Web.

Comparing the results from the teachers' and the students' survey, the findings seems to attest that their strenghts and weaknesses in digital information literacy skills are considerably similar. This testifies to the need of providing some ad hoc courses to both Italian university teachers and students

about digital information literacy topics, especially those concerning reliable information research, academic libraries and databases, and Internet search strategies.

References

- Minister of Technological Innovation and Digital Transition (2021) "*Strategia nazionale per le competenze digitali – Piano operativo*". Available from: **https://repubblicadigitale.innovazione.gov.it/assets/docs/Piano-Operativo-Strategia-Nazionale-per-le-competenze-digitali.pdf** [Accessed on 07.07.2022]
- European Commission (2021) "*DESI Report 2021*". Available from: **https://digital-strategy.ec.europa.eu/en/policies/desi-italy** [Accessed on 07.07.2022]
- Official Gazette of the Italian Republic (20th August 2019) "*Introduzione dell'insegnamento scolastico dell'educazione civica*". Available from: **https://www.gazzettaufficiale.it/eli/id/2019/08/21/19G00105/sg** [Accessed on 14.07.2022]
- Italian Authority for Children and Adolescents (2022) "*Educazione digitale: formazione gratuita per docenti con il kit di Geronimo Stilton*". Available from: **https://www.garanteinfanzia.org/educazione-digitale-formazione-gratuita-docenti-della-primaria-con-il-kit-di-geronimo-stilton** [Accessed on 14.07.2022]
- AIB - Associazione Italiana Biblioteche (2016) "*Manifesto per l'Information Literacy*". Available from: **https://www.aib.it/struttura/commissioni-e-gruppi/gruppo-literacy/ilmanifesto/** [Accessed on 14.07.2022]
- AIB - Associazione Italiana Biblioteche (2021) "*Educazione civica ed Information Literacy a scuola e in biblioteca*". Available from: **https://www.aib.it/attivita/2021/94740-educazione-civica-ed-information-literacy-a-scuola-e-in-biblioteca-6/** [Accessed on 14.07.2022]
- Minister of Technological Innovation and Digital Transition (2022) "*The roadmap*". Available from: **https://repubblicadigitale.innovazione.gov.it/it/le-azioni/** [Accessed on 14.07.2022]

France

Digital Literacy in French Context/Introduction

Until the 2000s, the digital divide cited problems of access to computer tools and the Internet for economic and social reasons as factors of social exclusion. Today, this is no longer the case insofar as 73% of the French population has multiple equipment (among computer, tablet and smartphone) to access the Internet (CREDOC, 2021), and despite that the digital divide persists. This situation is exacerbated by the omnipresence of digital technology in our everyday life (work, studies, social relations, consumption, etc.).

In this sense, to the concept of digital divide is added the concept of digital inclusion that affect the entire population not only students. The omnipresence of digital technology requires new skills. Nowadays, digital literacy becomes a must-have skill. It is the technical and intellectual skills and ethical behavior that enable individuals to be autonomous and responsible in a variety of digital interactions.

Aware of the importance of Digital Literacy, the French government, through the Ministry of National Education, The Ministry of Higher education and the Ministry of Culture, is working for the development of digital literacy.

The Ministry of National Education and Youth

This Ministry is responsible for preparing the government's national education policy and national educational curriculum. It sets up the common basis of competences (Socle commun de connaissances, de compétences et de culture) that every student between the ages of 6 and 16 must know and master at the end of compulsory schooling (Ministère de l'Education Nationale et de la Jeunesse, n.d.–d). A website EDUSCOL provides resources for teachers to help them teach, learn and practice. We can observe that in the digital domain, the development of the skills necessary for the use of ICT is acquired within the framework of activities in various specialized fields. ICT is not an independent subject but integrated with all other subjects. The updated curriculum, launched in early September 2016, includes the study of computer code with algorithms and robotics in mathematics and engineering.

At the start of the 2013 school year, it sets up a plan for digital schools, the aim of which was to create a digital public service for education. This plan is not necessarily about digital literacy, but it

provides teachers and students with the needed digital resources. For this purpose, in February 2014, the Ministry of National Education created the Digital Education Department. As stipulated on their website, the mission of the Digital Education Department is to drive and support the digital transformation of the education system for the benefit of the educational community and its employees. It defines the development policy for the public digital education service… (Ministère de l'Education Nationale et de la Jeunesse, n.d.–a)

In 2019, the Minister of National Education reaffirmed that "*digital is one of the major levers of the educational policy we are conducting*." In his speech, he devoted a special part to the digital skills of students. He stated:

"The mastery of digital skills is essential to allow a reasonable and responsible use of digital tools and services and to guarantee a successful professional integration... In a society marked by an abundance of information, media and information literacy enables students to learn to become media and Internet users who are aware of their rights and duties and who have control over their digital identity. MIL aims to give students "access to a safe, legal and ethical use of the possibilities of publication and dissemination" and to make them capable of "referring to the basic rules of the right of expression and publication, in particular on the networks". It helps to prevent cyber-violence." (Ministère de l'Education Nationale et de la Jeunesse, n.d.–c)

On January 24, 2022, the Minister of National Education, Youth and Sports presented new initiatives for the generalization of media and information literacy. (Ministère de l'Education Nationale et de la Jeunesse, n.d.–b)

The Ministry of Culture

The ministry of Culture attaches great importance to media and information literacy as specified on his website "*In our society transformed by digital eco-systems and disrupted by crises that contribute to the unprecedented spread of false information and conspiracy theories, the deployment of a media and information literacy policy for all audiences is of fundamental importance to the Ministry of Culture.*

Giving the keys to understanding the media and digital worlds, reinforcing the ability to analyze the information conveyed by the media, the Internet and social networks, and developing critical thinking are major challenges in the fight against the abuses that affect the functioning of our democracy." (Ministère de la Culture, n.d.–b)

Since 2015, the Ministry of Culture has supported the development of media and information literacy (MIL) for all audiences, young people and adults, in all French territories. It has intensified its action from 2018 with the mobilization of increased financial resources and the implementation of a media literacy plan (Ministère de la Culture, n.d.–a).

The priorities and objectives of this plan are as follows:

- The decoding of infox, the mastery of orientation in the different sources of information, the understanding of the mechanisms of influence that are at play.
- Deconstructing conspiracy theories that are massively disseminated online and fighting against hateful content.
- The understanding of journalistic work, the functioning of the media and digital eco-systems
- Developing critical thinking skills in the face of scientific disinformation.

According to the website of the Ministry of Culture, the latter has allocated 8 million euros for image, media and information literacy.

As part of its media and information literacy (MIL) policy and actions and as an extension of its digital culture meetings dedicated to MIL, in particular those organized at the Bibliothèque nationale de France (2021)and the Maison de la radio (2018), the Ministry of Culture is organizing on October 13, 2022 at the Cité des sciences et de l'industrie a day of experience sharing and reflection on the problems of evaluating and measuring the impact of media and information literacy projects.

The Ministry of Higher Education (HE)

From 2015, the ministry of HE starts to support the Ministry of Education's plan for digital schools via the *Investments Program for the future.* It gives support to projects designed to promote a variety of experiments, approaches and methodologies, aimed at "demonstrating what works", developing shared expertise and creating a knock-on effect, as part of the digital policy led by the Minister of National Education, Higher Education and Research. The general objective of this program is to support projects led by a group of actors motivated by digital action in education and who propose, through a collective and ambitious approach, to create an "educational territory of digital innovation". (Ministère de l'Enseignement supérieur et de la Recherche, 2015).

In November 2015, the Secretary of State for Higher Education and Research mandated the National Digital Council (CNNum) to suggest an approach to facilitate the strategic transformation of higher education. Among these suggestions one is related to digital literacy: “Providing access to digital literacy and offering various training courses, from computer science to digital culture, digital humanities and "power to act", for all players in higher education and research, students, teacher-researchers and administrators” (Conseil National du Numérique, 2016).

Since that time, and through informal discussions with several university staff, that recommendation has not been implemented.

Methodology

A survey instrument was developed by the project partners. The first part of the survey referred to Information Literacy Practices of participants. In other words, their online information seeking and use behaviors and habits along with the digital tools they use. The second part, which was organized rather like a test which aimed to investigate the actual knowledge level of participants. So that the gaps in their knowledge, if there is any, can be specified and addressed. The survey was conducted between May-August 2022 in France. Questionnaire was sent out through student and faculty mailing lists. In total, 90 students and 32 faculty (teachers) participated in the survey.

Skill Gap Analysis

Digital Information Literacy is a set of skills which enables individuals to find, evaluate, use and communicate information effectively and ethically. Digital Information Literacy Skills are essential for success not only at school but also at the workplace and in daily life. It is a necessity for employability and competition in the labor market. These are the skills each and every individual needs to be equipped with in this digital age, in order to be able to survive. Consequently, each student should be taught these skills at school and each teacher should employ and master these skills, in order to be able to transfer them to their students.

The main aim of this part of the report is to present the findings of a survey which investigated the level of digital information literacy skills possessed by university students and faculty in France. The analysis of the findings will highlight their strengths and weaknesses, and also the potential needs that should be addressed in the course content on digital information literacy which will be developed within this project for these target groups.

Findings from the Student Survey

Part 1: Information Literacy Practices

The first part of the survey was composed of three questions, all of which were based on a 5-Point Likert Scale according to the frequency of action: Always, Often, Sometimes, Rarely, and Never.

Table 16: Frequency of the Use of Digital Information Sources – Students

	Always %	Often %	Sometimes %	Rarely %	Never %
General search engines (e.g., Google, Bing, Yahoo!)	70.0	25.6	3.3	1.1	0.0
Google Scholar	5.6	8.9	13.3	8.9	63.3
Library catalogs	5.6	12.2	16.7	18.9	46.7
Wikipedia	10.0	27.8	44.4	14.4	3.3
Other encyclopedias (Britannica, online or print)	3.3	7.8	22.2	22.2	44.4
Governmental Websites (.gov sites)	10.0	42.2	23.3	21.1	3.3
Library databases (e.g., WoS, EBSCO, JSTOR)	8.9	28.9	12.2	10.0	40.0
Blogs	4.4	8.9	25.6	36.7	24.4
Social networking sites (e. g. Facebook)	34.4	26.7	15.6	13.3	10.0
Video sharing sites (YouTube, TeacherTube, etc.)	35.6	26.7	24.4	8.9	4.4
Slide sharing sites (e.g., Slideshare)	5.6	22.2	21.1	18.9	32.2
Online forums	3.3	16.7	26.7	24.4	28.9

Students were first asked how often they use certain digital information sources (See Table 16 & Figure 1). Findings indicate that the most frequently used information access tools (generally regarded as secondary information sources) are search engines. Majority of students (about 96%) use general search engines, such as Google, always or often (70% + 26%) while only 4% use them sometimes or rarely. When it comes to the other information access tools, which are gateways to more scientific, quality and reliable content, such as Google Scholar, Library Catalogs and Library Databases, the frequency of usage drops down significantly. Only 6% of the students always use Google Scholar and Library Catalogs while 9% always use Library Databases. Those who use Google Scholar often are 9%, Library Catalogs 12%, Library Databases 29%. A high percentage of students never use Google Scholar, Library Catalogs and Library Databases (63%, 47% and 40% respectively).

As for the primary information sources, there seems to be a difference between Wikipedia and other encyclopedias (online or print). While about 38% of the participants use Wikipedia either always or often, only 11% use other encyclopedias always or often. While those who never use Wikipedia is only 3%, it is 44% for other encyclopedias.

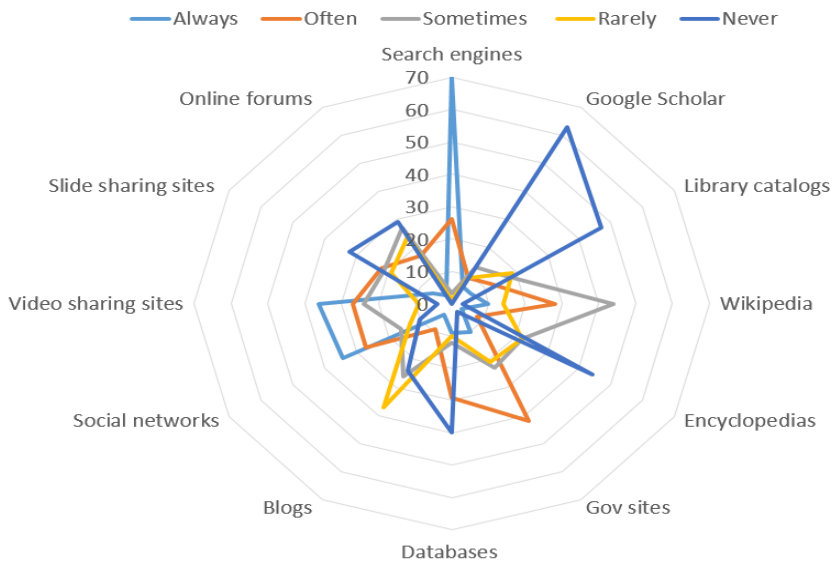
Findings indicate that, on one hand, about half of the participants (10% always + 42% often, in total 52%) use governmental websites, which are considered as highly reliable sources of information, on the other hand about one-fourth rarely or never (3% and 21% respectively, 24% in total) use these sites.

Less reliable information sources such as Social Networking Sites are always used by one-third of the participants. One-fourth use these sources often. In total more than half of the participants (61%) use Social Networking Sites for gathering information.

Video Sharing Sites also seem to be among frequently used sites by at least half of the participants (always 36%, often 27%, in total 63%).

In general, data reveals that students tend to use less reliable sources of information more frequently than the reliable ones.

Figure 1: Frequency of the Use of Digital Information Sources – Students



The second question in the first part of the survey was about the reliability of web sources. Mainly about which features of a website students have a habit to check before they use it (See Table 17 & Figure 2). Findings reveal that the URL of the websites is the most frequently checked feature by the students. Slightly more than one third (36%) of the participants always pay attention to the websites' URL, while further 27% do this often. Only 11% never check the URL. Currency of the website seems to be the second most frequently checked feature by the students. 29% always control the currency of a website while 38% control it often. Author's authority, presentation of different viewpoints, links to

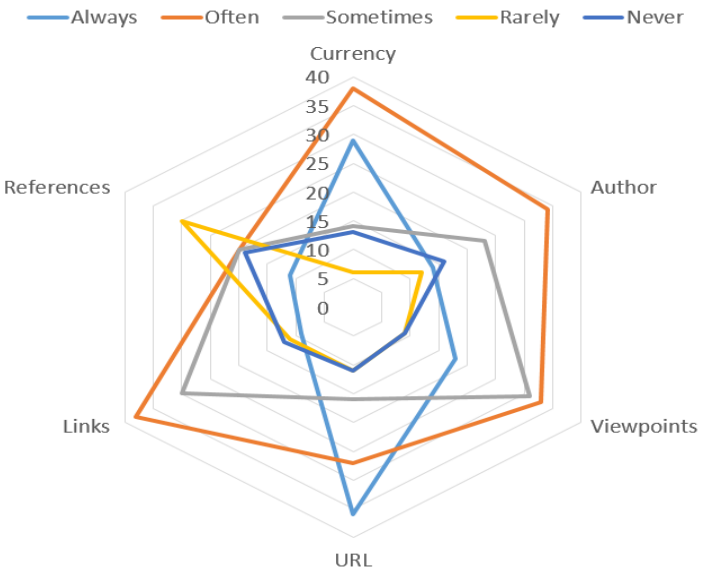
other web sources as well as having a bibliography or reference list are other features checked often by about one third of the participants. Majority do not pay much attention to these features.

Participants seem to be checking several features of a website before they use them for their assignments.

Table 17: Websites Features Checked by Students

	Always %	Often %	Sometimes %	Rarely %	Never %
How current the Website is	28.9	37.8	14.4	5.6	13.3
Author's credentials (title, degrees, affiliation)	14.4	34.4	23.3	12.2	15.6
Whether content refers different viewpoints	17.8	33.3	31.1	8.9	8.9
What the URL (i.e., .edu, .org, .gov) is	35.6	26.7	15.6	11.1	11.1
Whether it has links to the other Web resources	8.9	37.8	30.0	11.1	12.2
Whether it has bibliography/reference list	11.1	20.0	20.0	30.0	18.9

Figure 2: Websites Features Checked by Students



The third question in this section was about how often students use certain digital tools one might use while preparing course-related assignments (See Table 18 & Figure 3). Presentation Tools such as PowerPoint and Prezi, Document Sharing Programs such as Google Documents and the Spell Checkers are the most heavily and frequently used digital tools by students. In total 84% use presentation tools while 82% use document sharing programs and 73% use spell checkers either

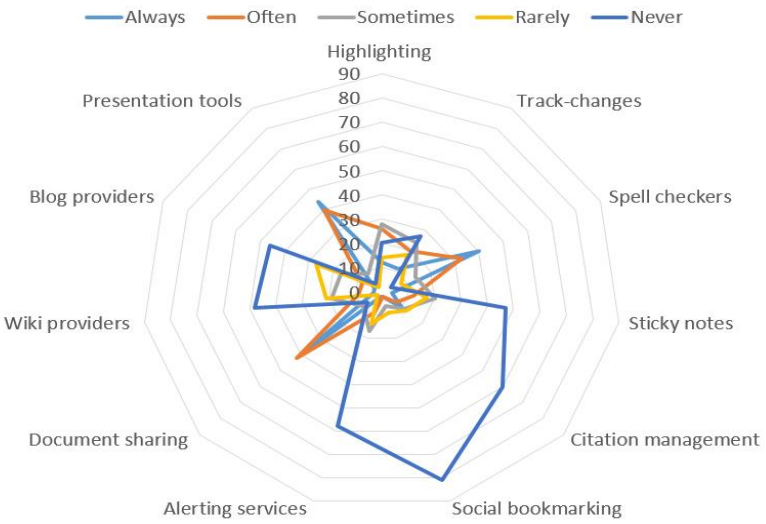
always or often. These three tools seem to be the most needed tools for classroom assignments. This is most probably because students are expected to carry out some teamwork which requires document sharing and generally working on the same document simultaneously and they are also expected to make presentations of their projects or assignments in the classroom. Since teamwork, neat and nice presentations as well as grammatically correct language use (including spelling) are among the evaluation rubrics of the majority of the faculty. These findings are rather expected.

Table 18: Digital Tools Used for Preparing Course-Related Assignments by Students

	Always %	Often %	Sometimes %	Rarely %	Never %
Highlighting feature of word processors	12.2	25.6	27.8	14.4	20.0
Track-changes feature of word processors	11.1	20.0	24.4	17.8	26.7
Spell checkers	40.0	33.3	14.4	7.8	4.4
Digital "sticky notes" (e.g., Post-It digital notes)	4.4	12.2	20.0	16.7	46.7
Citation management tools (RefWorks, EndNote)	10.0	6.7	11.1	12.2	60.0
Social bookmarking (e.g., digg, delicious)	2.2	2.2	5.6	8.9	81.1
Alerting services (Web feeds for new content)	2.2	8.9	16.7	14.4	57.8
Document sharing programs (Google Documents)	40.0	42.2	8.9	2.2	6.7
Wiki server providers (Wikia, PBWorks)	3.3	8.9	18.9	21.1	47.8
Blog server providers (Blogger, Wordpress)	3.3	7.8	16.7	26.7	45.6
Presentation tools (e.g., Power point, Prezi, etc.)	44.4	40.0	8.9	2.2	4.4

As for the least used tools, Social Bookmarking is on top of the list. 81% of the students never use it. It is rather unexpected since findings also indicate that search engines and websites are heavily used by students. Citation Management Tools are the second least used (60% never and 12% rarely use them). This is also rather unexpected since preparing assignments at university level requires preparation of nicely done bibliographies and correctly made references. Highlighting and Track-change features of word-processors are always or often used by only one-third of the students. Sticky Notes, Alerting Services, Wiki and Blog Server Providers are less frequently used tools by the majority.

Figure 3: Digital Tools Used for Preparing Course-related Assignments by Students



Part 2: Digital Information Literacy Test

The second part of the survey was organized like a test composed of twelve multiple choice questions, each with five alternative answers, among which participants asked to tick the correct one (See Table 19 & Figure 4).

The highest success with 91% correct answers was for the second question (Q2) which is about the reliability of the information on the web. 7% did not answer it correctly and only 2% indicated that they had no idea about the subject. The second most successful question with 70% correct answers was a question about the ranking of the Google search results (Q9). 13% of the students ticked a wrong answer and 17% said they had no idea on this issue. These findings are in line with the findings from the first part of the survey. Students refer and use search engines and websites very frequently; they are mostly aware of the reliability issues regarding web sources and they check many different features of websites before using.

Table 19 : Test Results – Students

	Correct answer %	Wrong answer %	No idea %
Reliability of information sources (Q1)	31.1	53.3	15.6
Reliability of the information on the web (Q2)	91.1	6.7	2.2
Content of the library catalogue (Q3)	5.6	52.2	42.2
Features of academic databases (Q4)	17.8	34.4	47.8
Search query formulation in a database–Boolean operators (Q5)	24.4	45.6	30.0
Search strategy for the words from the same root-truncation (Q6)	16.7	43.3	40.0
Search strategy on Google-Noun clause (Q7)	37.8	48.9	13.3
Search strategy on Google-Search for a specific file type (Q8)	27.8	60.0	12.2
Order of Google search results (Q9)	70.0	13.3	16.7
Using & citing information from the Internet (Q10)	47.8	27.8	24.4
Using & citing images from internet (Q11)	65.6	24.4	10.0
How to avoid plagiarism? (Q12)	58.9	21.1	20.0

Findings also indicate that more than half (59%) of the participants have a clear idea about what plagiarism is and how to avoid it (Q12). However, still 41% of the participants either do not know how to avoid plagiarism or have no idea about it. 66% seem to know that they should cite images (Q11) and 47% know that they should cite information (Q10) from the Internet while using and referring to them in their assignments. Data also shows that about 40% to 60% of the students still have some problems with citing Internet sources and the concept of plagiarism.

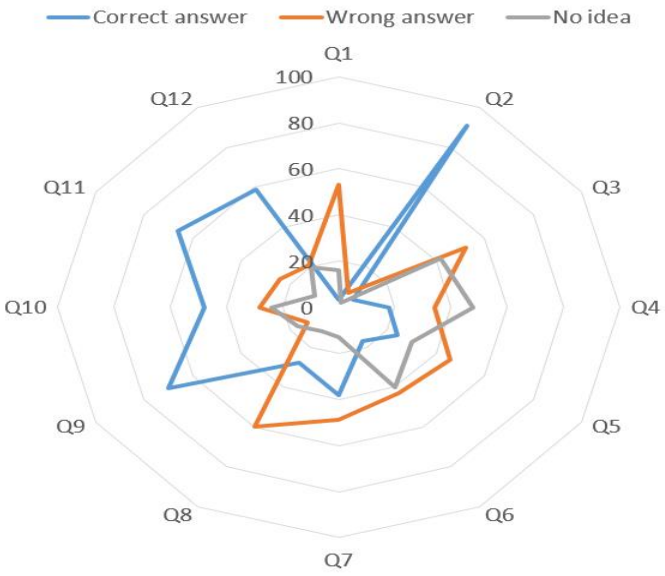
Success rate for the rest of the questions seems lower than 38%. 31% of the students are knowledgeable about the reliability of different kinds of information sources (Q1), while 53% failed answering this question correctly and 16% said they had no idea at all.

Students' level of knowledge on secondary information sources such as Library Catalogs and Library Databases seem also problematic. Since only 6% answered the question about the content of Library Catalogs (Q3) correctly (52% of the answers were incorrect and 42% of the students did not have an idea). Only 17% of the students answered the question about Library Databases correctly, yet the remaining 83% either had no idea or failed to provide a correct answer. These findings seem to be in line with the findings from the first part of the survey. Library Catalogs and Databases are the least used sources by the students. These findings require careful attention. Because at university level one needs to use both the university library's catalog and the databases library subscribed to, to be able to access the deep web. These are the information sources which provide access to reliable and scholarly

information which cannot be accessed through general search engines. However, findings reveal that students do not know much about these sources and they do not use them frequently.

Other four questions in this section (Q5 to Q8) were about search strategies which are important to make effective and efficient online searches on the web or databases and library catalogs. The highest success rate was 38% and the lowest 17%. There seems to be room for improvement here. Students use search engines frequently to access information, yet they do not possess effective search skills.

Figure 4: Test Results - Students



Findings from the Faculty Survey

Part 1: Information Literacy Practices

Identical with the student's survey, the first part of the faculty survey instrument was composed of three questions, all of which were based on a 5-Point Likert Scale according to the frequency of action: Always, Often, Sometimes, Rarely, and Never.

Table 20: Frequency of the Use of Digital Information Sources – Faculty

	Always %	Often %	Sometimes %	Rarely %	Never %
General search engines (eGoogle, Bing, Yahoo!)	75.0	12.5	0.0	3.1	9.4
Google Scholar	34.4	21.9	28.1	9.4	6.3
Library catalogs	46.9	18.8	25.0	6.3	3.1
Wikipedia	21.9	31.3	21.0	25.0	0.0
Other encyclopedias (Britannica, online or print)	3.1	6.3	37.5	31.3	21.9
Governmental Websites (.gov sites)	9.4	28.1	28.1	25.0	9.4
Library databases (e.g., WoS, EBSCO, JSTOR)	65.6	18.8	12.5	3.1	0.0
Blogs	9.4	12.5	9.4	46.9	21.9
Social networking sites (e. g. Facebook)	15.6	28.1	15.6	9.4	31.3
Video sharing sites (YouTube, TeacherTube, etc.)	18.8	12.5	31.3	25.0	12.5
Slide sharing sites (e.g., Slideshare)	0.0	18.8	40.6	12.5	28.1
Online forums	3.1	9.4	28.1	31.3	28.1

Faculty were asked how often they use certain digital information sources (See Table 20 & Figure 5). Findings indicate that the most frequently used information access tools (generally regarded as secondary information sources) by the faculty are also search engines. Majority of the faculty (88%) use general search engines such as Google always or often (75% + 13%, in total 88%) while only 3% use them rarely and 9% never use them. When it comes to the other information access tools, which are gateways to more scientific, quality and reliable content, such as Google Scholar, Library Catalogs and Library Databases, the frequency of usage drops down slightly however still remains remarkably higher than students' usage rate. About one-third (34%) always use Google Scholar, about half (47%) always use Library Catalogs, and more than half (66%) always use Library Databases. When the usage frequencies always and often put together figures rise up to 54%, 66% and 85% (Google Scholar, Library Catalogs and Library Databases respectively).

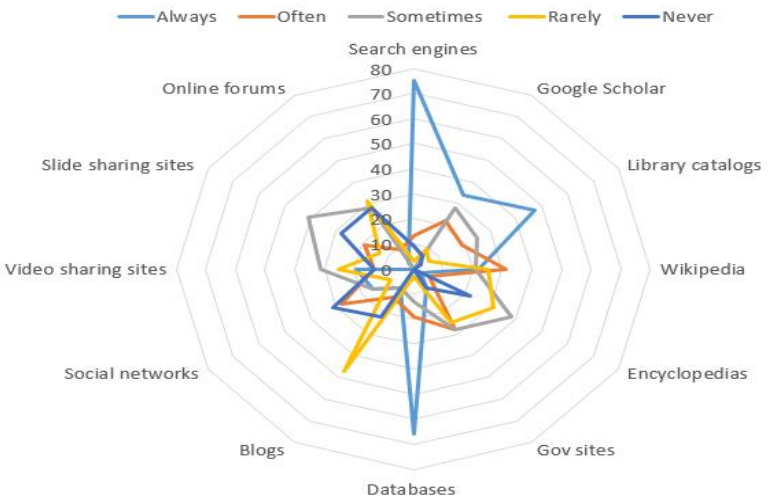
Data reveals that a very low percentage of faculty never use Google Scholar and Library Catalogs (6% and 3% respectively). However, no one ticked the option never for Library Databases. That means all faculty use databases which are essential to access scholarly publications for their scientific work. Majority use them always or often. Findings also indicate that those who use Library Catalogs and Google Scholar always or often are not as high as those who use Library Databases.

As for the primary information sources, data shows that all faculty use Wikipedia despite the fact that there are a lot of discussions about its reliability as an information source in academia. There seems to be a difference between the usage rates of Wikipedia and other encyclopedias (online or print). While about half of the participants use Wikipedia either always or often, only 9% use other encyclopedias always or often. Furthermore, about half of the faculty either do not use them at all or

use them rarely. About one-third of the participants use governmental websites frequently (9% always and 28% often, in total 37%) which are considered as highly reliable sources of information, while one-third use them sometimes and the one-third use them either rarely or never. Relatively less reliable sources such as Social Networking Sites are frequently (always + often) used by 44% of the participants. Video Sharing Sites seems to be used by one-third of the participants (19% always + 13% often), while slide sharing sites seem not equally popular.

In general, data reveals that faculty tend to use more reliable secondary sources such as Library Databases, Library Catalogs and Google Scholar in comparison with students. While they use reliable sources such as gov.sites and encyclopedias less frequently, they tend to use less reliable sources such as Social Media more frequently.

Figure 5: Frequency of the Use of Digital Information Sources – Faculty

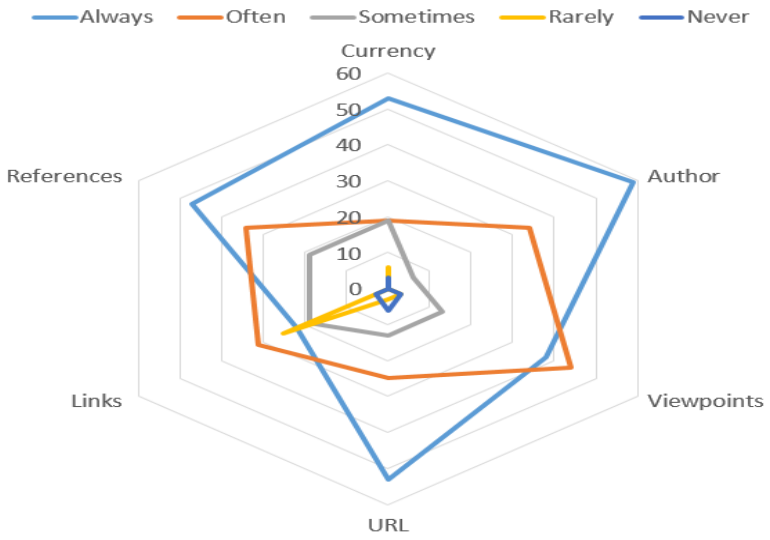


The second question of the survey was about the reliability of web sources. Mainly about which features of a website participants check before they use it (See Table 21 & Figure 6). Findings reveal that author's authority is the feature always checked by 59%, and often checked by 34% (in total by 93%) of the faculty. Following the author's authority, URL, currency of the website and references are the features most frequently checked. Data reveals that faculty pay more attention to the authority, references and the presentation of different viewpoints than the students.

Table 21: Website Features Checked by Faculty

	Always %	Often %	Sometimes %	Rarely %	Never %
How current the Website is	53.1	18.8	18.8	6.3	3.1
Author's credentials (title, degrees, affiliation)	59.4	34.4	6.3	0.0	0.0
Whether content refers different viewpoints	37.5	43.8	12.5	3.1	3.1
What the URL (i.e., .edu, .org, .gov) is	53.1	25.0	12.5	3.1	6.3
Whether it has links to the other Web resources	21.9	31.3	18.8	25.0	3.1
Whether it has bibliography/reference list	46.9	34.4	18.8	0.0	0.0

Figure 6: Website Features Checked by Faculty



The third question of the survey was about how often faculty use certain digital tools while using and communicating information (See Table 22 & Figure 7). Presentation Tools such as PowerPoint and Prezi, and Spell Checkers are the most heavily and frequently used digital tools by the faculty. In total 90% use presentation tools while 84% use spell checkers either always or often. This is not surprising since their main job is about making presentations either in classrooms or at conferences and they publish. Effective presentations require using several and advanced presentation tools, publications require correct use of grammar. Another frequently used tool is Document Sharing Programs. 62% of the faculty either always or often use them. This is also expected, since it is necessary to share documents with students and fellow researchers. Data indicates similarities between

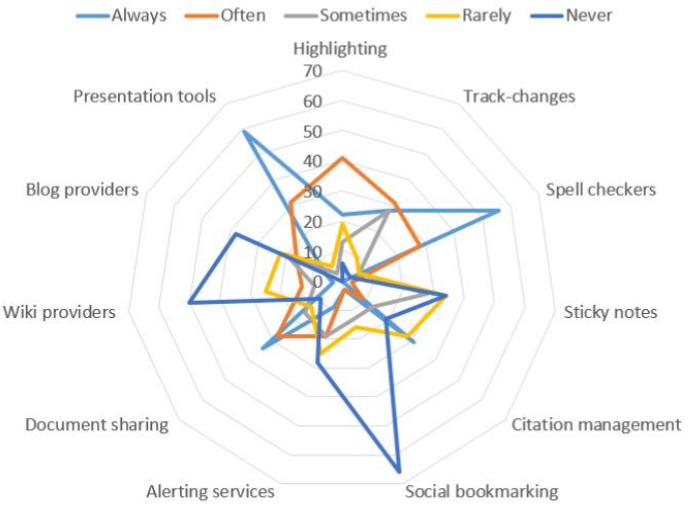
students and faculty regarding the mostly used digital tools. However, there are also some differences. Track-changes and Highlighting features of the word processors and Citation Management Systems are used by the faculty more often than the students. Track-changes and Highlighting are important features especially while correcting student work or carrying out tasks as a referee on fellow researchers' scientific work. Citation Management is necessary to keep track of references faculty use in their scientific work effectively and efficiently.

Table 22: Digital Tools Used by Faculty

	Always %	Often %	Sometimes %	Rarely %	Never %
Highlighting feature of word processors	21.9	40.6	12.5	18.8	6.3
Track-changes feature of word processors	28.1	31.3	28.1	9.4	3.1
Spell checkers	56.3	28.1	6.3	6.3	3.1
Digital "sticky notes" (e.g., Post-It digital notes)	0.0	3.1	28.1	34.4	34.4
Citation management tools (RefWorks, EndNote)	31.3	9.4	12.5	28.1	18.8
Social bookmarking (e.g., digg, delicious)	3.1	3.1	12.5	15.6	65.6
Alerting services (Web feeds for new content)	9.4	18.8	18.8	25.0	28.1
Document sharing programs (Google Documents)	34.4	28.1	15.6	12.5	9.4
Wiki server providers (Wikia, PBWorks)	3.1	12.5	9.4	25.0	50.0
Blog server providers (Blogger, Wordpress)	6.3	15.6	18.8	21.9	37.5
Presentation tools (e.g., Power point, Prezi, etc.)	59.4	31.3	3.1	6.3	0.0

As for the least used tools, Digital Sticky Notes is on the top of the list. It is followed by Social Bookmarking Sites. Alerting Services, Wiki and Blog Server Providers are also among the less frequently used tools by the majority.

Figure 3: Digital Tools Used by Faculty



Part 2: Digital Information Literacy Test

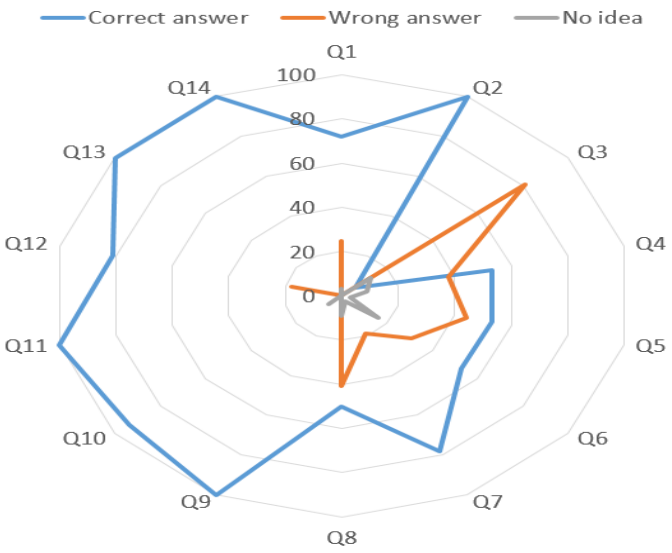
Similar to the students' survey, the second part of the faculty survey was organized like a test composed of multiple-choice questions, each with five alternative answers, among which they were expected to tick the correct one (See Table 23 & Figure 8).

Faculty's survey included two extra questions. These two questions (Q10 & Q11) were about the order of the components of a scholarly article and making a difference between opinion statements and facts. These are regarded as higher levels of information literacy skills which are required especially for the communication of information and should be mastered mainly by researchers, in other words by the faculty. Expectedly, the success rate of the faculty from the test was higher than the success rate of students. Five of the questions were answered correctly by all participants (100%). These were the questions related to the reliability of the information on the web, ranking of the Google search results (functions of algorithms), sequence of the elements in a research article, using & citing images from the Internet and how to avoid plagiarism. Distinguishing opinions from facts, using & citing Internet sources, searching for noun-clauses and reliability of information sources were the questions about or over three-fourth of the faculty answered correctly.

Table 23: Test Results - Faculty

	Correct answer %	Wrong answer %	No idea %
Reliability of information sources (Q1)	71.9	25.0	3.1
Reliability of the information on the web (Q2)	100.0	0.0	0.0
Content of the library catalogue (Q3)	6.3	81.2	12.5
Features of academic databases (Q4)	53.1	37.5	9.4
Search query formulation in a database–Boolean operators (Q5)	53.1	43.8	3.1
Search strategy for the words from the same root-truncation (Q6)	53.1	31.3	15.6
Search strategy on Google-Noun clause (Q7)	78.1	18.8	3.1
Search strategy on Google-Search for a specific file type (Q8)	50.0	40.6	9.4
Order of the Google search results (Q9)	100.0	0.0	0.0
Statements on personal opinion-opinions of others (Q10)	93.8	0.0	6.3
Sequence of the elements in a research article (Q11)	100.0	0.0	0.0
Using & citing information from the Internet (Q12)	81.3	18.7	0.0
Using & citing images from internet (Q13)	100.0	0.0	0.0
How to avoid plagiarism? (Q14)	100.0	0.0	0.0

Figure 8: Test Results - Faculty



However, there seems to be a serious problem with the knowledge of the content of the Library Catalogs (81% wrong, 13% no idea, in total 94%). Faculty use library catalogs, however it seems like they are not totally aware of its coverage. Similarly, although faculty use Library Databases frequently, they do not know their coverage well. About half of the participants either provided the wrong answer or said they do not have an idea for the database question. Furthermore, data reveals a knowledge gap regarding Search Strategies which are very important to retrieve relevant online information.

Resources for Digital Literacy Skill Development

In France, no standard has been developed for digital literacy or information literacy. Most of the initiatives concerning Digital Literacy are either private with the help of public found or developed by public bodies. The French academic librarians contribute to the training on digital literacy but curiously there are not many online course on their website.

Digital Literacy Initiatives

Although academic librarians are actively involved in training students in digital literacy, there are surprisingly few online courses available on this topic. Most of the time, resources are limited to a description of the databases available in the library and how to use them. For this reason, the following is a list of organizations and online resources that are primarily relevant to schools. We assume that a student who has acquired skills in school will be able to use them in university. In addition, these resources can be useful as an example to follow. In the following we will present the most representative ones without claiming to be exhaustive. These initiatives will be presented in alphabetical order.

Canal-u.tv

Created in 2001, Canal-U is the audiovisual platform designed to meet the needs of scientific audiovisuals. Canal-U is a national higher education and research system supported by the Ministry of Higher Education and Research and managed by the Fondation Maison des Sciences de l'Homme. Canal-U is part of the open science access movement developed in accordance with the FAIR principles. Some courses deal with digital literacy (see below)

This platform offers many courses and conferences in French about digital literacy.

CLEMI

CLEMI (Centre pour l'éducation aux médias et à l'information) is responsible for media and information education (MIE) throughout the French education system.

Its mission is to promote, both at the national level and in the academies, in particular through training activities, the pluralist use of information media in education in order to foster a better understanding by students of the world around them while developing their critical faculties.

Educavox

Educavox gathers different actors, notably associations and teachers. According to the legal mention this initiative has been conceived in 2009, created in 2010 following the Entretiens des Civilisations Numériques (2005/2007) [...] with the help of public, private and associative support,

www.educavox.fr offers the French-speaking educational ecosystem a dynamic formula for understanding and accompanying the transformation of our society through digital technology, particularly in the field of education, by means of debates, resources, and proposals and the development of practices. Educavox is managed by An@é (the National Association of School Actors). Since its creation in 1996, An@é has been acting in the field of education, with all the actors, with regard to:

- the evolution of uses and professions,
- the impact of the media and digital technology on cultures and education,

the impact of globalization on the change in societies.

EDUCNUM: Digital education for everyone

In May 2013, the CNIL[5] initiated a group of diverse actors - from the world of education, research, the digital economy, civil society, corporate foundations and other institutions - to promote and support actions aimed at fostering a genuine "digital citizen culture".

This group has the following missions

- To initiate and promote actions aiming at raising awareness and training all publics, especially the youngest, to a responsible and enlightened use of digital technologies;
- To encourage the exchange of experiences between the different actors involved in digital education, and this by promoting dialogue between generations;
- To inform the educational community (teachers, associations, extracurricular activities, parents) about the resources and actions of the collective in the field of digital education;
- Relay and contribute to the visibility of the actions undertaken by the members of the collective, both at the national and international levels;
- Communicate on the actions carried out by public statements, after consultation and concertation of the members and make proposals and recommendations to the public authorities;
- To associate the economic actors to the importance of developing a general digital culture.

Other platforms exist, but they do not concern directly our project since they are for primary school students such as Prim à bord: The digital portal for the first degree, or totally technic oriented EdTech France, <Class'Code>, etc.

[5] French data protection authority

Online Resources & Guides

In the following, we selected some interesting resources from the previous platform.

Digital Citizen Education Kit (French)

Published in 18/01/2021, this educational kit is authored by the expert of EDUCNUM. Below the outline:

- How do I delete a photo on a social network?
- At what age can my child watch a screen?
- How can I distinguish between legal and illegal sites?
- What are the rights of Internet users?
- What is the role of the media in relation to equality issues?
- Does freedom of expression have limits?

Guide to Using Social Networks in The Classroom (French)

Published in 2019, this guide is prepared by CLEMI and Academie de Paris. As specified on the website of Paris academy, this guide gives rules of good digital use for ethical, responsible, reliable and secure behavior on the Internet.

It provides teachers with concrete solutions for conducting their educational projects on social networks, while reminding them of the basic steps and precautions to be taken in order to conduct them in compliance with legal rules (freedom of expression, image and content distribution rights, personal data).

Its ambition is twofold:

- To help teachers understand and master the steps necessary to set up an educational use of one or more social networks;
- To present inspiring examples of pedagogical use of social networks in the classroom.

199 Educational Resources (FR)

Presented by the CLEMI, these resources are presented by typology, grade level and thematic. Mainly resources concern media and information literacy, including digital literacy. Many theatrics are covered like Discover the media, Information and citizenship, Get information with the internet, Fake news, etc.

Recommendations/Conclusions

As presented in the introduction, media and information literacy education is at the heart of the concerns of different French ministries. Since 2013, the government has put in place several plans in favor of school digitization, which we didn't noticed in the case of universities.

Nevertheless, and according to our survey analysis, we cannot say that students in France have enough skills in Digital Literacy despite the Government investment. A 2018 international survey organized by the IEA International Association for the Evaluation of Educational Achievement (Fraillon et al., 2020) reveals that French students occupy a median position in Digital Literacy. The best countries being Denmark and the Republic of Korea. This study is based on the 4 sub-dimensions of literacy which are: Understanding how to use a computer; Information gathering; Information production; Digital communication.

Digital Information Literacy Skills are essential for success at school, at the workplace and in daily life. Every individual needs to be equipped with these skills to be able to survive in the digital age. Equipping individuals with Digital Information Literacy Skills requires training and a well-planned training requires analysis of needs of the target groups.

A survey carried out within the DIGI-Key Project to investigate the level of digital information literacy skills possessed by university students and faculty in partner countries to discover their training needs. In this report findings from the French survey were presented.

The analysis of the survey findings not only provide information about the information behavior and habits of students and faculty but also highlight the knowledge gaps and needs for training. French findings along with the findings from other partner countries are expected to be useful for content development for the Digital Information Literacy Course, the main outcome of the DIGI-Key Project.

Findings of the French survey reveals that students frequently use search engines to access information however they use the other information access tools, which are gateways to more scientific, quality and reliable content, such as Google Scholar, Library Catalogs and Library Databases, significantly less. According to the test results, students' level of knowledge on Library Catalogs and Library Databases seems problematic. This could be the reason why Library Catalogs and Databases are the least used sources by the students. Findings indicate that students do not know much about these sources and they seldomly use them. It is widely known that everyone first uses

search engines when they need information, however it is also known that search engines do not provide access to the deep web. There seems to be a knowledge gap to address here.

Students refer and use search engines and websites very frequently. Test results show that the majority is aware of the ranking of the Google search results (functions of algorithms) and the reliability issues regarding web sources. They check many different features of websites before using them. However, they do not have the habit of checking some very important features such as the authority and references. They also do not use Social Bookmarking and Alerting Services much, which are useful for effective use of the web. It seems like students can benefit from a training which explains more about the importance of authority and references for the evaluation of websites and how to use Alerting Services and Social Bookmarking tools.

As for the search strategies which are important to make effective and efficient online searches on the web or databases and library catalogs, the success rate on the test was low. Students use search engines frequently to access information, yet they do not possess effective search skills. There seems to be room for improvement here.

In general, data reveals that students tend to use less reliable sources of information more frequently than the reliable ones. Test results show that the majority failed answering the question about the reliability of the information sources. It is possible that students do not have detailed knowledge about information sources (their content, reliability, authority, etc.). This is another knowledge gap determined through the survey.

As for the digital tools, Presentation Tools, Document Sharing Programs and the Spell Checkers seem to be the most heavily and frequently used digital tools by students. There seems to be room for training on other tools which are not widely used.

Findings also indicate that an important portion of the students do not know how to avoid plagiarism and have problems with citing Internet sources.

Consequently, need analysis indicate the following subject areas to be addressed during the content development for a Digital Information Literacy Course for students: Information sources (both primary and secondary), search strategies, intellectual property rights and ethical use of information, evaluation of information sources, digital tools which can be used while using and communicating information.

Findings of the faculty survey provided further information about the general situation. The most frequently used information access tools by the faculty are also search engines, however other access tools such as Google Scholar, Library Catalogs and Library Databases are also frequently used.

As for the primary information sources, data show that all faculty use Wikipedia despite the fact that there are a lot of discussions about its reliability as an information source in academia. Use of other encyclopedias (online or print) and government websites, which are considered as highly reliable sources of information, are significantly low. Relatively less reliable sources such as Social Networking Sites and Video Sharing Sites are among relatively frequently used sources. In general, data reveals that faculty tend to use more reliable secondary sources such as Library Databases, Library Catalogs and Google Scholar in comparison with students. While they use reliable sources such as gov.sites and encyclopedias less frequently, they tend to use less reliable sources such as Social Media more frequently.

The author's authority, URL, currency of the website and references are the features most frequently checked by faculty to evaluate websites. Data reveals that faculty pay more attention to the authority, references and the presentation of different viewpoints than the students.

Presentation Tools, Spell Checkers and Document Sharing Programs are the most heavily and frequently used digital tools by the faculty. Data indicates similarities between students and faculty regarding the mostly used digital tools. However, there are also some differences. Track-changes and Highlighting features of the word processors and Citation Management Systems are used by the faculty more often than the students. As for the least used tools, Digital Sticky Notes is on the top of the list. It is followed by Social Bookmarking Sites. Alerting Services, Wiki and Blog Server Providers are also among the least frequently used tools by the majority.

Expectedly, the success rate of the faculty from the test was higher than the success rate of the students. However, there seems to be a serious problem with the knowledge of the coverage of the Library Catalogs. Faculty use library catalogs, however it seems like they are not totally aware of its coverage. Similarly, although faculty use Library Databases frequently, they do not know their coverage well. Furthermore, data reveals a knowledge gap regarding Search Strategies which are very important to retrieve relevant online information.

Consequently, it can be summed up that faculty's Digital Information Literacy Skills are higher than the students. Information sources (both primary and secondary), digital tools, search strategies are the areas where some knowledge gap was detected.

References

Conseil National du Numérique. (2016). *Une nouvelle dynamique pour la transformation numérique de l'Université*. https://cache.media.enseignementsup-recherche.gouv.fr/file/strategie_numerique_pour_l_enseignement_sup_/03/9/DP_CNNum-ESR_587039.pdf

(2021). *Baromètre du numérique : Edition 2021: Enquête sur la diffusion des technologies de l'information et de la communication dans la société française.* CREDOC. https://www.credoc.fr/publications/barometre-du-numerique-edition-2021

Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Duckworth, D. (2020). *Preparing for Life in a Digital World: Iea International Computer and Information Literacy Study 2018 : International Reort* (1st ed. 2020). *Springer eBook Collection*. SPRINGER NATURE. https://doi.org/10.1007/978-3-030-38781-5

Ministère de la Culture. (n.d.–a). *Education au médias et à l'information: Un engagement prioritaire du ministère de la Culture*. Retrieved September 12, 2022, from https://www.culture.gouv.fr/Thematiques/Education-aux-medias-et-a-l-information/Education-au-medias-et-a-l-information-un-engagement-prioritaire-du-ministere-de-la-Culture

Ministère de la Culture. (n.d.–b). *Education aux médias et à l'information*. Retrieved September 12, 2022, from https://www.culture.gouv.fr/Thematiques/Education-aux-medias-et-a-l-information

Ministère de l'Education Nationale et de la Jeunesse. (n.d.–a). *Direction du numérique pour l'éducation [DNE]*. Retrieved September 13, 2022, from https://www.education.gouv.fr/direction-du-numerique-pour-l-education-dne-9983

Ministère de l'Education Nationale et de la Jeunesse. (n.d.–b). *Une nouvelle dynamique pour l'éducation aux médias et à l'information*. Retrieved September 12, 2022, from https://www.education.gouv.fr/bo/22/Hebdo4/MENE2202370C.htm

Ministère de l'Education Nationale et de la Jeunesse. (n.d.–c). *Le numérique au service de l'École de la confiance*. Retrieved September 12, 2022, from https://www.education.gouv.fr/le-numerique-au-service-de-l-ecole-de-la-confiance-308365

Ministère de l'Education Nationale et de la Jeunesse. (n.d.–d). *Le socle commun de connaissances, de compétences et de culture*. Retrieved September 12, 2022, from

https://www.education.gouv.fr/le-socle-commun-de-connaissances-de-competences-et-de-culture-12512

Ministère de l'Enseignement supérieur et de la Recherche. (2015). *Deuxième Programme d'investissements d'avenir (PIA2)*. https://www.enseignementsup-recherche.gouv.fr/fr/bo/15/Hebdo30/MENB1517013N.htm

Türkiye

Introduction

In today's world, where the world discusses the new and the traditional, access to information resources has created different environments where literacy skills are considered as a separate skill. Being able to adapt to the change and transformation experienced through digital literacy has necessitated many countries to carry out different studies on this issue and to inform their citizens in this direction. (Karabacak and Sezgin, 2019). Digital literacy is perceived in society only as the use of online tools. While this information is correct, it is somewhat incomplete. Digital literacy includes accessing, organizing, restructuring, evaluating and presenting information effectively and critically in the digital environment. (Martin and Grudziecki, 2006; Onursoy, 2018).

In today's internet usage, digital information literacy is a common problem of all countries. The digital world is like a door to every country. Countries are struggling to use digital technology well in every field. The Internet and digital technology have entered the field of education in recent years and have become an integral part of the process. With the Covid-19 pandemic process, the emphasis on the use of this technology, especially in the field of education in schools, has also increased the European Union Project Support in this field. The results of the “Digital 2020” report prepared in cooperation with “We are Social” and “Hootsuite”, two global brands in the social media field, numerically express the current view of Türkiye in the digital field. According to the report, the population of Türkiye spends an average of 7 hours and 29 minutes on the Internet per day. Again, according to the data of the same report, the number of internet usage increased by 2.4 million, the number of mobile phone users increased by 2.6 million and the number of people using social media actively increased by 2.2 million in the last year in Türkiye. (Global Digital Overview, 2020; Sezgin and Karabacak 2020).

In the digital age we live in, it is understood from exam results, homework, seminars and theses that students cannot use the internet properly despite having computers or smart mobile phones with internet connection. It is known that students who continue to university continue to experience the same problems due to these skills that cannot be gained in secondary education. Students think that the information on every page that comes to Google or another search engine in response to a question they wrote to learn is correct. Therefore, millions of correct, incorrect, incomplete, erroneous and harmful information are used without thinking. Teaching students that all kinds of information resources, all digital publications and all digital libraries are available on their mobile phones and showing them how to access these resources is the best and shortest way to teach learning.

This decision of Türkiye, which forces all student youth at the university, starting from the pre-school period to stay at home and affecting their education, falls within the scope of "education in emergencies". Considering the impact of the pandemic process on education, according to UNESCO data, while schools were closed in 161 countries around the world, 1.86 billion students were affected by this situation. Again, according to UNESCO data, 24,901,925 students in Türkiye were affected by this situation (UNESCO, 2020). In our country, there are 7.5 million students affiliated to YÖK (YÖK Information System, 2020a) and over 18 million students affiliated to the Ministry of National Education (MEB, 2019). When evaluated in general, it is seen that over 25 million students in Türkiye are directly affected by this situation. After the preparation made in the education community in the compulsory interim period that started on March 12, 2020, public schools affiliated to the Ministry of National Education started to carry out teaching activities by switching to distance education via television, through EBA TV (Education Informatics Network) established by the Ministry on March 23 and private schools continued their education with their own systems. (YÖK Uzaktan Öğretim Anketi, 2020; Zan and Zan, 2020).

One day after March 11, 2020, when the first Covid-19 case was seen in Türkiye, face-to-face education was suspended in all educational institutions with the decision taken by the Ministry of National Education (MEB). According to the decision taken, from March 16 to March 30, education was suspended for two weeks and it was recommended that students spend the first week of this break at home. As of Monday, March 23, 2020, distance education activities that students can attend from their homes have started. In the first week of distance education, broadcasts started on TRT EBA TV. In the next process, the educational contents were made available to the students via the EBA platform. The fact that the services offered to the students in the first period were not interactive negatively affected the participation of the students in the process and their motivation for distance education. Despite this situation, the Ministry of National Education implemented the live lesson application and started the live lesson application for the students who are preparing for the central exams. In the following process, live lessons were opened for all levels and teachers were given the opportunity to conduct live lessons. Firstly, the distance education process, which was planned for two weeks from March 23, 2020, continued until June 19 due to the fact that the epidemic could not be brought under control and the number of cases increased. Thus, the second half of the 2019-2020 academic year was completed with distance education. It has been announced that from March 23, 2020, when the distance education process started, to April 30, 2021, 21.8 billion accesses were made to the EBA platform over the internet, and 15,993 hours of broadcasting were made on TRT EBA TV.

It was started that the EBA mobile application was downloaded 18 million 500 thousand times and all EBA content reached 14 million 57 thousand students and 1 million 177 thousand teachers. On the other hand, 1 million 911 thousand students and 265 thousand 497 teachers have had access to the EBA Academic Support platform. In the live lesson application, which makes the distance education process interactive, it was shared with the public that 246 million 640 thousand hours of live lessons were provided. Although these data show that there is a great demand for EBA, which is at the center of distance education, detailed data on regular access, participation, and attendance to EBA are needed. (Emin and Altunel, 2021).

Distance education processes, which are applied with the break given to face-to-face education in the corona virus epidemic, are mostly carried out through technology-supported applications. For this reason, the state of having technological devices to follow the course processes of the students stands out as a parameter that directly affects the efficiency of the education and training processes during the pandemic period. Therefore, the difference between students who have digital devices in the distance education process and those who do not, in terms of access to education and benefiting from education opportunities, also increases inequality in education. Studies in the literature point out that this inequality will increase against students who are socioeconomically disadvantaged. (Emin and Altunel, 2021). As a matter of fact, according to the 2018 data of the Program for International Student Assessment (PISA), the rate of students in OECD countries to have a computer to follow their schoolwork is 89 percent. In terms of socioeconomic status, this rate is 78 percent for students in the lowest quartile. In Türkiye, while the rate of students having a computer is 67 percent, this rate is about 36 percent for students in the lowest socioeconomic quartile. This digital-based increasing inequality is also called “digital cliff” or “digital distinction”. In addition to having digital devices, the services offered by schools, internet access opportunities, digital literacy levels of teachers, students and parents are also important indicators of the digital cliff. (OECD, 2019; Emin and Altunel, 2021).

Although it is important to access and use technology in the distance education process, it is not enough on its own. In this period, when education and training processes are carried out at home, the suitability of home environments to follow lessons and to study is one of the important parameters. According to PISA data, 89 percent of students in OECD countries state that they have a quiet and suitable environment to follow their lessons, while this rate is around 85 percent for students in the lowest quartile in terms of socioeconomic status. In Türkiye, 87 percent of students stated that they have a quiet place to study at home. For students from the lowest quarter of the socioeconomic

distribution, this rate is 77 percent. In other words, the status of students' access to education and having quality education environments vary according to their socioeconomic status. (OECD, 2019).

Distance Education Applications in Universities during the Pandemic Period in Türkiye

During the pandemic period in Türkiye, more than 99% of both state and foundation universities have applied the theoretical courses digitally through distance education. Many universities have made the decision to teach many courses in distant education that can be applied and digitally taught remotely. (YÖK Distant Education Survey, 2020). While some universities use the distance education program software, they have created for distance education, some universities have given lectures using distance education programs such as meet google Zoom. (YÖK Distant Education Survey, 2020). These digital platforms have provided training areas for students to open classes, create lessons, homework and exams and etc. However, during the synchronous and asynchronous processing of the lessons, it is seen that the student and the instructor interact in different virtual environments. When the decisions taken by universities about the way the courses are taught in general are examined, it is understood that synchronous and asynchronous applications are compulsory in the courses or only in certain courses. (YÖK distant education survey, 2020; Zan and Zan. 2020)

Digital Literacy in Universities in Türkiye

It was observed that during the compulsory distance education process, which started with the Covid-19 epidemic, which the whole world started to experience in 2020, students were insufficient in reaching the right information sources and compiling and presenting information over the internet. In other words, it has become clearer with distance education that our students are insufficient in digital information literacy. In Türkiye, especially after the pandemic, research on digital literacy has accelerated. In particular, studies are carried out to determine the digital literacy of students and adult employees of educational institutions. In a study, it was reported that students with higher digital literacy are more ready for online learning (Yurtseven, Saraç and Akgun, 2021). In a study conducted to determine the digital literacy levels of university students in Türkiye, it was reported that students' digital literacy levels were moderate and digital data security awareness levels were high. The digital literacy levels and digital data security awareness levels of male students were found to be higher than female students (Göldağ, 2021). In many studies conducted on Turkish university students, it has been found that students are at a medium or high level in terms of digital literacy levels (Bayrakçı and Narmanlıoğlu 2021; Uyar, 2021: Yılmaz and Esmer, 2021). A model was developed by Wan Ng

(2012) on the dimensions of digital literacy. According to this model, digital literacy is a combination of three dimensions (technical, cognitive and social-emotional).

The concept of literacy, in its current meaning, is far beyond a literacy behavior such as perceiving and deciphering the writings on paper; it has taken the form of meeting the competence in a process where cognitive features such as meaning, interpretation, synthesis and translation predominate (Onursoy, 2018). In the studies on this subject, digital literacy in general, the levels of adaptation to new or developing technologies, which are the indicators of the individual's digital literacy, have been highlighted. Such an approach will be misleading. However, the lessons, assignments and exam results of the students who use digital technological devices (computer, mobile phone, etc.) well in the distance education process show that the students are insufficient in reaching the right information in the digital world, in compiling and in presenting them within the framework of ethical rules. In addition, it is known that students do not sufficiently benefit from other scientific resources, especially the digital resources of university libraries. In a study conducted with university students, it was determined that students' digital literacy levels were low. As a result of this study, skilful use of digital devices, spending more time in the digital world does not mean that users use technology wisely, It has been reported that the literacy skills of young people are insufficient because the dimensions of digital skills and their critical views are not in parallel (Onursoy, 2018).

In Türkiye, the "Digital Transformation Project in Higher Education" was initiated by the Council of Higher Education with its projects and practices in 8 pilot universities and later was planned to be extended to all universities in Türkiye. The "Digital Literacy" course was added to the curriculum of the pilot universities of this project in the 2018-2019 academic year spring semester. Within the scope of this project, it has been reported that 3 thousand 112 instructors took "learning and teaching in higher education in the digital age" and 30 thousand 2 students took "digital literacy" lessons. Approximately 40 thousand students in pilot universities were planned to be given trainings on "Internet technologies", "portable technologies", "social networks", "technology, society and people", "informatics ethics", "technology and lifelong learning", "cloud technology", "technology and lifelong learning" courses, which are included in the digital literacy course (YÖK, 2019 ; Sezgin and Karabacak 2020).

It is important for universities to quickly adapt to digital transformation and to complete their technical infrastructure in order to be successful in the future and to survive in the post-pandemic new world order. For digitalization, it is important for universities to invest more in reducing costs, outsourcing, digital collaboration and partnerships, digital information resources and digital libraries.

However, in order for students to use university digital resources effectively and for more students and staff to benefit from digital information resources, digital information literacy training should be given at universities and digital literacy course for especially 1st year students should be included in the compulsory course. In the curricula of digital literacy courses, more emphasis should be placed on accessing digital information sources, testing the accuracy of these sources, compiling, interpreting and presenting information in an ethical framework, rather than the technical uses of technological digital devices and device features. The obligatory curricula of all university departments for the digital literacy course and similar courses stipulated by YÖK in the coming years in Türkiye will be an important step for young people in terms of education quality and learning skills.

The course topics prepared for higher education; It consists of carefully prepared the course contents under many sub-titles such as Internet Technologies, Portable Technologies, Social Networks, Informatics Ethics, Cloud Computing Future Technologies. However, it can be said that there is a deficiency in this course curriculum, especially in scanning academic digital information resources, accessing digital information resources of university libraries, compiling this information and presenting it in an ethical framework.

Aydın Adnan Menderes University and Çanakkale Onsekiz Mart University Distance Education and Digital Library Infrastructure

During the pandemic period, Aydın Adnan Menderes University has successfully provided distance education in all university departments using the google.meet application. All applications, including exams and assignments, have been successfully implemented through this system. Aydın Adnan Menderes University in Türkiye is a university with a good distance education infrastructure.

The total collection number in the Central Aydın Adnan Menderes University Library and in department libraries is around 100.000. Apart from the printed collection, all libraries contain 241.749 electronic books, 38.750 electronic journal and over 4 million international doctorate and master theses. Çanakkale Onsekiz Mart University Distance Education Distance Education is a platform where education can be carried out in synchronous and asynchronous formats in a virtual environment by using technological structures, regardless of time and place, with and sound transfer. In Distance Education, which is one of the technological learning methods, the only need of the educator and the learner is computer and internet access. ÇOMU Library is one of the few research libraries in Türkiye with its rich printed and electronic collection as well as its physical equipment and facilities.

ÇOMU libraries consist of 1ÇOMU libraries consist of 1 central library, 3 faculty libraries and 9 libraries.

Survey Results of Higher Education Students on Digital Literacy Skills in Aydin Adnan Menderes University

This survey was conducted to reveal the information literacy practices of Aydın Adnan Menderes University students and their skills in digital information literacy. The questionnaire was filled by the students after the necessary information was given to total 100 students 15 minutes before the classes, which were applied to the first and second year students in different faculties.

The aim of this survey, conducted as part of the 2021-1-BG01-KA220-HED-000031164 Key to Information Treasure in Digital World- Digital Literacy in Higher Education (DIGI-KEY) project, is to create a digital information literacy training course curriculum for university students. In this study, the findings of the survey results in two aspects (positive and negative) are equally valuable.

Part 1: Information Literacy Practices

Question 1: Undergraduate students who participated in the survey were asked how often they used the following resources related to their courses and studies.

1	General search engines (e.g., Google, Bing, Yahoo!, Ask.com)
2	Google Scholar
3	Library catalogs
4	Wikipedia
5	Other encyclopedias (e.g., Britannica, either online or print)
6	Governmental Web sites (.gov sites)
7	Library databases (e.g., WoS, EBSCO, JSTOR)
8	Blogs
9	Social networking sites (e. g. Facebook)
10	Video sharing sites (e.g., YouTube, TeacherTube, etc.)
11	Slide sharing sites (e.g., Slideshare)
12	Online forums

58 out of 100 students stated that they always use general search engines, 33 frequently, 7 sometimes and rarely.

10 of the students stated that they always use Google Scholar, 14 of them frequently, 26 of them sometimes, 25 of them rarely use Google Scholar, and 25 students stated that they never use Google Scholar.

43 of the students reported that they rarely use the Library Catalogues, 25 of them sometimes. However, 19 of them stated that they never use the Library Catalogues

31 of the students stated that they use Wikipedia sometimes, 26 of them frequently, 23 of them always and 18 of them rarely.

30 of the students stated that they use Other Encyclopaedias sometimes and rarely, and 12 of them frequently. However, 21i stated that they never use Other Encyclopaedias.

37 of the students stated that they use the Government Web Sites frequently, 32 sometimes, 17 always and 12 rarely.

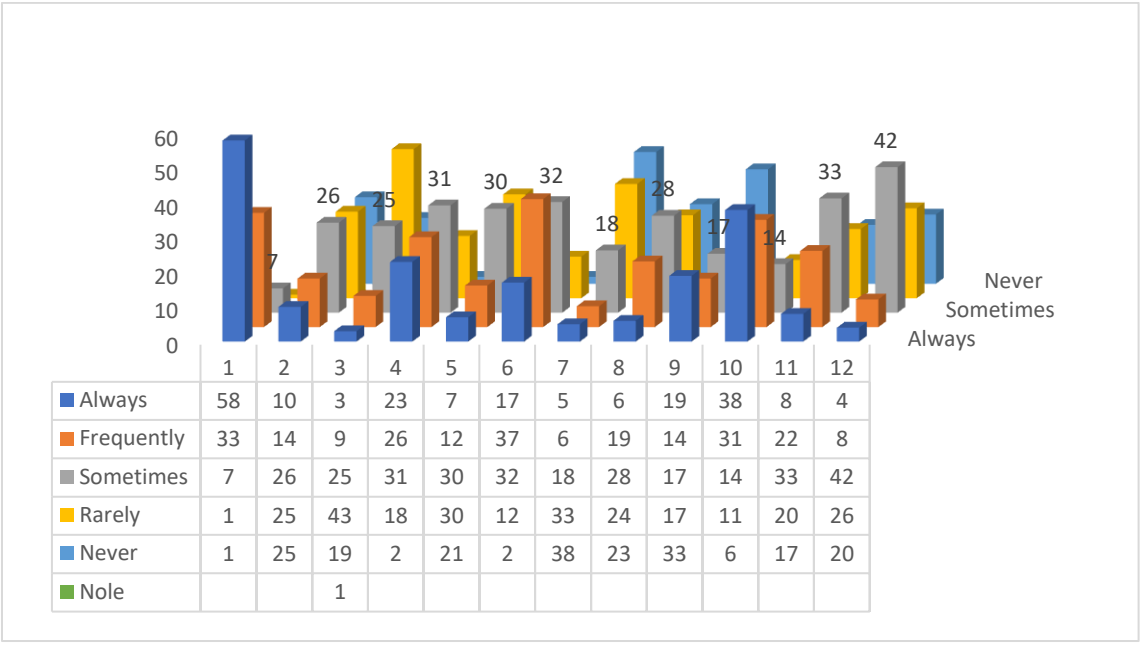
Thirty-three of the students reported that they rarely use the Library Data Banks, and 18 of them sometimes. However, 38i stated that they never use the Library Data Banks.

28 of the students stated that they use Blogs sometimes, 24 rarely, and 19 frequently. However, 23 stated that they never used Blogs.

19 of the students reported that they always use Social Networking Sites, 17 of them sometimes and rarely, and 14 of them frequently. However, 33 of them stated that they never use Social Networking Sites.

38 of the students reported that they always use Video Sharing Sites, 31 often, 14 sometimes, and 11 rarely. 33 of the students stated that they use Slide Sharing Sites sometimes, 20 rarely and 22 frequently. However, 17 of them stated that they never use Slide Sharing Sites.

42 of the students reported that they use the Online Forums sometimes and 26 of them rarely. However, 20 of them stated that they never use the Online Forums.



	1	2	3	4	5	6	7	8	9	10	11	12
Always	58	10	3	23	7	17	5	6	19	38	8	4
Frequently	33	14	9	26	12	37	6	19	14	31	22	8
Sometimes	7	26	25	31	30	32	18	28	17	14	33	42
Rarely	1	25	43	18	30	12	33	24	17	11	20	26
Never	1	25	19	2	21	2	38	23	33	6	17	20
Nole			1									

Question 2: The undergraduate students who participated in the survey were asked whether they thought of the questions given in the table for the resource they found on the "Web"

1	How current the Web site is
2	Author's credentials (e.g., title, degrees, affiliation)
3	Whether the Web site content acknowledges different viewpoints (i.e., not biased)
4	What the URL (i.e., .edu, .org, .gov) is and what it means
5	Whether the Web site has links to other resources on the Web
6	Whether the Web site has bibliography/reference list

39 out of 100 students stated that they always check how up-to-date the Web site is, 32 frequently, and 24 sometimes.

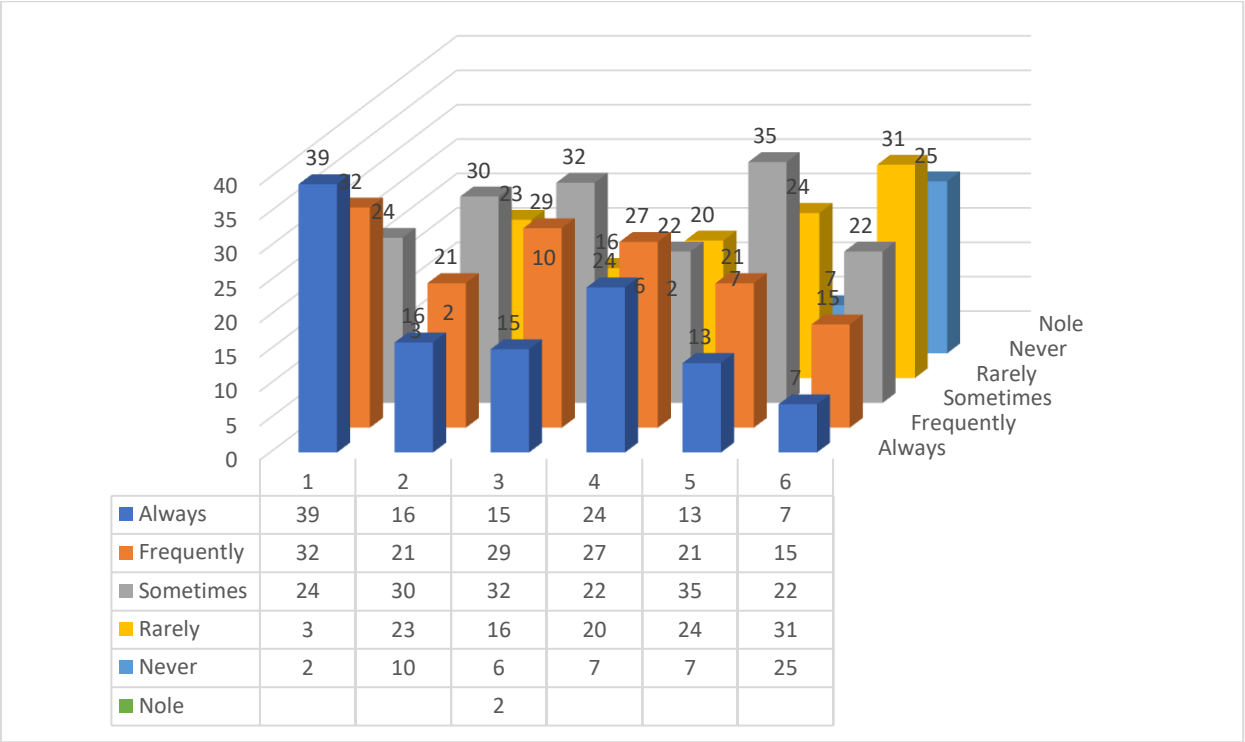
Thirty of the students stated that sometimes, 21 of them frequently, and 16 of them always paid attention to the author's identity information (eg title, degrees, and membership). However, 10 of them stated that they never pay attention to the author's identity information (eg title, degrees, membership).

32 of the students reported that they sometimes check, 29 often, 16 rarely, 15 always check whether the Web site content accepts different viewpoints (i.e. whether it was biased). However, 6 of them reported that they never check whether the Web site content accepts different viewpoints.

27 of the students stated frequently, 24 always, 22 sometimes and 20 rarely, that they knew what the URL (ie edu, .org, .gov) was and what it meant.

35 students stated that they sometimes, 24 rarely, 21 often, and 13 always check whether the Web site has links to other resources on the Web.

31 of the students reported that they rarely, 22 sometimes, and 15 frequently checked the Web site for a bibliography/reference list.



	1	2	3	4	5	6
Always	39	16	15	24	13	7
Frequently	32	21	29	27	21	15
Sometimes	24	30	32	22	35	22
Rarely	3	23	16	20	24	31
Never	2	10	6	7	7	25
Nole			2			

Question 3: How often do you use each of these tools to prepare assignments related to your courses and studies?

1	Highlighting feature of word processors
2	Track-changes feature of word processors
3	Spell checkers
4	Digital "sticky notes" (e.g., Post-It Digital Notes)
5	Citation management tools (e.g., RefWorks, EndNote, EasyBib)
6	Social bookmarking (e.g., digg, delicious)
7	Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)
8	Document sharing programs (e.g., Google Documents)
9	Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)
10	Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)
11	Presentation tools (e.g., Powerpoint, Prezi, etc.)

40 out of 100 students stated that they use the accent feature of word processors sometimes, 19 frequently, 17 rarely, and 13 always. However, 11 students stated that they do not use the highlighting feature of word processors.

Thirty-five of the students stated that they rarely, 29 sometimes, and 13 frequently use the part replacement feature of word processors. However, 15 students reported that they never use the part replacement feature of word processors.

32 of the students stated that they use spelling checkers sometimes, 29 rarely, 13 frequently, and 14 always. However, 12 students stated that they never use spelling checkers.

32 of the students stated that they use digital "sticky notes" sometimes, 27 of them rarely and 15 of them frequently. 21 students reported they never use Digital “sticky notes”.

26 of the students reported that they rarely use citation management tools, 19 of them sometimes. 44 students stated that they never use Citation management tools.

25 of the students reported that they use social bookmarks rarely, 21 sometimes, and 16 frequently. 35 students stated that they never use social bookmarking.

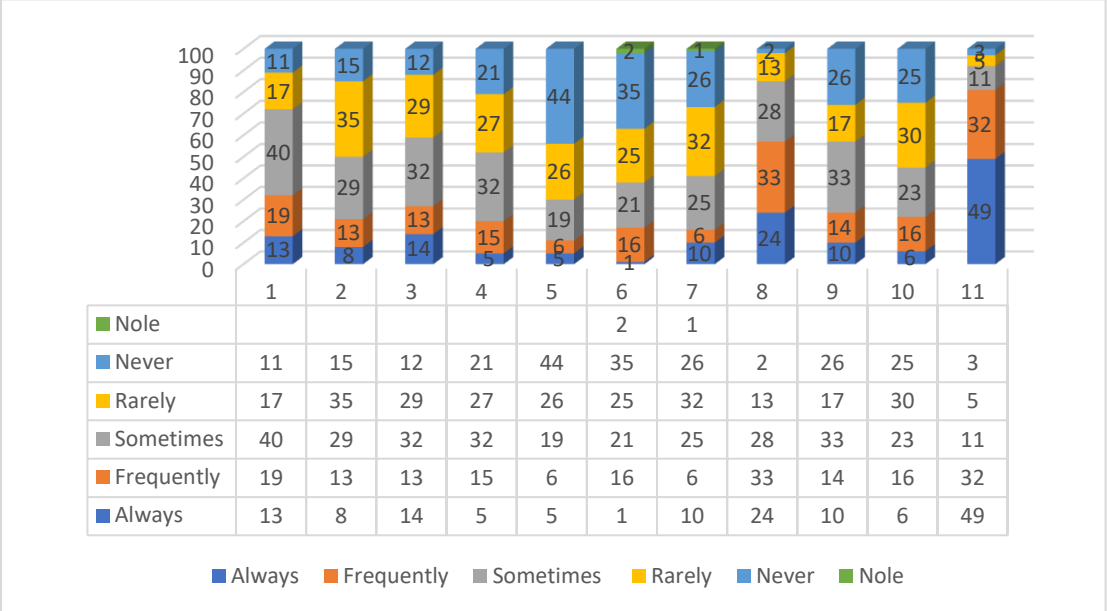
32 of the students stated that they use Alert services rarely, 25 sometimes, and 10 always. However, 26 students reported never using Alert service

33 of the students stated that they use document sharing programs frequently, 28 sometimes, and 24 always. Only 2 students reported that they never used document sharing programs.

Thirty-three students reported sometimes, 17 rarely, 14 frequently, and 10 always about the frequency of using Wiki server providers to create and share Web content. However, 26 students stated that they never use Wiki server providers to create and share Web content.

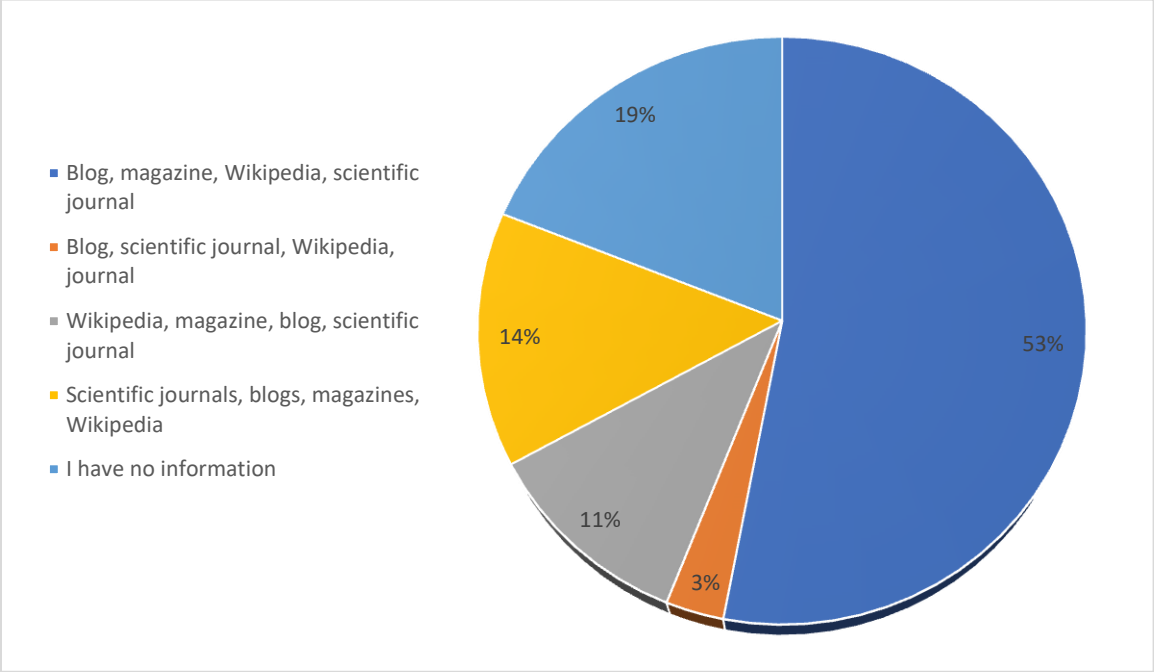
30 of the students seldom, 23 sometimes, and 16 frequently use Blog server providers to create and share Web content. However, 25 students reported that they never use Blog server providers to create and share Web content.

49 of the students stated that they always use presentation tools, 32 frequently, and 11 sometimes. Only 3 students stated that they never use Presentation tools.



	1	2	3	4	5	6	7	8	9	10	11
Nole						2	1				
Never	11	15	12	21	44	35	26	2	26	25	3
Rarely	17	35	29	27	26	25	32	13	17	30	5
Sometimes	40	29	32	32	19	21	25	28	33	23	11
Frequently	19	13	13	15	6	16	6	33	14	16	32
Always	13	8	14	5	5	1	10	24	10	6	49

Graphic B2.1: The students were asked: “Which order has the information sources ranked and verified from the least official to the most official?”



53% of the students said "Blog, magazine, Wikipedia, scientific journal",

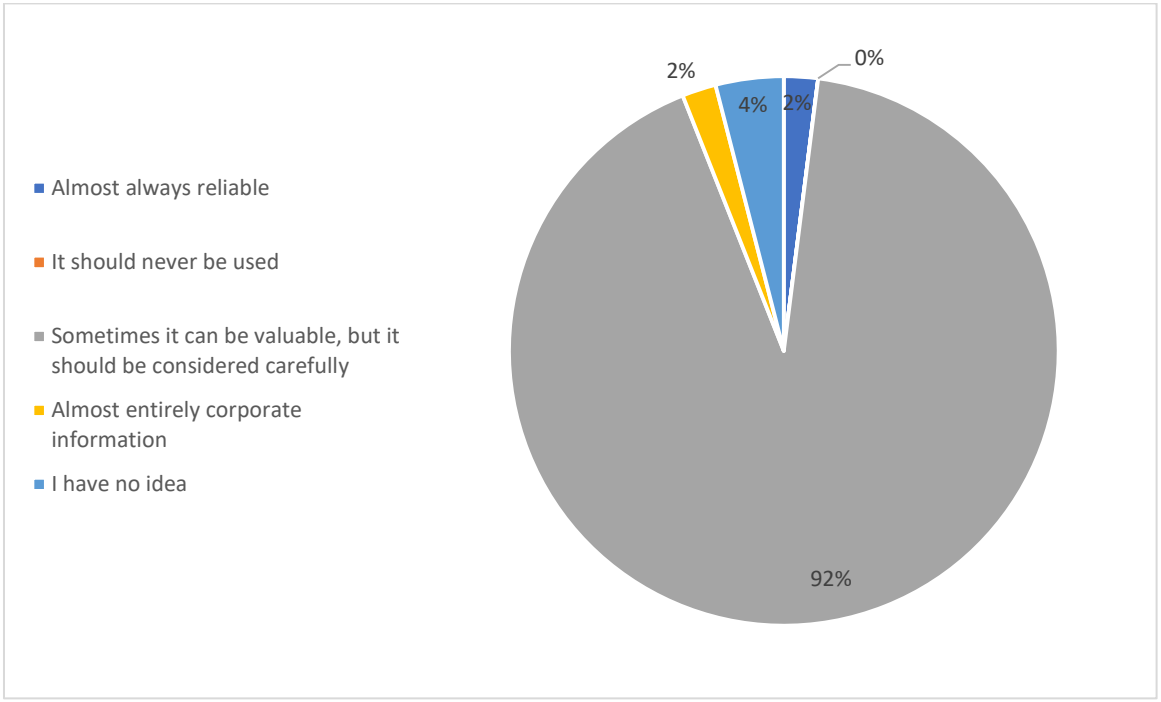
19% said "I have no information",

14% answered as "Scientific journals, blogs, magazines, Wikipedia"

11% as “Wikipedia, magazine, blog, scientific journal “and

3% replied as “Blog, scientific journal, Wikipedia, journal”.

Graphic B2.2: the students were asked about the reliability of the information on the web.



“0” replied 92% of the students.

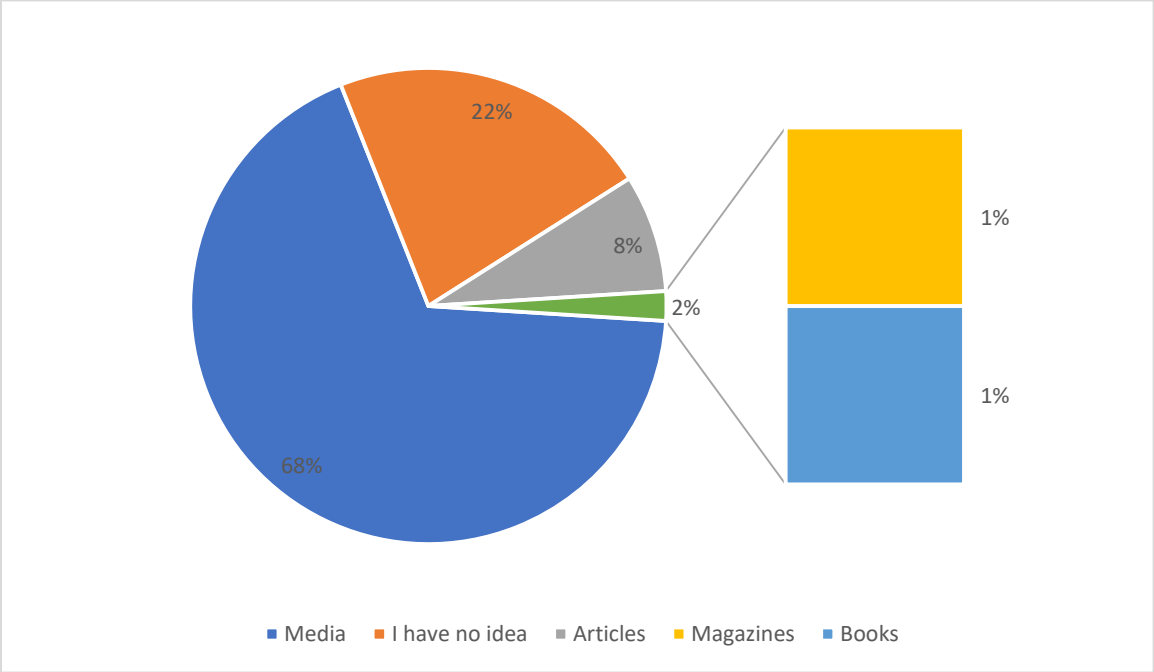
%4said “I have no idea”

%2 said, “Almost entirely corporate information” and

%2 answered as “Almost always reliable”.

Sometimes it can be valuable, but it should be considered carefully

Graphic B2.3: The students were asked: “Which of the below doesn’t exist in the library catalogue?



68% of the students said “Media”,

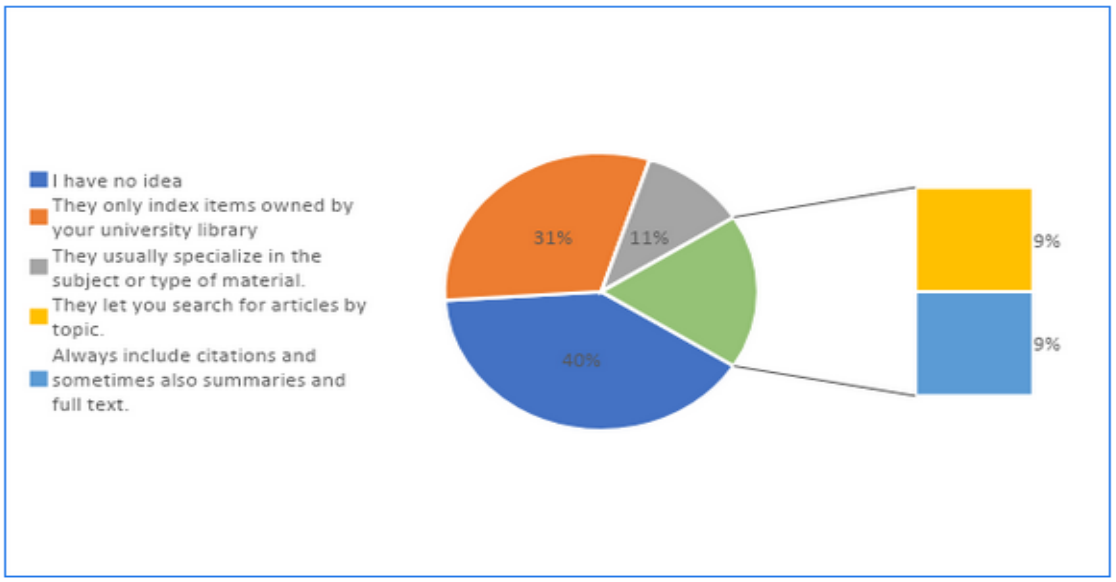
22% said “I have no idea”,

8% said “Articles”,

%1 said “Magazines” and

1% replied “Books”.

Graphic B2.4: The students were asked: “Which of the following statements about Academic Databases is not true?”



40% of the students said, “I have no idea.”

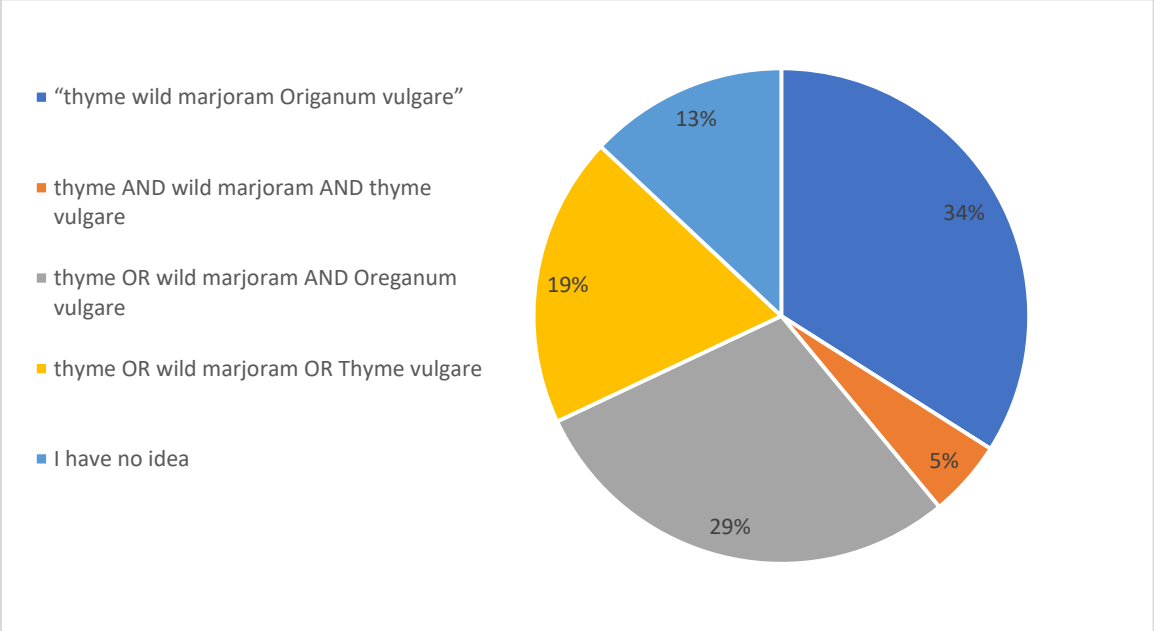
31% said “They only index items owned by your university library.”

11% said “They usually specialize in the subject or type of material.”

9% said “They let you search for articles by topic.” and

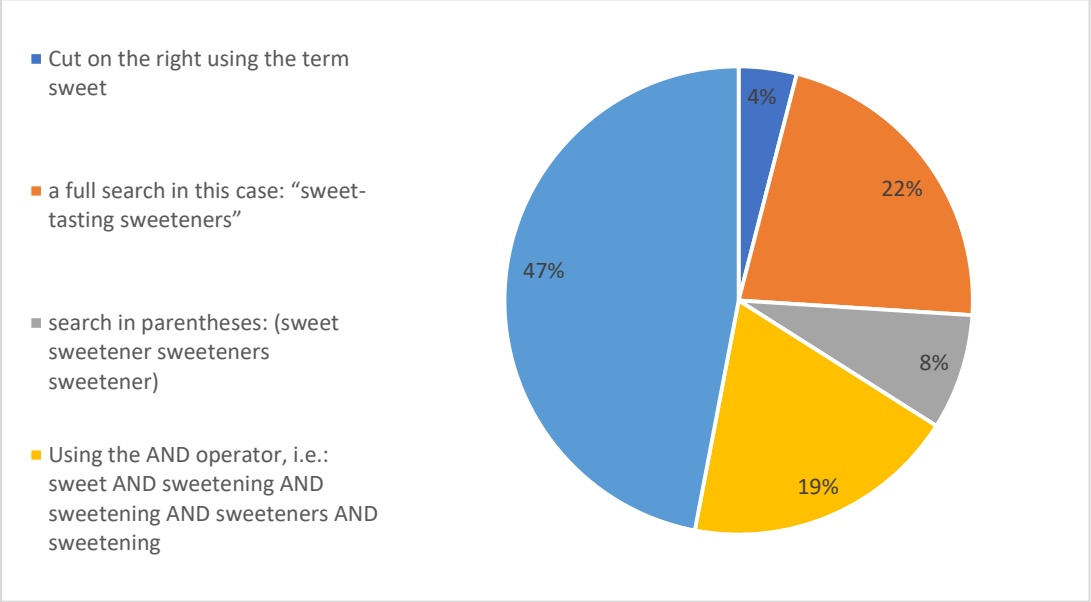
9% said “Always include citations and sometimes also summaries and full text.”

Graphic B2.5: Students were asked this question: "You want to learn about the medicinal herb thyme, also known as wild marjoram in traditional herbal medicine. Its scientific name is Oreganum Vulgare. What is the most appropriate search query in a database?"



34% of the students said, "thyme wild marjoram Origanum vulgare",
"29% thyme OR wild marjoram AND Oreganum vulgare",
19%u "thyme OR wild marjoram OR Thyme vulgare",
13% "I have no idea",
5% replied "thyme AND wild marjoram AND thyme vulgare".

Graphic B2.6: Students were asked: “You are interested in the topic of sweeteners and sweeteners and come up with the appropriate English terms: sweet, sweetener, sweetener, sweeteners, and sweetener. What is the most appropriate search strategy?”



47% of students answered as “I have no idea”,

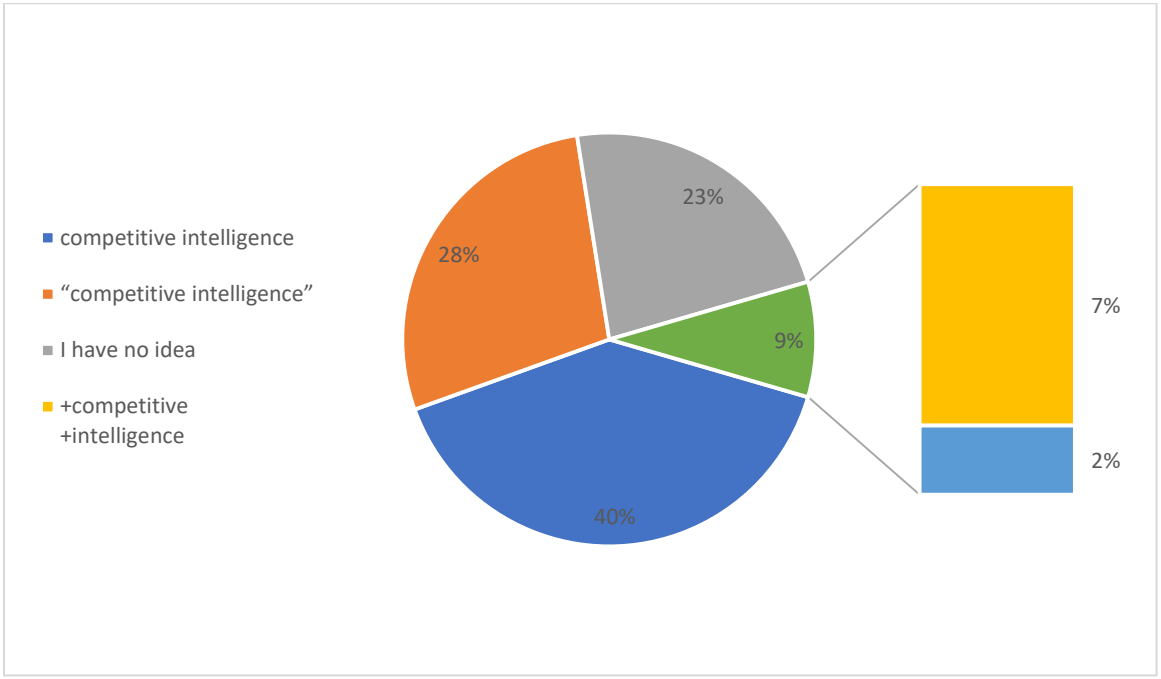
22% “a full search in this case: “sweet-tasting sweeteners”,

19% “Using the AND operator, i.e.: sweet AND sweetening AND sweetening AND sweeteners AND sweetening”,

8% “search in parentheses: (sweet sweetener sweeteners sweetener)”and

4% of them gave the answer: “Cut on the right using the term sweet”.

Graphic B2.7: Students were asked: You want to search for competitive intelligence on Google. What is the most appropriate search strategy?



40% of students responded as "competitive intelligence",

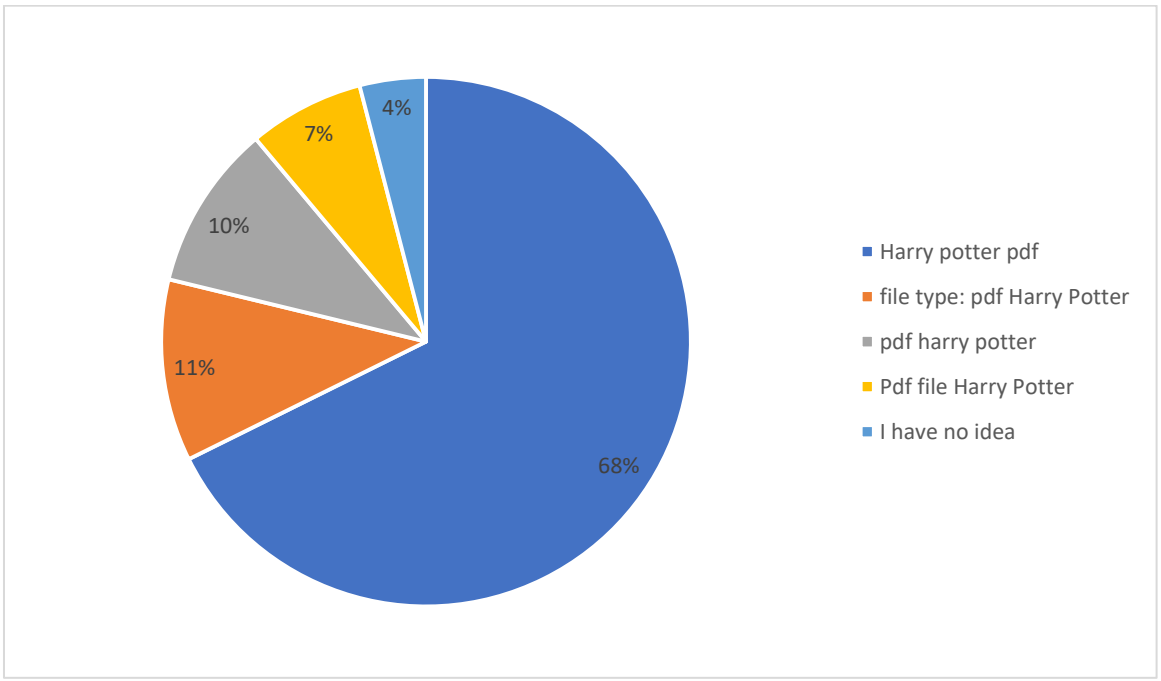
28% as ""competitive intelligence"",

23% as "I have no idea",

7% as "+competitive +intelligence" and

2% as "intelligent competitive".

Graphic B2.8: Students were asked: “How do you search for Harry Potter's pdf files on Google?”



68% of the students answered this question as "Harry potter pdf",

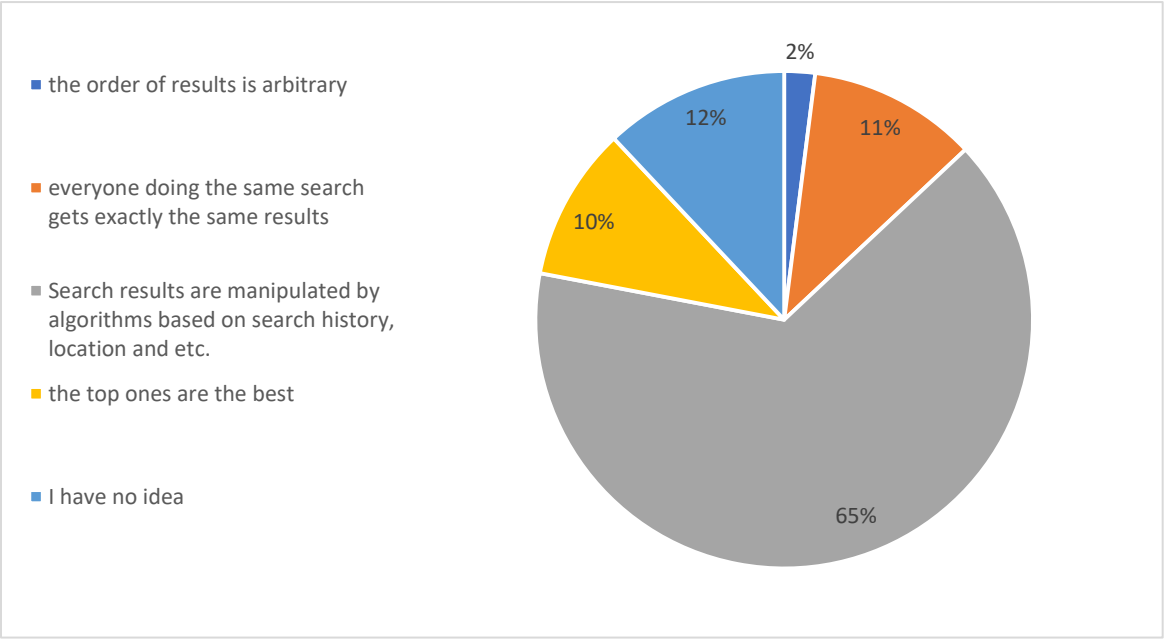
11% as “file type: pdf Harry Potter”,

10% as "pdf Harry Potter",

7% as “Pdf file Harry Potter”and

4% answered as “I have no idea”.

Graphic B2.9: Students were asked: Which of the following is true regarding Google search results?



65% of students answered this question as “Search results are manipulated by algorithms based on search history, location and etc.”

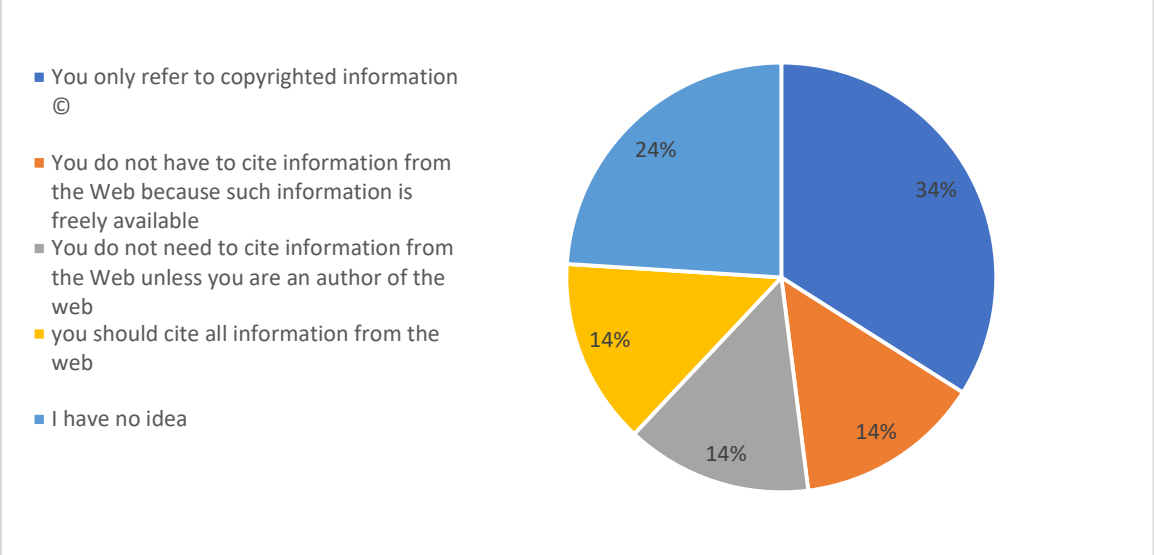
12% said “I have no idea”,

11% said “everyone doing the same search gets exactly the same results”,

10% said “the top ones are the best “and

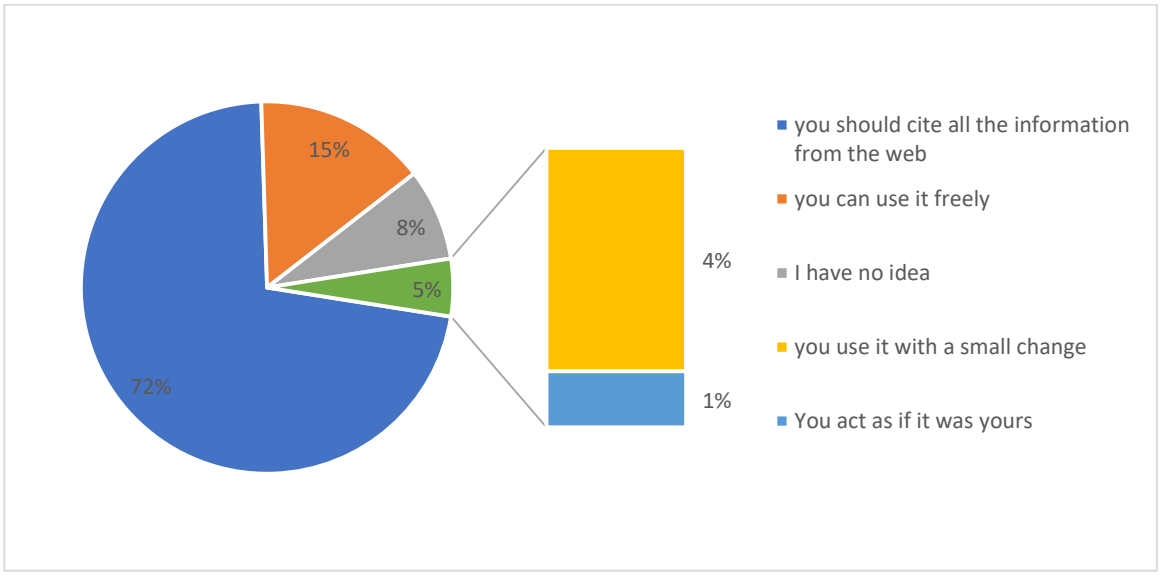
2% replied that “the order of results is arbitrary”.

Graphic B2.10: Students were asked: “What is the appropriate procedure for using information from the Internet?”



34% of students said “You only refer to copyrighted information ©”, 24% said "I have no idea", 14% replied as “You do not have to cite information from the Web because such information is freely available”, You do not need to cite information from the Web unless you are an author of the web 14% said “site “and 14% replied as “you should cite all information from the web”.

Graphic B2.11: Students were asked: “You want to use a photo you found on the internet. What should you do?”



72% of the students replied that “you should cite all the information from the web”.

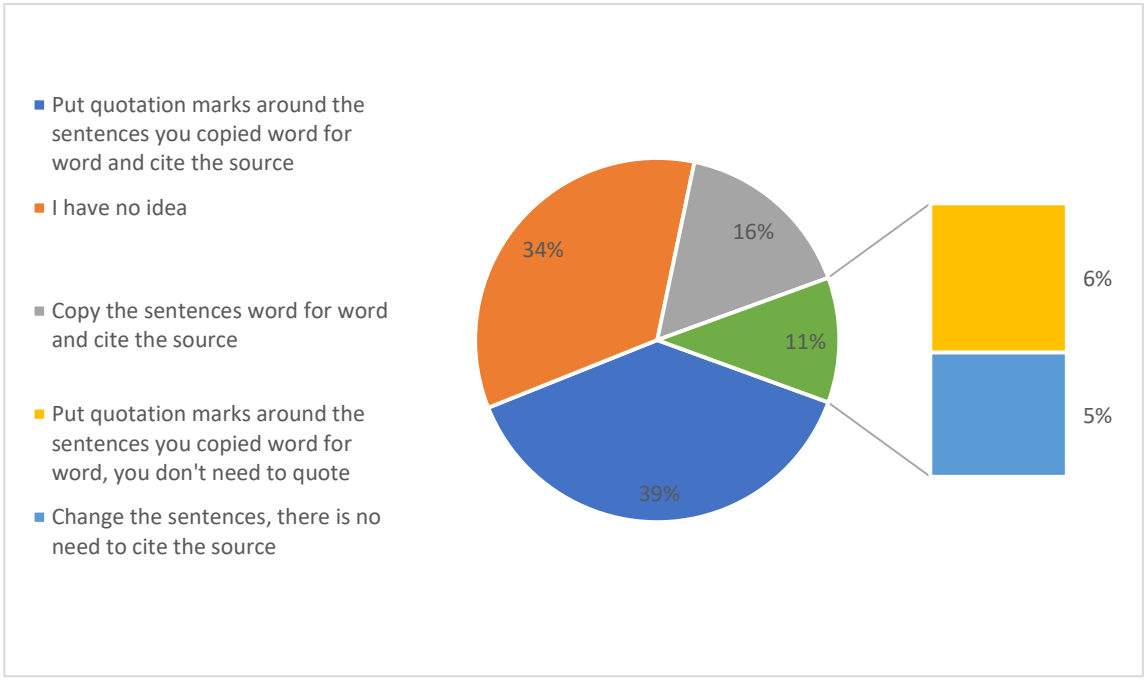
15% said “you can use it freely”,

8% said "I have no idea",

4% said "you use it with a small change" and

1% replied as “You act as if it was yours”.

Graphic B2.12: The students were asked:" Which of the following will help you avoid plagiarism?



39% of the students replied as "Put quotation marks around the sentences you copied word for word and cite the source".

34% said "I have no idea",

16% replied as "Copy the sentences word for word and cite the source",

6% said "Put quotation marks around the sentences you copied word for word, you don't need to quote" and 5% gave the answer as "Change the sentences, there is no need to cite the source".

Results:

Some of the questions asked in the first part aim to determine the digital information literacy levels of the students. In the second part, there are questions to test the accuracy of the answers given in the first part.

Considering the general ratios of the answers given to some questions in the 1st part;

*Most of the students did not use google scholar, library catalogues and other educational resources. These deficiencies should be considered as a negative and important digital literacy deficiency for students' academic development.

*It has been observed that almost 50% of the students do not pay attention to or do not care about issues such as current status, author identification information, reference list, etc., in the use of websites by students.

* It has been observed that students do not generally use some digital supportive and facilitating tools during their studies and homework preparation stages.

When the answers given to the questions asked in the second part are examined, some remarkable results are discussed below.

*In the order of the students' digital information sources from the less formal to the official, 53% of the students made the correct order and 47% of the students ranked them incorrectly.

*92% of the students answered the question about the reliability of the Information on the Web as “Sometimes it may be valuable, but it should be carefully evaluated”.

*To the question of "Which of the following is true about Google search results", 65% of the students mostly gave correct answer by saying "Search results are manipulated by algorithms based on search history, location, etc.”. However, the fact that the answers given by the students to other questions about how to search in search engines and the methods of searching for information are generally wrong show that the students have insufficient knowledge on this subject.

In summary, as a result of this study, it has been seen that most students have insufficient knowledge about the usage of the education and academic sites and library resources, and searching for information in search engines. It has been observed that 50% of the students have insufficient knowledge on ethical rules in addition to the up-to-datedness of digital pages and digital information. In addition to the practical performance of the students in the courses in the distance education process implemented in our university, the results of homework and exams have shown us that the students are insufficient in reaching the right information in the digital world, compiling it and presenting it within the framework of ethical rules. In addition, it is known that most of the students do not sufficiently

benefit from other scientific resources, especially the digital resources of university libraries. It is a fact that the skilful use of digital technological devices (computer, mobile phone, etc.) and spending more time in the digital world does not mean that users use technology wisely. As a result of this survey, it is seen that the literacy skills of the young people are insufficient since the dimensions of their digital skills and their critical views are not in parallel.

Survey results of higher education graduate students on digital literacy skills

This survey was conducted to reveal information literacy practices and digital information literacy skills of Aydın Adnan Menderes University students. It was conducted with 50 graduate and doctorate students in different faculties. The aim of this survey is to identifying students' deficiencies in digital literacy, In this study, the findings of the survey results from two aspects (positive and negative) are equally valuable.

Question 1: Graduate students who participated in the survey were asked how often they used the following resources related to their courses and studies.

1	General search engines (e.g., Google, Bing, Yahoo!, Ask.com)
2	Google Scholar
3	Library catalogs
4	Wikipedia
5	Other encyclopedias (e.g., Britannica, either online or print)
6	Governmental Web sites (.gov sites)
7	Library databases (e.g., WoS, EBSCO, JSTOR)
8	Blogs
9	Social networking sites (e. g. Facebook)
10	Video sharing sites (e.g., YouTube, TeacherTube, etc.)
11	Slide sharing sites (e.g., Slideshare)
12	Online forums

33 out of the 50 students, reported that they always use general search engines, and 13 frequently.

26 of the students reported that they always use Google Scholar, 6 of them frequently and 7 of them sometimes. However, 7 students stated that they never used Google Scholar.

16 of the students stated that they use the Library Catalogs sometimes, 12 of them always, and 6 of them rarely. However, 13 of them stated that they never used the Library Catalogues.

14 of the students reported that they used Wikipedia frequently, 13 of them rarely, 9 of them sometimes, and 9 of them always.

21 of the students reported that they used Other Encyclopedias rarely, 6 of them frequently, 4 of them sometimes, and 4 of them always. However, 15 of them stated that they never used Other Encyclopedias.

17 of the students stated that they used the Government Web Sites frequently, 14 of them always, 7 of them sometimes, and 8 of them rarely. However, 4 reported that they never used Government Websites.

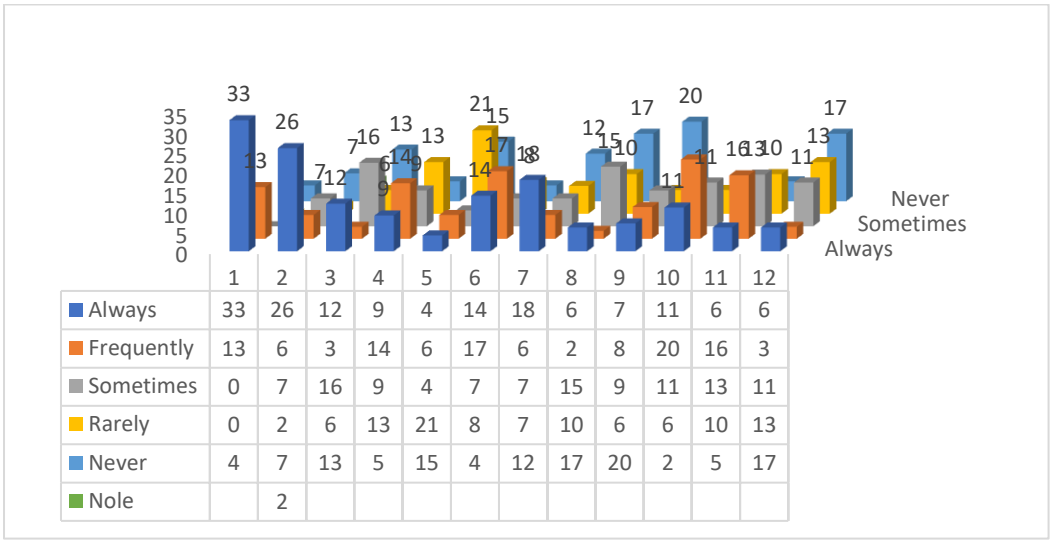
18 of the students reported that they always use the Library Data Banks, 7 of them sometimes, 7 of them rarely, and 6 of them frequently. However, 12 of them stated that they never used the Library Data Banks.

15 of the students reported that they use Blogs sometimes, 10 rarely, and 6 of them always. However, 17 of them stated that they never used Blogs.

9 of the students stated that they use Social Networking Sites sometimes, 8 frequently, 7 always, and 6 rarely. However, 20 of them stated that they never use Social Networking Sites. 20 of the students stated that they use Video Sharing Sites frequently, 11 sometimes, 11 always, and 6 rarely.

16 of the students reported that they used the Slide Sharing Sites frequently, 13 of them sometimes, 10 of them rarely, and 6 of them always. However, 5 of them stated that they never used Slide Sharing Sites.

13 of the students reported that they used the Online Forums rarely, 11 sometimes, 6 always, and 3 frequently. However, 17 of them stated that they never used the Online Forums.



	1	2	3	4	5	6	7	8	9	10	11	12
Always	33	26	12	9	4	14	18	6	7	11	6	6
Frequently	13	6	3	14	6	17	6	2	8	20	16	3
Sometimes	0	7	16	9	4	7	7	15	9	11	13	11
Rarely	0	2	6	13	21	8	7	10	6	6	10	13
Never	4	7	13	5	15	4	12	17	20	2	5	17
Nole		2										

Question 2: The graduate students who participated in the survey were asked whether they thought of the questions given in the table for the resource they found on the "Web".

1	How current the Web site is
2	Author's credentials (e.g., title, degrees, affiliation)
3	Whether the Web site content acknowledges different viewpoints (i.e., not biased)
4	What the URL (i.e., .edu, .org, .gov) is and what it means
5	Whether the Web site has links to other resources on the Web
6	Whether the Web site has bibliography/reference list

32 out of 100 students stated that they always check how up-to-date the Web site is, 11 frequently, and 7 sometimes.

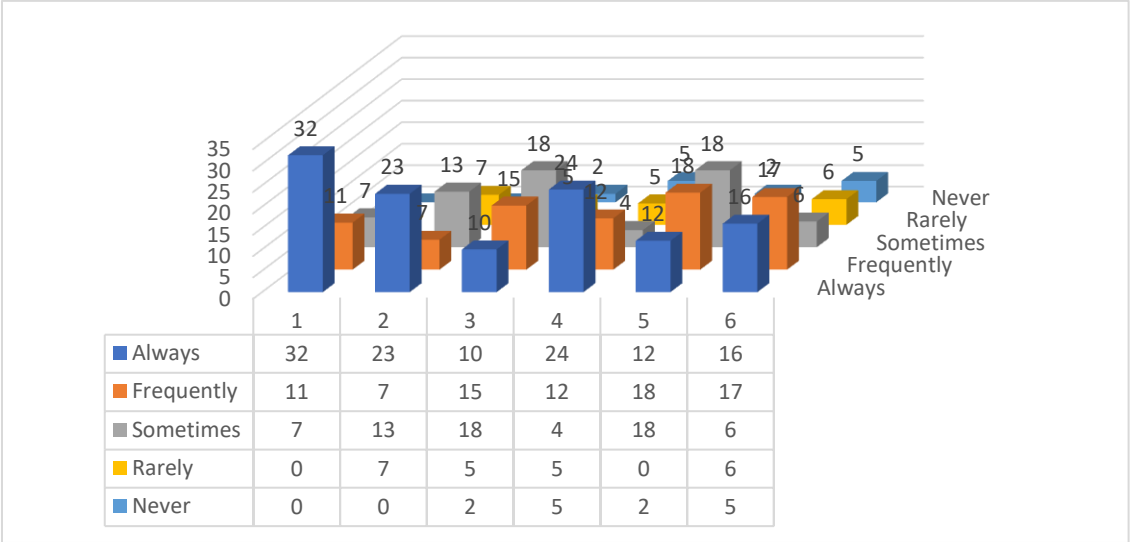
23 of the students always, 13 sometimes, 7 often, 7 of them always stated that they pay attention to the Author's identity information (e.g. title, degrees, membership).

18 of the students reported that they sometimes check, 15 often, 10 always, 5 rarely check whether the Web site content accepts different viewpoints (i.e. whether it was biased). However, 2 of them reported that they never check whether the Web site content accepts different viewpoints.

24 of the students stated always, 12 often, 4 sometimes and 5 rarely, that they knew what the URL (ie edu, .org, .gov) was and what it meant. However 5 of them reported that they never knew what the URL (ie edu, .org, .gov) was and what it meant.

18 students stated that they sometimes, 18 often, and 12 always check whether the Web site has links to other resources on the Web.

17 of the students reported that they frequently, 16 always, 6 rarely, 6 sometimes checked the Web site for a bibliography/reference list. However, 5 of them reported that they never check whether the Web site for a bibliography/reference list.



	1	2	3	4	5	6
Always	32	23	10	24	12	16
Frequently	11	7	15	12	18	17
Sometimes	7	13	18	4	18	6
Rarely	0	7	5	5	0	6
Never	0	0	2	5	2	5

Question 3: How often do you use each of these tools to prepare assignments related to your courses and studies?

1	Highlighting feature of word processors
2	Track-changes feature of word processors
3	Spell checkers
4	Digital "sticky notes" (e.g., Post-It digital notes)
5	Citation management tools (e.g., RefWorks, EndNote, EasyBib)
6	Social bookmarking (e.g., digg, delicious)
7	Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)
8	Document sharing programs (e.g., Google Documents)
9	Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)
10	Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)
11	Presentation tools (e.g., Power point, Prezi, etc.)

13 out of 50 students stated that they use the accent feature of word processors sometimes, 12 always, 10 frequently and 10 rarely. However, 3 students stated that they do not use the highlighting feature of word processors.

17 of the students stated that they rarely, 17 sometimes, 8 always and 4 frequently use the part replacement feature of word processors. However, 2 students reported that they never use the part replacement feature of word processors.

17 of the students stated that they use spelling checkers sometimes, 14 always, 12 frequently, and 6 rarely. Only 1 student stated that they never use Spelling checkers.

13 of the students stated that they use digital "sticky notes" frequently, 12 of them sometimes, 9 of them rarely, and 8 of them always. However 6 students reported never use Digital "sticky notes".

13 of the students reported that they frequently use citation management tools, 12 of them rarely, 8 of them always and 7 of them sometimes. However, 10 of them stated that they never use Citation management tools.

15 of the students reported that they use social bookmarking rarely, 9 sometimes, 6 always, and 3 frequently. However, 15 of them stated that they never use social bookmarking.

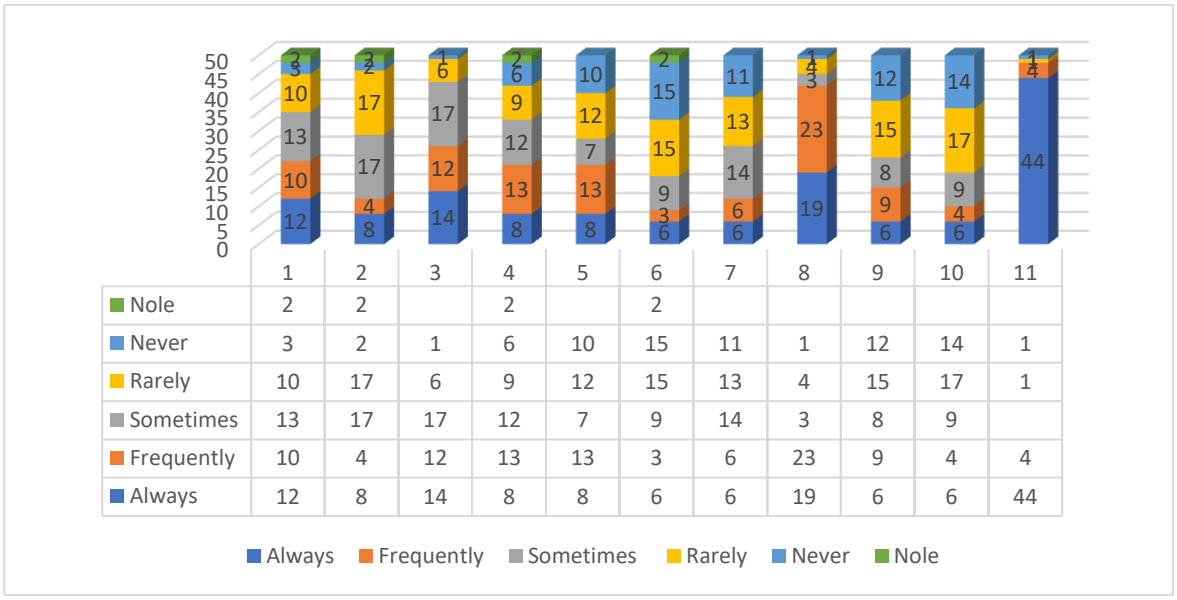
13 of the students stated that they use Alert services rarely, 14 sometimes, 6 always, 6 frequently. However, 11 students reported never using Alert services.

23 of the students stated that they use document sharing programs frequently, 19 always, 4 rarely, and 3 sometimes. Only 1 student reported that they never use document sharing programs.

15 students reported rarely, 9 often, 8 sometimes, and 6 always about the frequency of using Wiki server providers to create and share Web content. However, 12 students stated that they never use Wiki server providers to create and share Web content.

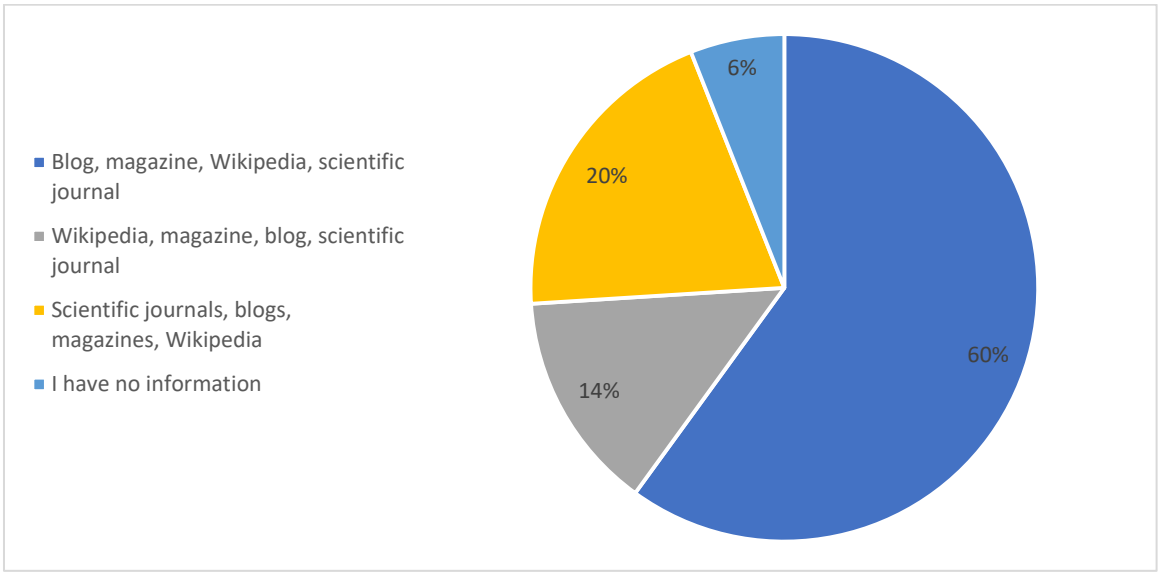
17 of the students rarely, 9 sometimes, 6 always and 4 frequently use Blog server providers to create and share Web content. However, 14 students reported that they never use Blog server providers to create and share Web content

44 of the students stated that they always use presentation tools, 4 frequently, and 1rarely. Only 1 student stated that they never use Presentation tools.



	1	2	3	4	5	6	7	8	9	10	11
Nole	2	2		2		2					
Never	3	2	1	6	10	15	11	1	12	14	1
Rarely	10	17	6	9	12	15	13	4	15	17	1
Sometimes	13	17	17	12	7	9	14	3	8	9	
Frequently	10	4	12	13	13	3	6	23	9	4	4
Always	12	8	14	8	8	6	6	19	6	6	44

Graphic B2.1: The graduate students were asked: “Which order has the information sources ranked and verified from the least official to the most official?”



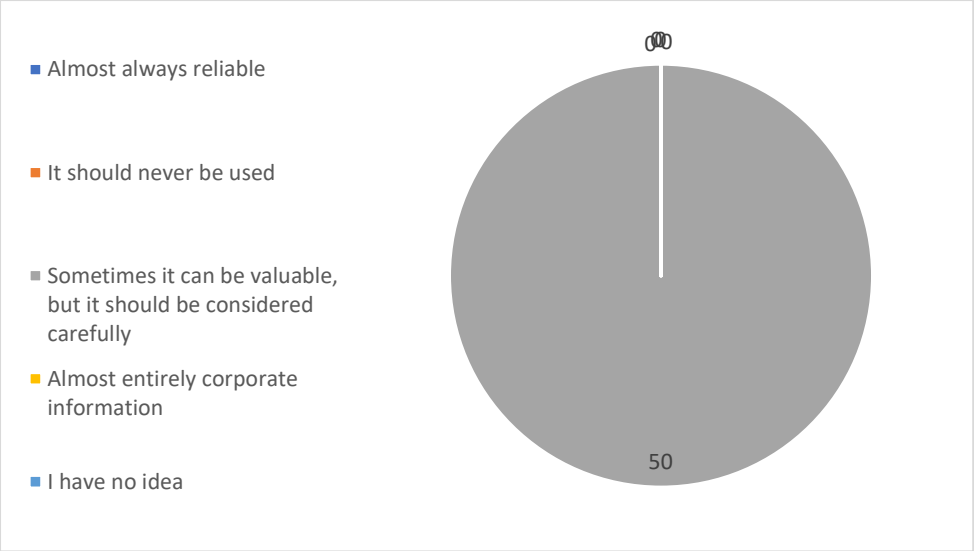
60% of the students said "Blog, magazine, Wikipedia, scientific journal",

20% answered as "Scientific journals, blogs, magazines, Wikipedia",

14% as “Wikipedia, magazine, blog, scientific journal,

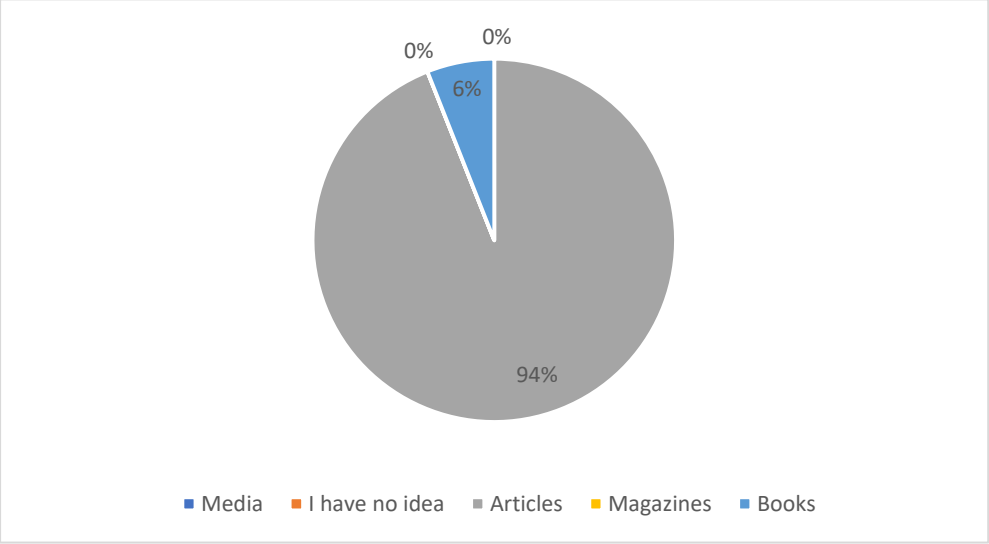
19% said "I have no information".

Graphic B2.2: The graduate students were asked about the reliability of the information on the web.



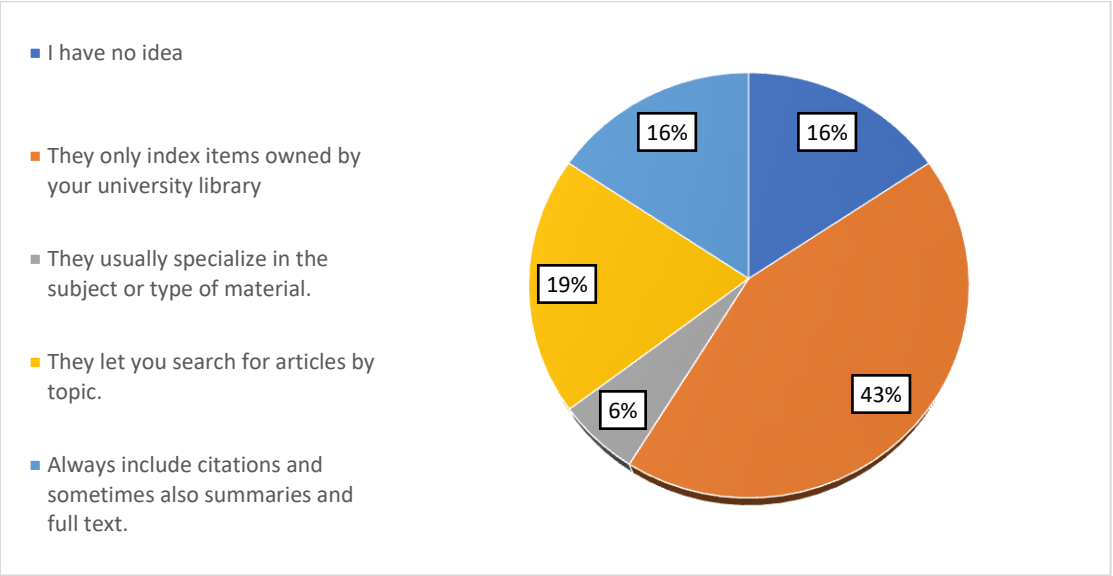
All of the students answered " Sometimes it can be valuable, but it should be considered carefully ".

Graphic B2.3: The graduate students were asked: “Which of the below doesn’t exist in the library catalogue?



94% of the students said “Articles”, 6% replied “Books”.

Graphic B2.4: The graduate students were asked: “Which of the following statements about Academic Databases is not true?”



43% of the students said, “They only index items owned by your university library.”

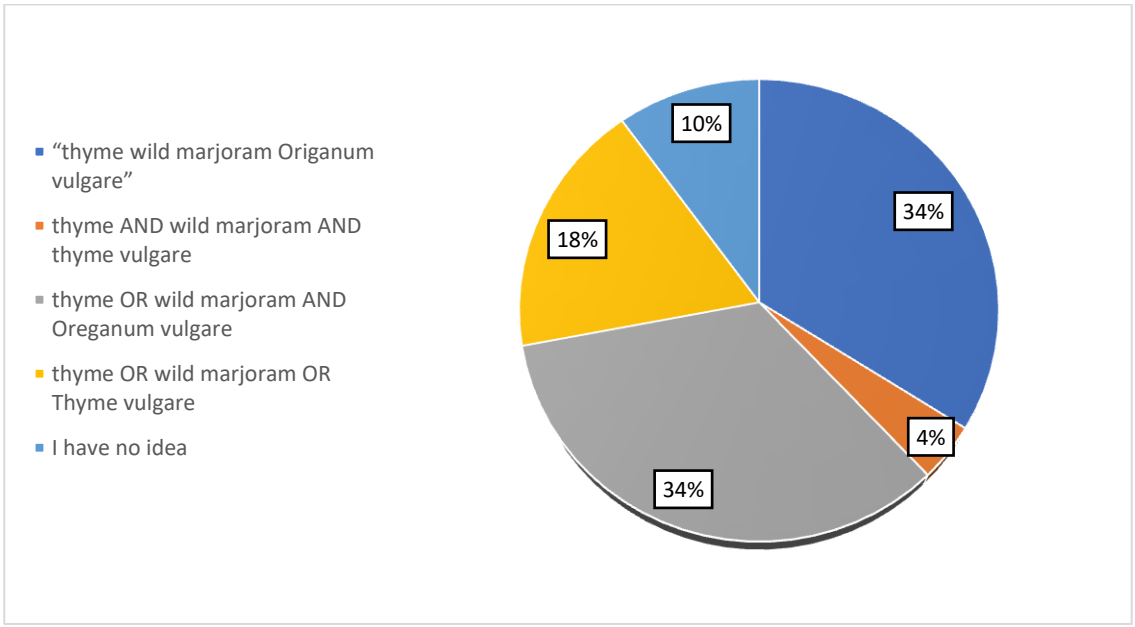
19% said “They let you search for articles by topic.”

16% said “Always include citations and sometimes also summaries and full text.”

16% said and “I have no idea.”

6% said “They usually specialize in the subject or type of material.”

Graphic B2.5: The graduate students were asked this question: "You want to learn about the medicinal herb thyme, also known as wild marjoram in traditional herbal medicine. Its scientific name is Oreganum Vulgare. What is the most appropriate search query in a database?"



34% of the students said, "thyme wild marjoram Origanum vulgare",

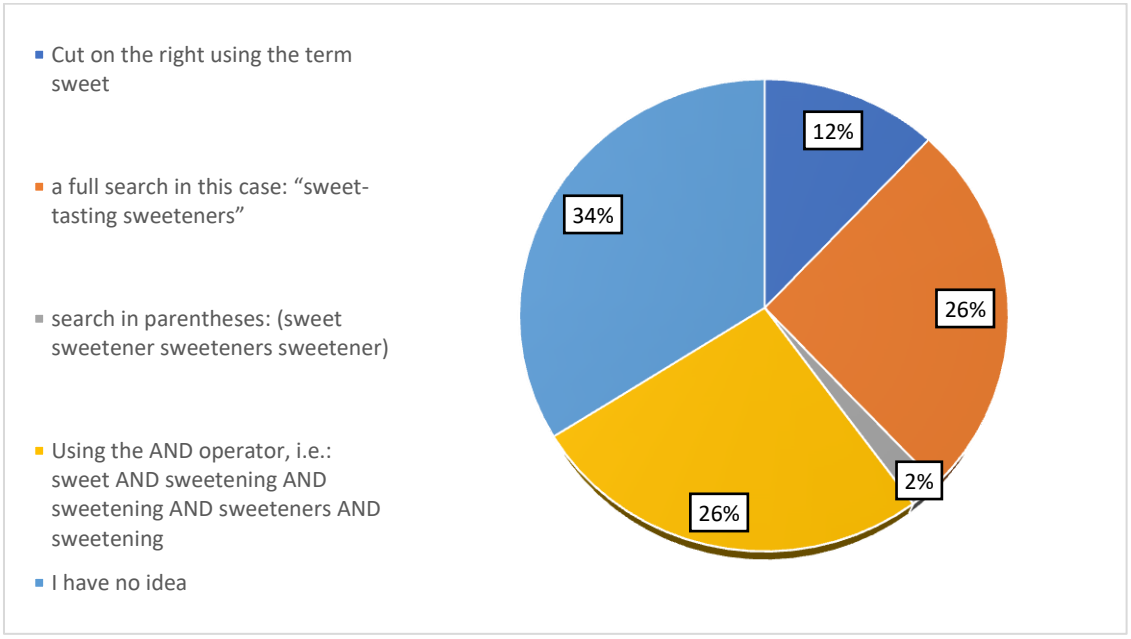
"34% thyme OR wild marjoram AND Oreganum vulgare",

18%u "thyme OR wild marjoram OR Thyme vulgare",

10% "I have no idea",

4% replied "thyme AND wild marjoram AND thyme vulgare".

Graphic B2.6: The graduate students were asked: “You are interested in the topic of sweeteners and sweeteners and come up with the appropriate English terms: sweet, sweetener, sweetener, sweeteners, and sweetener. What is the most appropriate search strategy?”



34% of students answered as “I have no idea”,

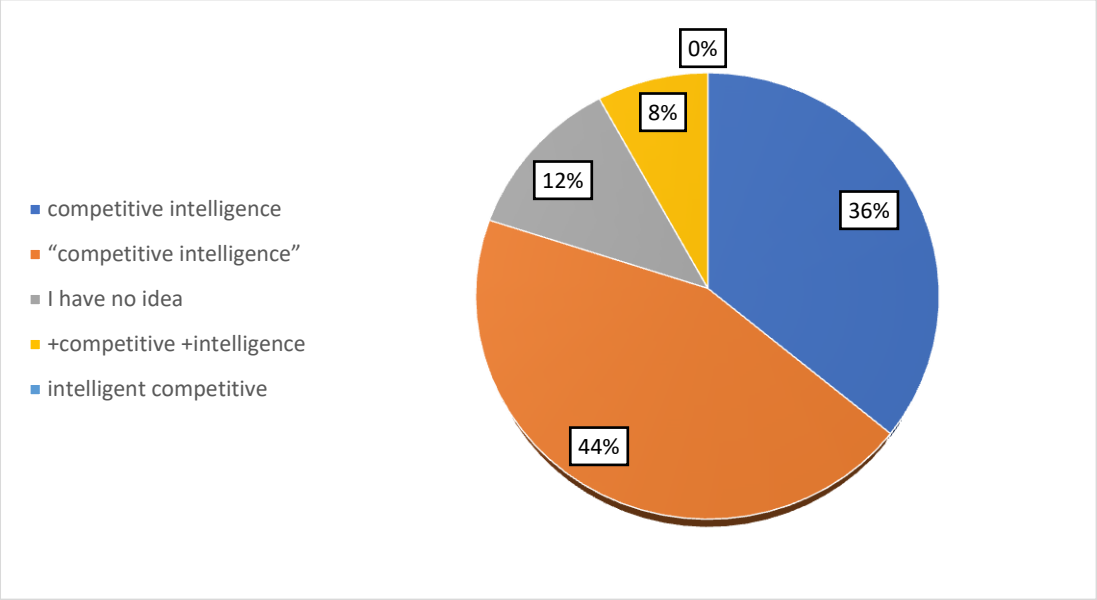
26% “a full search in this case: “sweet-tasting sweeteners”,

26% “Using the AND operator, i.e.: sweet AND sweetening AND sweetening AND sweeteners AND sweetening”,

12% of them gave the answer: “Cut on the right using the term sweet” and

2% “search in parentheses: (sweet sweetener sweeteners sweetener)”.

Graphic B2.7: Students were asked: You want to search for competitive intelligence on Google. What is the most appropriate search strategy?



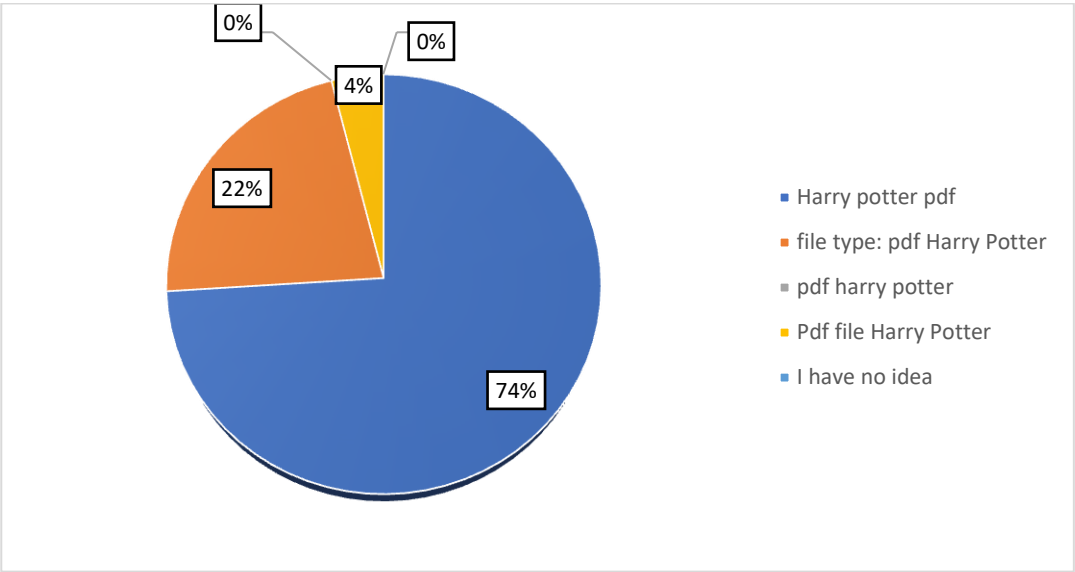
44% of students responded as ““competitive intelligence” ”,

36% as, “competitive intelligence”

12% as “I have no idea”,

8% as“+competitive +intelligence” and

Graphic B2.8: The graduate students were asked: “How do you search for Harry Potter's pdf files on Google?”

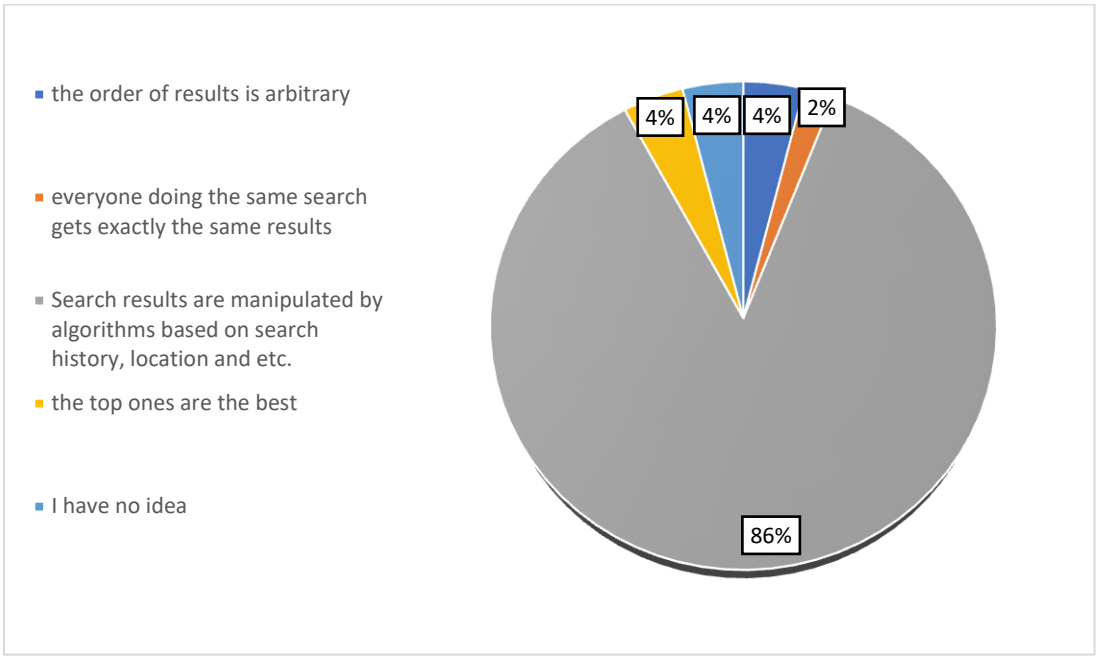


74% of the students answered this question as "Harry potter pdf",

22% as “file type: pdf Harry Potter”,

4% as “Pdf file Harry Potter”.

Graphic B2.9: The graduate students were asked: Which of the following is true regarding Google search results?



86% of students answered this question as “Search results are manipulated by algorithms based on search history, location and etc.”

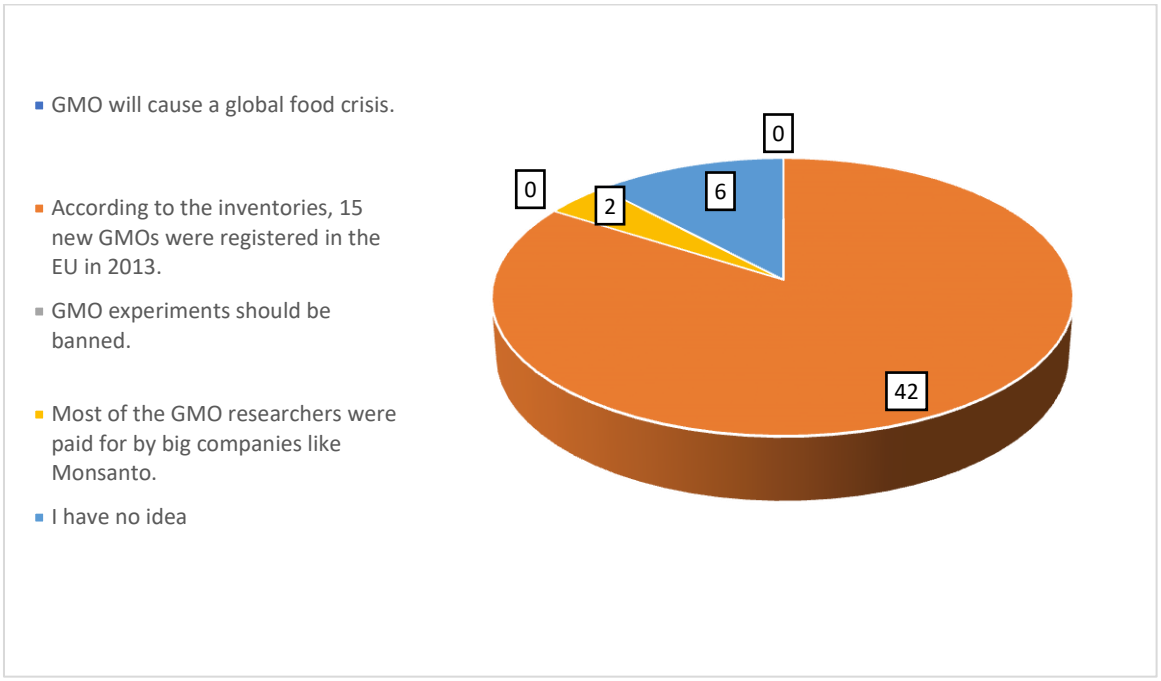
4% said “I have no idea”,

4% said “the top ones are the best “and

4% replied that “the order of results is arbitrary”,

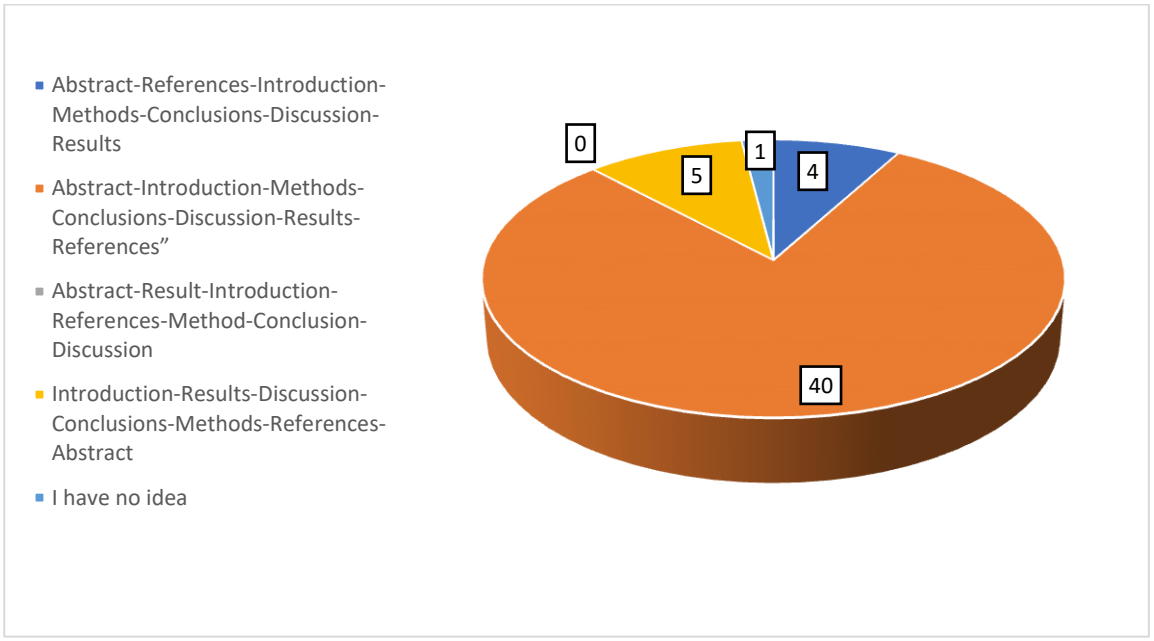
2% said “everyone doing the same search gets exactly the same results”,

Graphic B2.10: The graduate students were asked: Which statement about GMOs (Genetically Modified Organisms) is not the author's personal opinion?



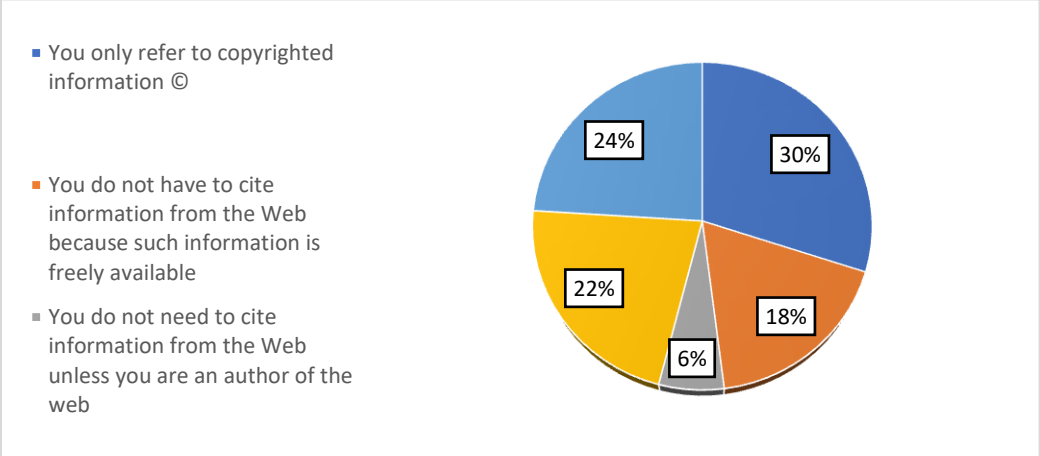
84% of the students answered "According to the inventories, 15 new GMOs were registered in the EU in 2013" and 12% answered "I have no idea".

Graphic B2.11: The graduate students were asked: What is the correct order of elements in a research paper?



80% of the students "Abstract-Introduction-Methods-Conclusions-Discussion-Results-References”,
10% said "Introduction-Results-Discussion-Conclusions-Methods-References-Abstract",
%8 said “Abstract-References-Introduction-Methods-Conclusions-Discussion-Results”,
%2 said “I have no idea”.

Graphic B2.12: The graduate students were asked: “What is the appropriate procedure for using information from the Internet?”



30% of students said, “You only refer to copyrighted information ©”,

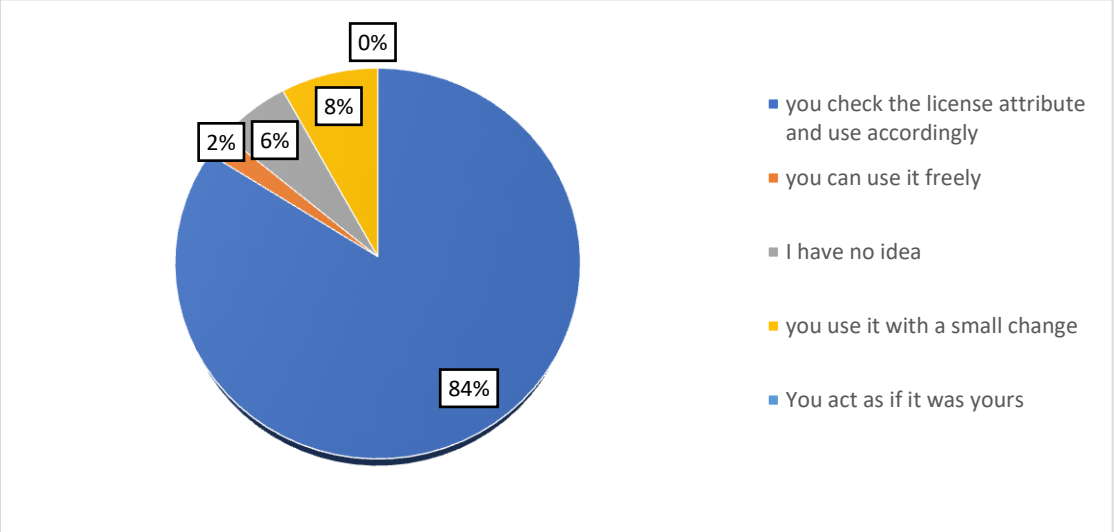
24% said "I have no idea",

22% replied as “you should cite all information from the web”,

18% replied as “You do not have to cite information from the Web because such information is freely available”,

6% said “You do not need to cite information from the Web unless you are an author of the web”.

Graphic B2.13: The graduate students were asked: “You want to use a photo you found on the internet. What should you do?”

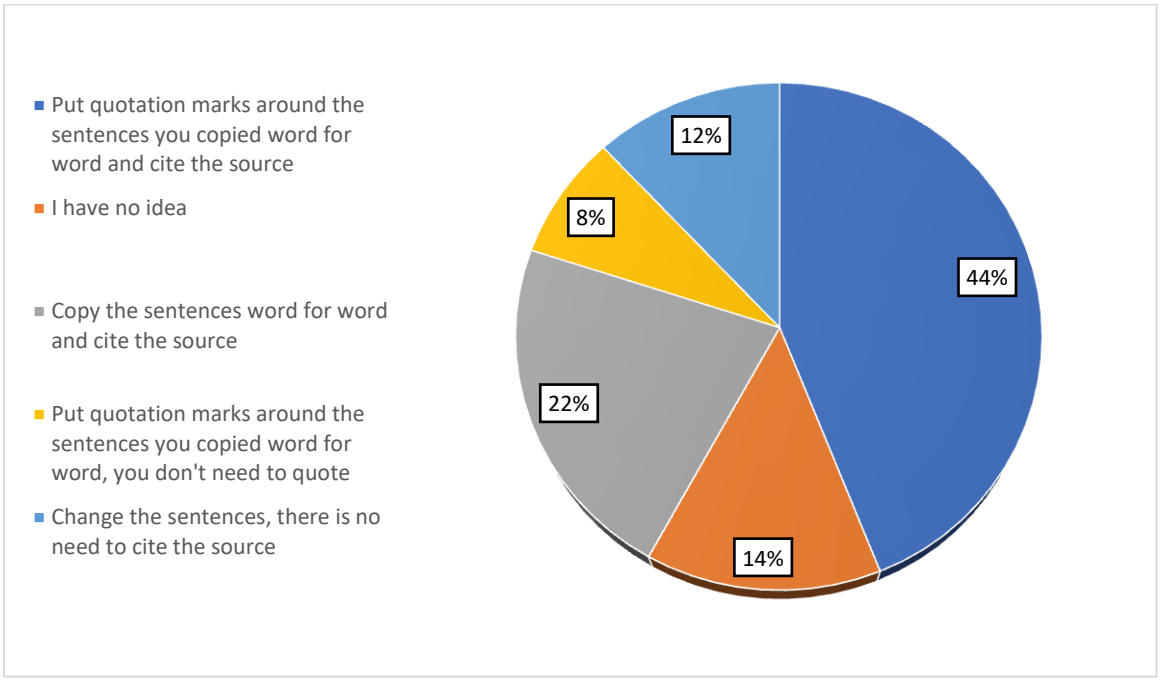


84% of the students replied that “you check the license attribute and use accordingly”.

8% said "you use it with a small change",

6% said "I have no idea", and 2% said “you can use it freely”.

Graphic B2.14: The graduate students were asked:" Which of the following will help you avoid plagiarism?



44% of the students replied as "Put quotation marks around the sentences you copied word for word and cite the source".

22% replied as "Copy the sentences word for word and cite the source",

14% said "I have no idea",

12% gave the answer as "Change the sentences, there is no need to cite the source" and 8% said "Put quotation marks around the sentences you copied word for word, you don't need to quote".

Conclusion

With some questions asked in the first part, it is aimed to determine the digital information literacy knowledge levels of the students. In the second part, there are questions to test the accuracy of the answers given in the 1st part.

According to the answers given to some questions in the 1st part;

* It can be said that graduate students generally search by typing keywords in search engines such as Google, and in nearly 50% of the students do not use or actively use Google Scholar.

*It was concluded that postgraduate students do not actively use the library resources of the universities, and these students do not use the digital education resources from the internet sufficiently.

It has been reported that some of the students do not look at or care about a resource on the Web, such as its up-to-dateness, author, identity information, extension of the web page, reference list of links, etc.

It has been observed that graduate students are inadequate in using digital tools such as spell checkers, citation management tools, document sharing programs, etc., which will facilitate their homework and course work.

B2. Evaluation in terms of questions

*When the graduate students were asked to rank the information sources from the least official to the most official, 60% of the students gave correct answers and 40% were incorrectly listed.

In the question asked to the students about the Academic Databases, 43% of the students gave the correct answer.

The percentage of students who gave the wrong answer to the 1st question, which is one of the questions asked about searching with keywords in search engines, is 66%. The number of students who gave the wrong answer to the second question was 88%,

3.question 56%, who answered the question incorrectly,

*B2.8. In the question, which is especially important in terms of finding pdf files, 78% of the questions were answered incorrectly.

B2.12.question: "What is the appropriate procedure for using information from the internet?" in the answers; They should quote all the information obtained from the web. In other words, 78% of the students think that they can use any information on the internet without quoting. The majority gave the correct answer about using a photo you found on the internet.

When the graduate students were asked about the method of obtaining and using the information copied from the internet in order to avoid plagiarism, 56% gave the wrong answer. This is an important shortcoming, especially for master's and doctoral students who will write a thesis.

Survey results of higher education students on digital literacy skills of Çanakkale Onsekiz Mart University

This survey, conducted for our Key to Information Treasure in Digital World- Digital Literacy in Higher Education (DIGI-KEY) project, was conducted to investigate the digital information literacy infrastructure of the students of different faculties studying at Çanakkale Onsekiz Mart University (COMU), and their current skills in the field of information literacy. Questionnaire applications were applied by the project team to the students in different classes of6 different faculties in a 15-minute period before the lesson. In the application, 100 students were first informed and then the questionnaires were completed. The purpose of this survey, carried out within the scope of the Digital Literacy in Higher Education (DIGI-KEY) project, is primarily to research the digital information literacy infrastructure of the students and finally to provide a digital information literacy education. In this study, the findings of the survey results from two aspects (positive and negative) are equally valuable.

Part 1: Information Literacy Practices

Question 1: First of all, the undergraduate students who participated in the survey were informed about the project and were asked how often they used the following resources related to their courses and academic studies.

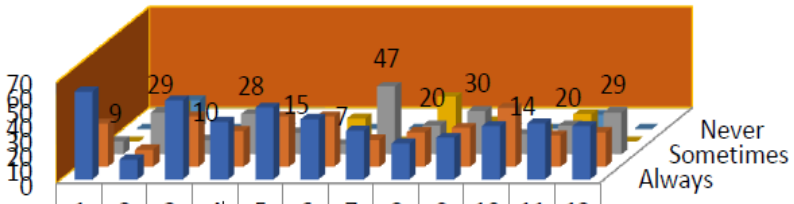
1	General search engines (e.g., Google, Bing, Yahoo!, Ask.com)
2	Google Scholar
3	Library catalogs
4	Wikipedia
5	Other Encyclopaedias (e.g., Britannica, either online or print)
6	Governmental Web sites (.gov sites)
7	Library databases (e.g., WoS, EBSCO, JSTOR)
8	Blogs
9	Social networking sites (e. g. Facebook)
10	Video sharing sites (e.g., YouTube, TeacherTube, etc.)
11	Slide sharing sites (e.g., Slideshare)
12	Online forums

- Of the 100 students who answered the questionnaire, 61 stated that they always used known general search engines, 30 said they used it frequently, and 9 of them said they rarely used it very often.
- 14 of the students stated that they always use Google Scholar, 12 of them frequently, 29 of them occasionally, 25 of them rarely use Google Scholar, and 20 of them never use Google Scholar.
- 55 of the students who participated in the survey stated that they do not use the library catalogs much, while 35 of them stated that they use it occasionally. On the other hand, 10 of the students stated that they never used library catalogs.
- 40 of the students stated that they use Wikipedia sometimes, 25 of them frequently, 28 of them all the time and 7 of them rarely.
- 50 of the students stated that they used other encyclopedias sometimes and rarely, and 35 of them frequently. However, 15 stated that they never used these encyclopedias.
- 42 of the students stated that they use government websites frequently, 35 of them occasionally,7 of them all the time and 16 of them rarely.

- 34 of the students stated that they used the Library Information Banks rarely, while 19 of them stated that they used it occasionally. However, 47 of them stated that they never used the Library Information Banks.
- 25 of the students stated that they use blogs sometimes, 24 of them rarely and 20 of them frequently. However, 31 stated that they have never used these blogs.

- 29 of the students stated that they use Social Networking Sites all the time, 27 of them occasionally and rarely, and 30 of them frequently. However, 14 of them stated that they neverused Social Networking Sites.
- 37 of the students stated that they use video sharing sites all the time, 41 frequently, 14 occasionally and 9 rarely. 39 of the students stated that they use Slide Sharing Sites occasionally, 22 rarely and 20 frequently. However, 19 of them stated that they never used slide sharing sites.
- 37 of the students stated that they used the Online Forums sometimes, and 24 of them rarely used it. However, 10 of them stated that they never used online forums.
- 36 of the students stated that they used the library information banks rarely, and 21 of them occasionally. However, 43 students stated that they never used library information banks.
- 38 of the students stated that they use blogs sometimes, 34 of them rarely, and 18 of them frequently. However, 10 of them stated that they never used blogs.
- 29 of the students stated that they use social networking sites all the time, 15 of them occasionally and rarely, and 34 of them frequently. However, 22 of them stated that they neverused social networking sites.
- 47 of the students stated that they use video sharing sites all the time, 42s frequently, 5 of themoccasionally and 6 of them rarely.
- 44 of the students stated that they use slide sharing sites occasionally, 20 of them rarely and 26 of them frequently. However, 10 of them stated that they never used slide sharing sites. 32 of the students stated that they use the online forums sometimes, and 16 of them rarely. However,52 of them stated that they have never used online forums.

Chart 1: Distribution of responses to survey question number one



	1	2	3	4	5	6	7	8	9	10	11	12
Always	61	14	55	40	50	42	34	25	29	37	39	37
Frequently	30	12	35	25	35	35	19	24	27	41	22	24
Sometimes	9	29	10	28	15	7	47	20	30	14	20	29
Rarely	0	25	0	7	0	16	0	31	14	9	19	0
Never	0	20	0	0	0	0	0	0	0	0	10	0
Nole												

Question 2: The graduate students who participated in the survey were asked the question, "Do you think about it when you find a resource on the Web"?

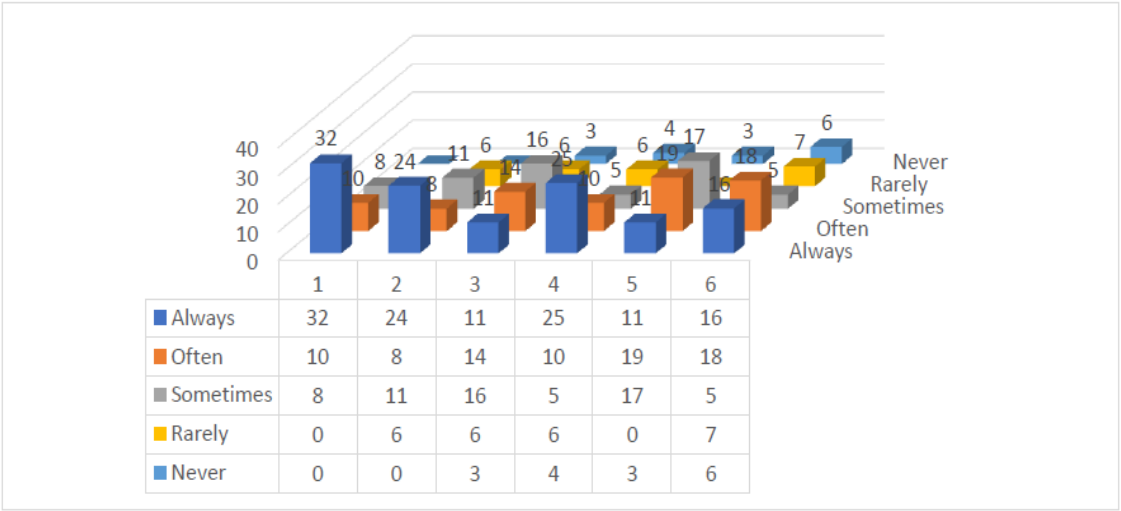
1	How current the Web site is
2	Author's credentials (e.g., title, degrees, affiliation)
3	Whether the Web site content acknowledges different viewpoints (i.e., not biased)
4	What the URL (i.e., .edu, .org, .gov) is and what it means
5	Whether the Web site has links to other resources on the Web
6	Whether the Web site has bibliography/reference list

Out of 50 students, 32 always, 10 often, 8 sometimes

How up-to-date the website is? They stated that they checked. 24 of the students stated that they always, 11 sometimes, 8 often, 7 rarely paid attention to the Author's identity information (eg, title, degrees, membership). 16 students sometimes, 14 often, 11 always, 6 rarely whether A significant majority of the students pointed out that the web page is constantly updated. Web site content accepts different viewpoints (i.e. is biased)? They reported that they did not control it. 25 of the students always, 10 often, 5 sometimes, 6 rarely

What is the URL (ie edu, .org, .gov) and what does it mean? They said “they knew”. But 4 of students replied as what is the URL (ie edu, .org, .gov) and what does it mean? They stated that they did not know. 17 of the students sometimes, 19 often, 11 always whether the Web site has links to other resources on the Web? They stated that they checked. 18 of the students frequently, 16 always, 7 rarely, 5 sometimes whether the website has a bibliography/reference list? They said they checked. But 6 of them is whether the website has a bibliography/reference list? They reported that they did not control it.

Chart 2. Distribution of responses to survey question number two.



	1	2	3	4	5	6
Always	32	24	11	25	11	16
Often	10	8	14	10	19	18
Sometimes	8	11	16	5	17	5
Rarely	0	6	6	6	0	7
Never	0	0	3	4	3	6

Question 3: How often do you use each of these tools to prepare assignments related to your coursesand studies?

1	Highlighting feature of word processors
2	Track-changes feature of word processors
3	Spell checkers
4	Digital "sticky notes" (e.g., Post-It digital notes)
5	Citation management tools (e.g., RefWorks, EndNote, EasyBib)
6	Social bookmarking (e.g., digg, delicious)
7	Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)
8	Document sharing programs (e.g., Google Documents)
9	Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)
10	Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)
11	Presentation tools (e.g., Power point, Prezi, etc.)

14 of the 50 students stated that they use the stress feature of word processors sometimes, 10 of them always, 9 of them frequently, and 12 of them rarely.

However, 3 of them stated that they do not use the highlighting feature of word processors. Eighteen of the students stated that they rarely, 15 sometimes, 9 always, and 5 frequently use wordprocessors' part replacement feature.

However, 1 of them reported that they never used the part replacement feature of word processors. 19 of the students reported that they used spelling checkers sometimes, 13 of them always, 11 of them frequently, and 5 of them rarely. Only 2 students stated that they never used Spell checkers.

12 of the students stated that they use digital "sticky notes" frequently, 13 of them sometimes, 10 of them rarely, 8 of them always.

However, 7 of them reported never using Digital "sticky notes". 14 of the students reported that they used citation management tools frequently, 11 of them rarely, 8 of them always and 7 of them sometimes.

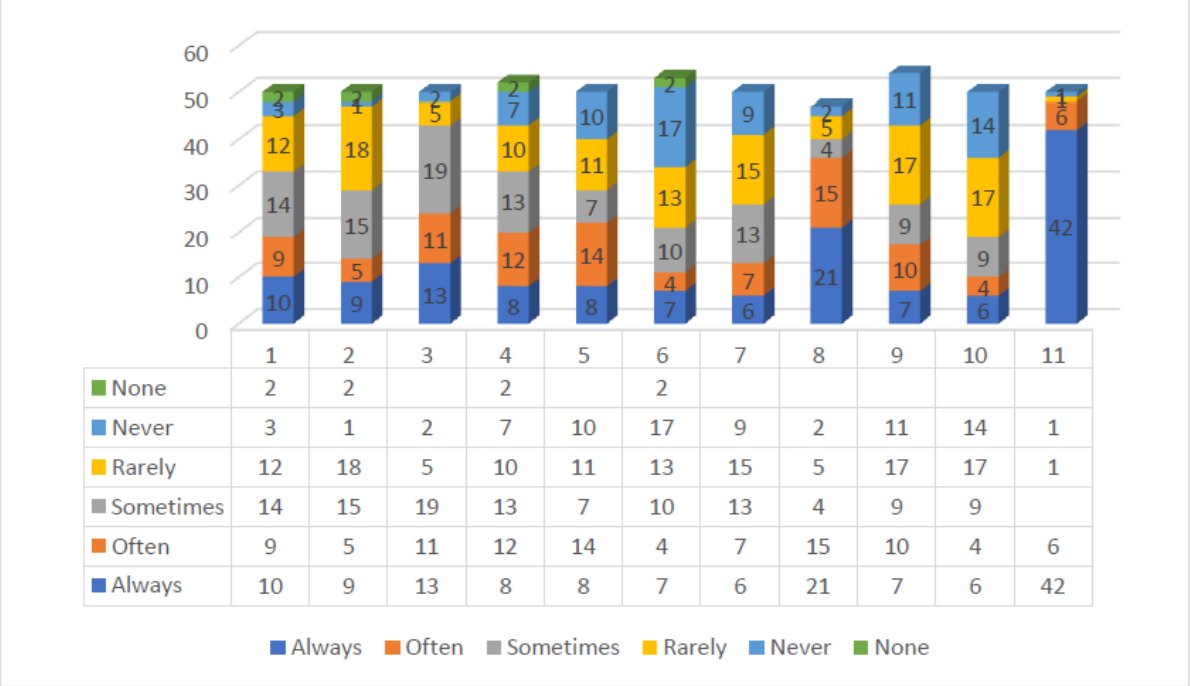
However, 10 of them stated that they never used Attribution management tools. 15 of the students reported that they used social bookmarks rarely, 13 sometimes, 7 always, and 4 frequently.

However, 17 of them stated that they never used social bookmarking. 15 of the students stated that they rarely use alert services, 13 of them sometimes, 6 of them always, and 7 of them frequently. However, 9 reported that they never used Alert services. 21 of the students stated that they always use document sharing programs, 15 of them frequently, 5 of them rarely, 4 of them sometimes.

Only 2 students reported that they never used document sharing programs. 17 of the students reported rarely, 10 frequently, 9 sometimes, and 7 always using Wiki server providers to create and share Web content. However, 11 stated that they never used Wiki server providers to create and share Web content. 17 of the students stated that they rarely, 9 sometimes, 6 always, 4 frequently stated that they use Blog server providers to create and share Web content.

However, 14 reported never using Blog server providers to create and share Web content. 42 of the students stated that they always use presentation tools, 6 of them frequently and 1 of them rarely. Only 1 student stated that he never used Presentation tools.

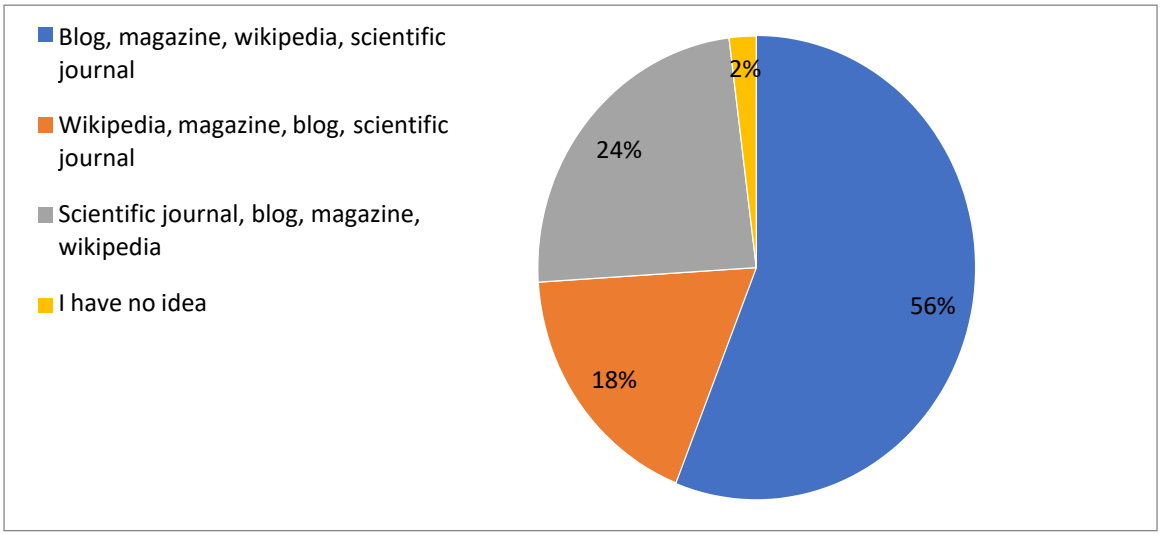
Chart 3. Distribution of responses to survey question number three.



	1	2	3	4	5	6	7	8	9	10	11
None	2	2		2		2					
Never	3	1	2	7	10	17	9	2	11	14	1
Rarely	12	18	5	10	11	13	15	5	17	17	1
Sometimes	14	15	19	13	7	10	13	4	9	9	
Often	9	5	11	12	14	4	7	15	10	4	6
Always	10	9	13	8	8	7	6	21	7	6	42

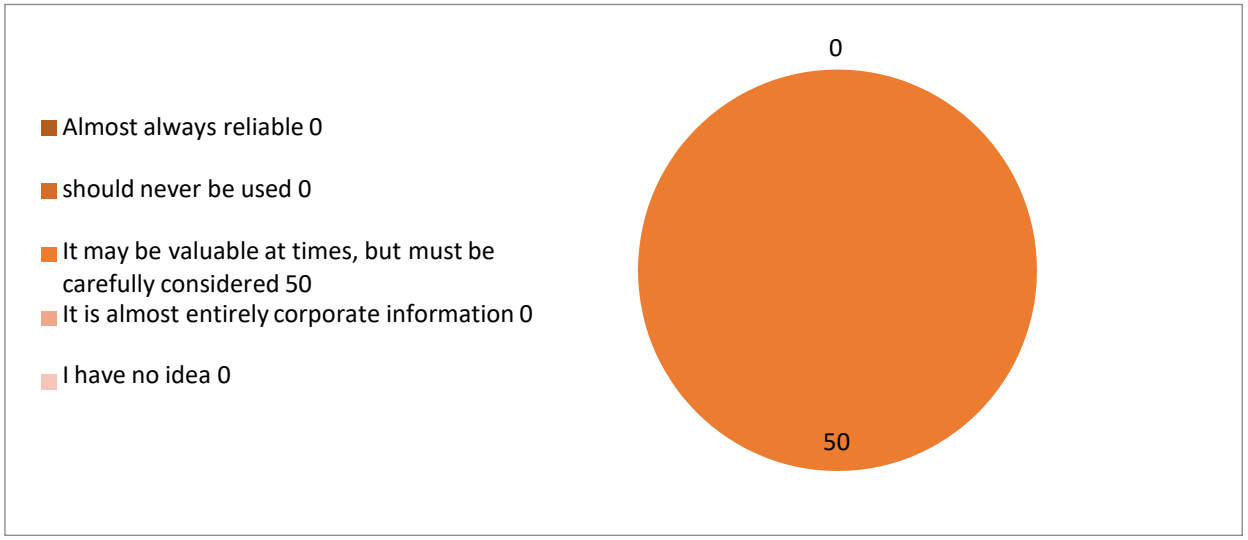
1	Highlight feature of word processors
2	Part replacement feature of word processors
3	Spell checkers
4	Digital "sticky notes"
5	Attribution management tools
6	social bookmarking
7	alert services
8	document sharing programs
9	Wiki server providers for creating and sharing web content
10	Blog server providers for creating and sharing web content
11	Presentation tools

Chart 4. Distribution of responses to survey question number four



56% of the students "**Blog, magazine, wikipedia, scientific journa**l", 24% "Scientific journal, blog, journal, wikipedia", 18% "Wikipedia, journal, blog, scientific journal", 2% He replied, “I have no idea”.

Question 5: The students were asked about the reliability of the information on the web

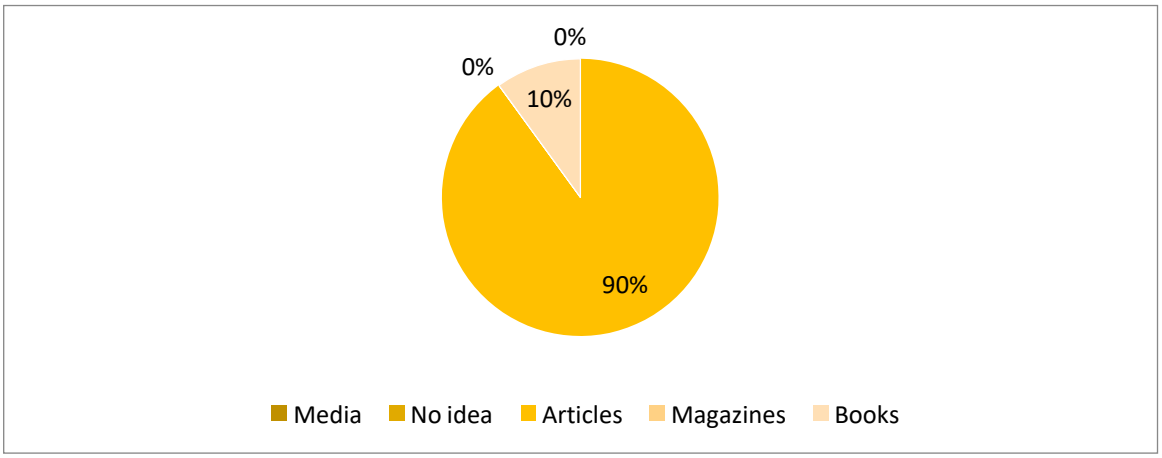


All of the students answered, "It can be valuable sometimes, but it should be carefully evaluated".

Chart 5. Distribution of responses to survey question number five

Question 6: The question has been asked as which of the following is not found in the library catalogue?

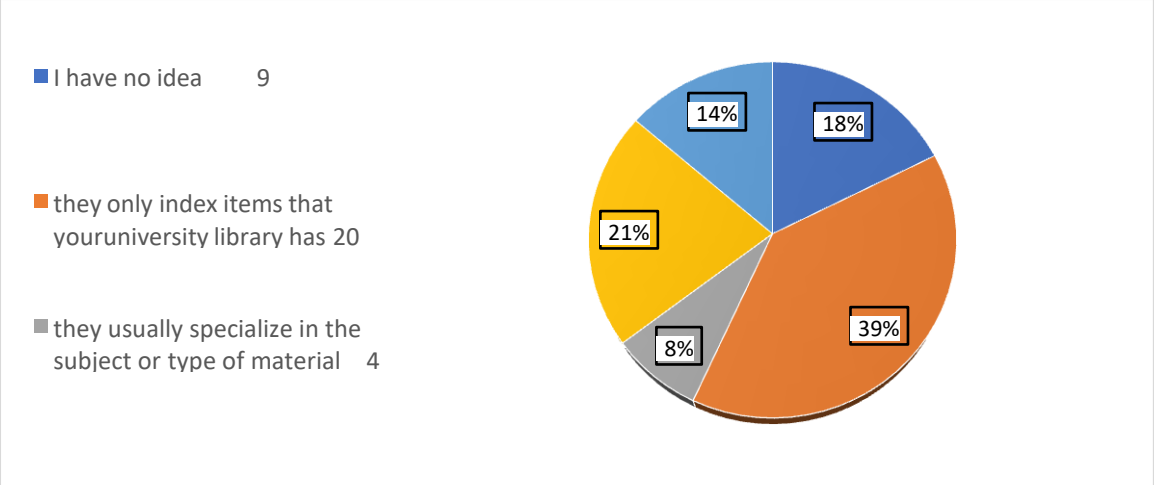
Chart 6. Distribution of responses to survey question number six



90% of the students answered "Articles" and 10% "Books".

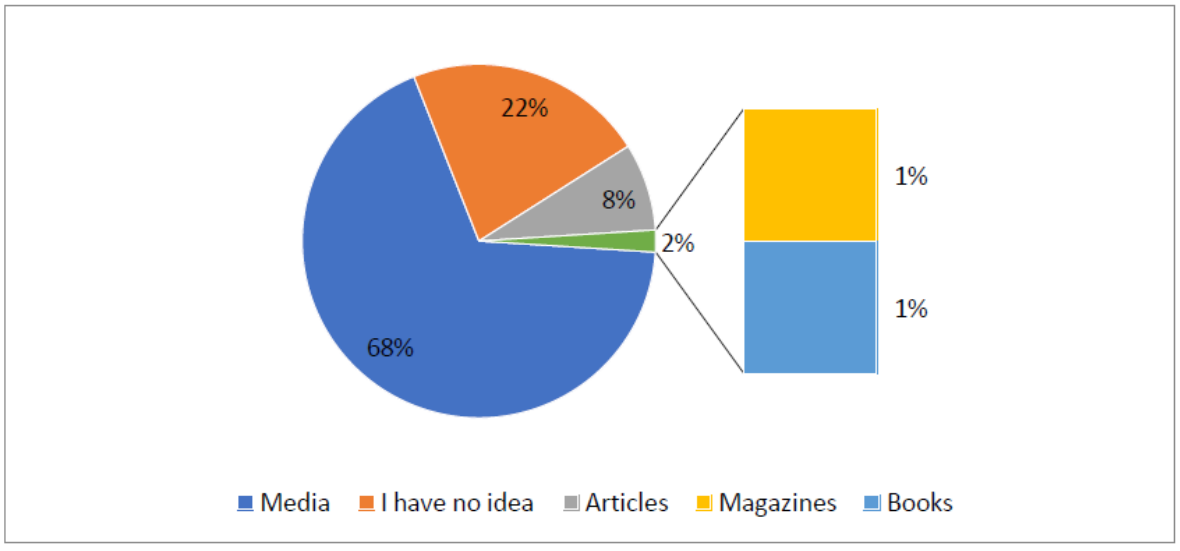
Question 7: The question has been asked to the students as which of the following statements aboutacademic databases is not true.

Chart 7. Distribution of responses to survey question number seven



39% of students “only index items your university library has”, 21% “allow you to search for articles by subject”, 14% “always include citations and sometimes also include abstracts and full text.”, 18% ' 'I have no idea', 8% of them generally specialize in the subject or type of material”.

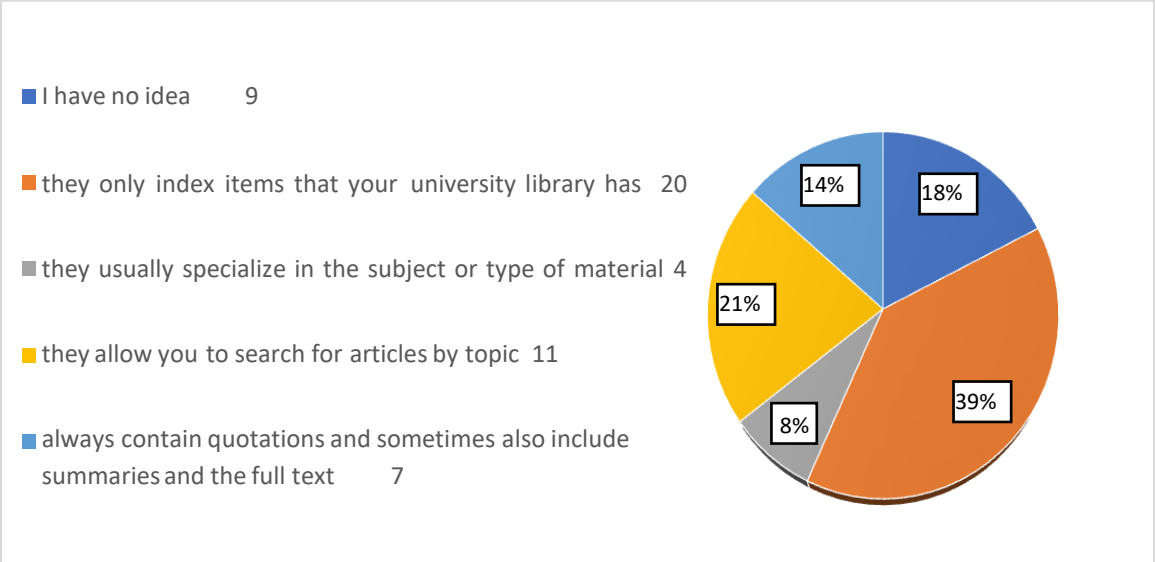
Question 8: The students were asked: “Which of the below doesn’t exist in the library catalogue?



68% of the students said “Media”, 22% said “I have no idea”, 8% said “Articles”, %1 said “Magazines” and 1% replied “Books”. Chart 8. Distribution of responses to survey questionnumber eight

Question 9: The question has been asked that which of the following statements about academicdatabases is not true.

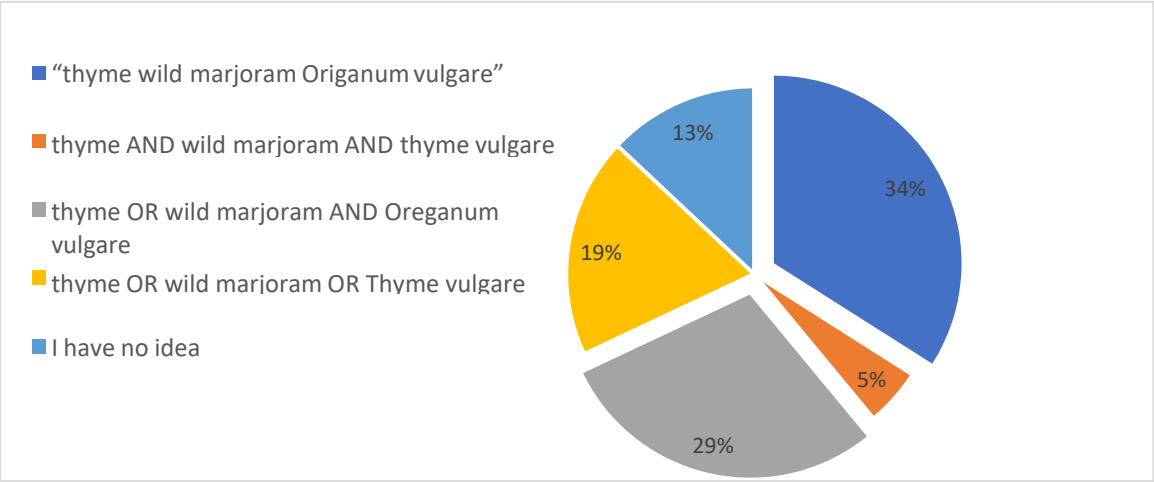
Chart 9. Distribution of responses to survey question number nine



39% of students “only index items your university library has”, 21% “allow you to search for articles by subject”, 14% “always include citations and sometimes also include abstracts and full text.” 18% ' 'I have no idea', 8% of them generally specialize in the subject or type of material”.

Question 10: Students were asked this question: "You want to learn about the medicinal herb thyme, also known as wild marjoram in traditional herbal medicine. Its scientific name isOreganum Vulgare. What is the most appropriate search query in a database?

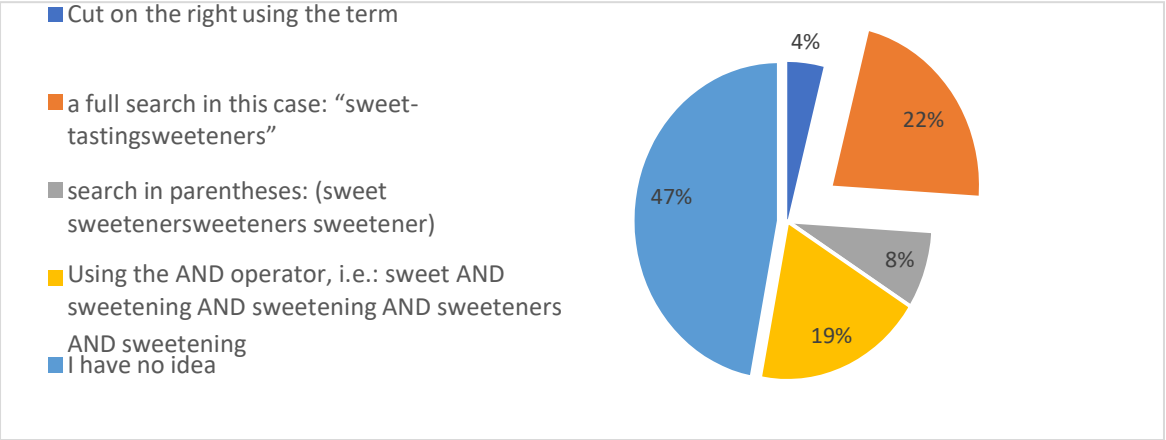
Chart 10. Distribution of responses to survey question number ten



36% of the students ""thyme oregano *Origanum vulgare*", 32% "thyme OR *wild marjoram* AND *Oreganum vulgare*", 16% "thyme OR wild marjoram OR *Thyme vulgare*", 10% "no idea none", 6% answered "thyme AND *wild marjoram* AND *thyme vulgare*".

Question 11: Students were asked: Are you interested in Sweeteners and sweeteners and find appropriate English terms: sweet, sweetener, sweetener, sweeteners, and sweetener. What is the most appropriate search strategy?

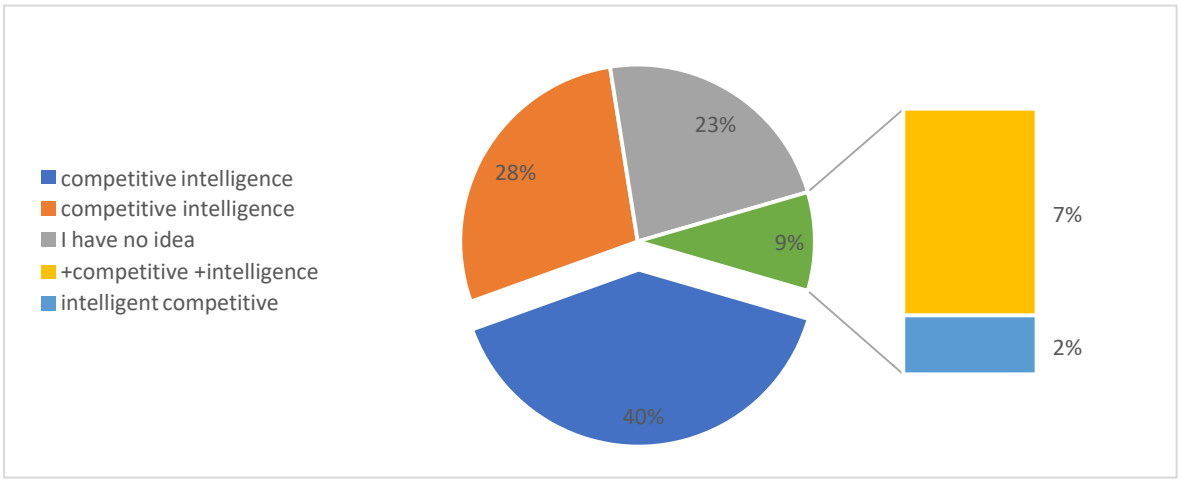
Chart 11. Distribution of responses to survey question number eleven



36% of students said “I have no idea”, 24% “a complete search in this case: “sweet sweetener sweetening sweeteners”, 22% “using the AND operator, ie: sweet AND sweetening AND sweetening VE sweetening AND sweetening”, 14% answered “right cut* using the term sweet”, 4% answered “search in parentheses: (sweet sweetener sweeteners sweetener)”

Question 12: Students were asked: You want to search for competitive intelligence on Google. Whatis the most appropriate search strategy?

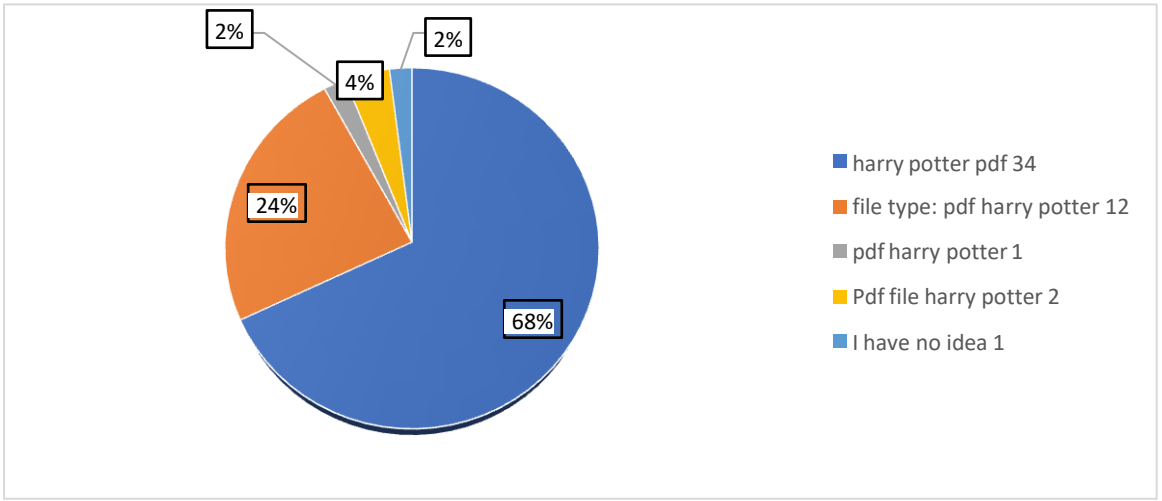
Chart 11. Distribution of responses to survey question number twelve



Results of the 46% of the students was "competitive intelligence", 32% competitive intelligence, 14% "I have no idea", 6% +competitive +intelligence and 2% "competitive with intelligence".

Question 13: Students were asked: “How do you search for Harry Potter's pdf files on Google?”

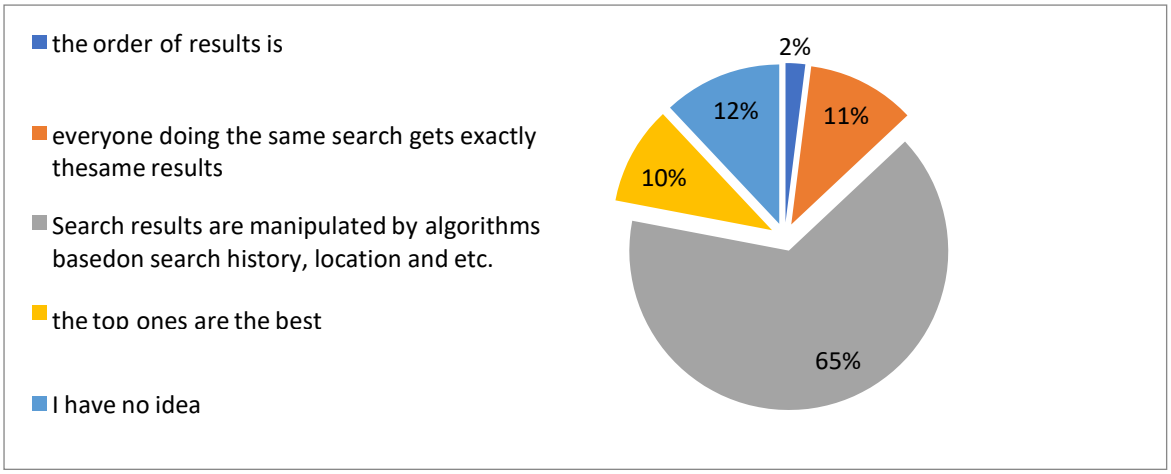
Chart 13. Distribution of responses to survey question number thirteen



68% of the students answered "harry potter pdf", 24% "file type: pdf harry Potter", 4% "Pdf file harry Potter" and 2% "I have no idea".

Question 14. Students were asked: Which of the following is true regarding Google search results?

Chart 14. Distribution of responses to survey question number fourteen



84% of students “search results are based on search history, location, etc. are manipulated by algorithms based on algorithms”, 6% “the top ones are the best” and “the order of results is arbitrary”, 2% “no idea”, 4% “everyone doing the same search gets exactly the same results” gavethe answer.

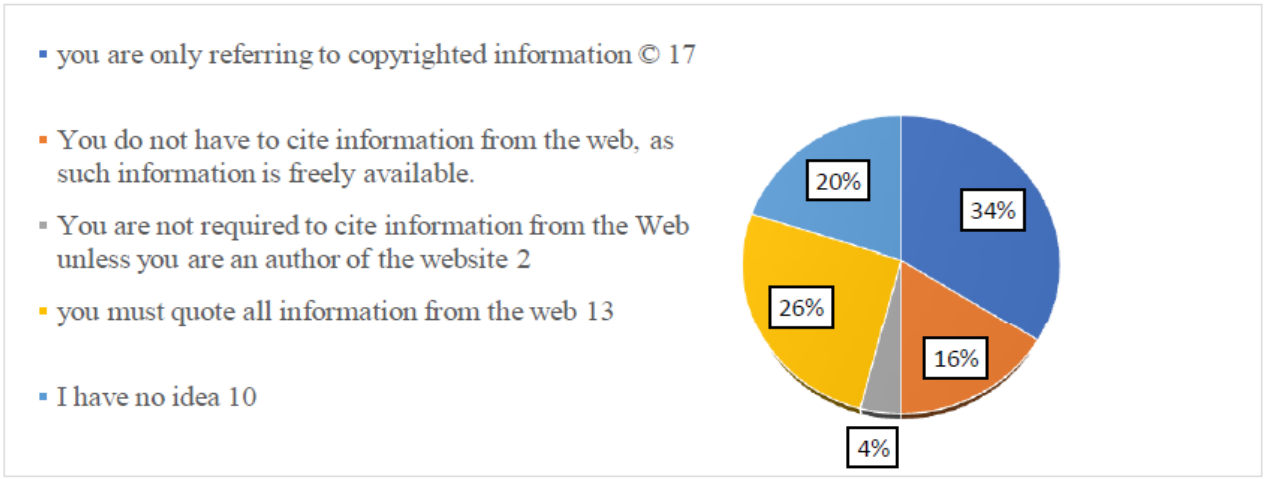
Question 15: Which statement to graduate students about GMOs (Genetically Modified Organisms) is notthe author's opinion? The question has been asked.

80% of the students answered, "According to the inventories, 15 new GMOs were registered in the EU in 2013" and 14% answered "I have no idea".

Question 16: What is the correct order of elements in a research paper? The question has been asked. 80% of the students "Abstract-Introduction-Methods-Conclusions-Discussion- Conclusions-References", 10% of them "Introduction-Conclusions-Discussion-Conclusions- Methods-References-Abstract", 8% of them "Abstract-References- Introduction-Methods-Results-Discussion-Conclusions", 2% answered "I have no idea".

Question 18: The question has been asked as "what is the appropriate procedure for postgraduate studentsto use information from the Internet?

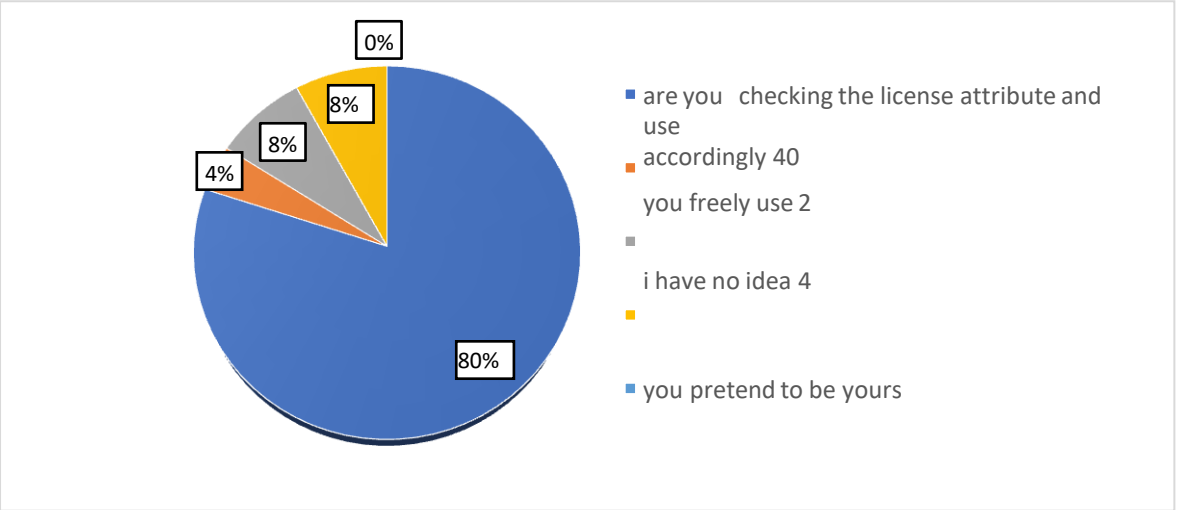
Chart 18. Distribution of responses to survey question number eighteen



34% of students "you only refer to copyrighted information ©", 20% "I have no idea", 26% "you should cite all information from the web", 16% "You should cite information from the web" you don't have to cite it because such information is freely available", 4% answered "You don't have to cite information from the Web unless you are an author of the website.

Question 19: You want to use a photo you found on the Internet to graduate students. The question has been asked.

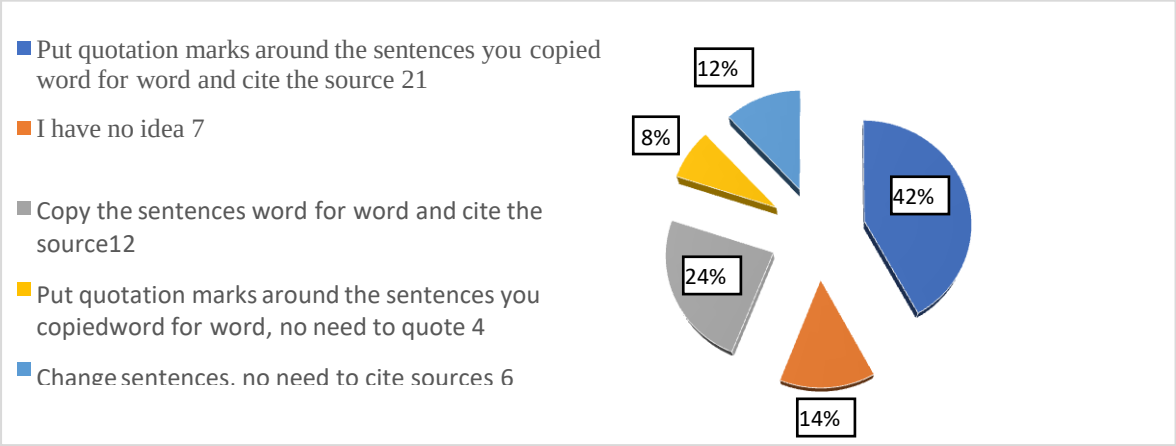
Chart 19. Distribution of responses to survey question number nineteen



80% of the students answered "you check the license attribute and use it accordingly", 8% "you use it with a small change" and "I have no idea", 4% "you use it freely".

Question 20: Which of the following will help you avoid plagiarism? The question has been asked.

Chart 20. Distribution of responses to survey question number twenty



42% of the students "Put quotation marks around the sentences you copied word for word and cite the source", 24% "Copy the sentences word for word and cite the source", 14% "I have no idea", 12% "Change the sentences, there is no need to cite the source", 8% answered "Put quotation marks around the sentences you copied word for word, you do not need to quote".

Results of Survey

Some of the questions asked in the first part aim to determine the digital information literacy levels of the students. In the second part, there are questions to test the accuracy of the answers given in the first part. Considering the general ratios of the answers given to some questions in the 1st part;

*Most of the students did not use google scholar, library catalogs and other educational resources. These deficiencies should be considered as a negative and important digital literacy deficiency for students' academic development.

*It has been observed that almost 50% of the students do not pay attention to or do not care about issues such as current status, author identification information, reference list, etc., in the use of websites by students.

* It has been observed that students do not generally use some digital supportive and facilitating tools during their studies and homework preparation stages. When the answers given to the questions asked in the second part are examined, some remarkable results are discussed below.

*In the order of the students' digital information sources from the less formal to the official, 53% of the students made the correct order and 47% of the students ranked them incorrectly.

*92% of the students answered the question about the reliability of the Information on the Web as “Sometimes it may be valuable, but it should be carefully evaluated”.

*To the question of "Which of the following is true about Google search results", 65% of the students mostly gave correct answer by saying "Search results are manipulated by algorithms based on search history, location, etc.”. However, the fact that the answers given by the students to other questions about how to search in search engines and the methods of searching for information are generally wrong show that the students have insufficient knowledge on this subject.

In summary, as a result of this study, it has been seen that most students have insufficient knowledge about the usage of the education and academic sites and library resources, and searching for information in search engines. It has been observed that 50% of the students have insufficient knowledge on ethical rules in addition to the up-to-dateless of digital pages and digital information. In addition to the practical performance of the students in the courses in the distance education process implemented in our university, the results of homework and exams have shown us that the students are insufficient in reaching the right information in the digital world, compiling it and presenting it within the framework of ethical rules. In addition, it is known that most of the students do not sufficiently benefit from other scientific resources, especially the digital resources of university libraries. It is a fact that the skillful use of digital technological devices (computer, mobile phone, etc.) and spending more time in the digital world does not mean that users use technology wisely. As a result of this survey, it is seen that the literacy skills of the young people are insufficient since the dimensions of their digital skills and their critical views arenot in parallel.

Conclusion:

References

Bayrakcı. S, Narmanlıoğlu H.2021. Türkiye'deki Lisans Öğrencilerinin ve Mezunlarının Dijital Okuryazarlık Düzeylerinin İncelenmesi. Bilişim Teknolojileri Online Dergisi Academic Journal of Information Tecnology. 12 : 46. https://doi.org/10.5824/ajite.2021.03.003.x

Digital 2020 Global Digital Overview (2020). https://datareportal.com/reports/digital2020-global-digital-overview

Emin M. N., Altunel M. 2021. Koronavirüs sürecinde Türkiye'nin uzaktan eğitim deneyimi. SETA Yayınları 190 | İstanbul

Göldağ B. 2021. Üniversite öğrencilerinin dijital okuryazarlık düzeyleri ile dijital veri güvenliği farkındalık düzeyleri arasındaki ilişkinin incelenmesi(Investigation of the Relationship between Digital Literacy Levels and Digital Data Security Awareness Levels of University Students) e- Uluslararası Eğitim Araştırmaları Dergisi. Cilt 12, Sayı 3, 82 – 100.

Karabacak, Z.İ., Sezgin A.A. 2019. Türkiye'de dijital dönüşüm ve dijital okuryazarlık. Türk İdare Dergisi 91: 488.

Martın, A., & Grudziecki, J. (2006). DigEuLit: Concepts and tools for digital literacy development. Innovation in Teaching and Learning in Information and Computer Sciences, 5(4), 249–267.

MEB, (2019). Milli Eğitim İstatistikleri Örgün Eğitim: 2018-2019 Eğitim Öğretim Yılı, Ankara, ISBN 978-975-11-5133-9.
http://sgb.meb.gov.tr/meb_iys_dosyalar/2019_09/30102730_meb_istatistikleri_orgun_egitim_2018_2019.pdf

NG, Wan (2012). Can We Teach Digital Natives Digital Literacy? Computers & Education, 59 (3), s.1065-1078.

OECD.2019 School education during COVID-19: Were teachers and students ready? https://www.oecd.org/education/Turkey-coronavirus-education-country-note.pdf(erişim 16.07.2022)

Onursoy S. 2018. Üniversite gençliğinin dijital okuryazarlık düzeyleri: Anadolu üniversitesi öğrencileri üzerine bir araştırma. Gümüşhane Üniversitesi İletişim Fakültesi Elektronik Dergisi, 6:2 ,989-1013

Sezgin A.A., Karabacak. Z. İ.2020. Yükseköğretimde dijital dönüşüm ve dijital okuryazarlık dersine yönelik betimsel bir analiz. Anadolu Üniversitesi İletişim Bilimleri Fakültesi Uluslararası Hakemli Dergisi Online Journal of the Faculty of Communication Sciences Cilt:28 Sayı:1 Volume: 28 Number: 1 ISSN-1309-348723 .

UNESCO, (2020). COVID 19 Impact on Education: Globall Monitoring of School Closures caused by COVID 19. https://en.unesco.org/covid19/educationresponse

Uyar A. 2021.Meslek Yüksekokulu Öğrencilerinin Dijital Okuryazarlık Düzeyleri Uluslararası Güncel Eğitim Araştırmaları Dergisi (UGEAD), Haziran, 2021; 7(1): 198-211

Yılmaz E., Esmer B. 2021. Sınıf Öğretmeni Adaylarının Dijital Okuryazarlık Becerilerinin İncelenmesi Examination of Digital Literacy Skills of Prospective Primary School Teachers. 19th International Primary Teacher Education Symposium (IPTES 2021) / 12-14 .74

YÖK Uzaktan Öğretim Anketi, (2020). Üniversitelerimizde Küresel Salgın Sürecinde Uzaktan Öğretim Uygulamaları Anket Sonuçları. https://covid19.yok.gov.tr/Documents/AnaSayfa/uzaktan-ogretim-anketi.pdf

YÖK, (2019). Yükseköğretimde Dijital Dönüşüm Projesi. https://basin.yok.gov.tr/DuyuruBelgeleri/2019/03_dijital_donusum_tanitim_toplantisi.pdf

YÖK Bilgi Sistemi, (2020a). Yüksek öğretim Bilgi Sistemi: Öğrenim Düzeyine Göre öğrenci Sayısı https://istatistik.yok.gov.tr/

Yurtseven N., Saraç S., Akgün E. 2021.Digital Skills for Teaching and Learning in Distance Education: An Example of a University in the Pandemic Eurasian Journal of Educational Research www.ejer.com.tr

Zan N ve Zan B.U. Koronavirüs ile Acil Durumda Eğitim: Türkiye'nin Farklı Bölgelerinden Uzaktan Eğitim Sistemine Dahil Olan Edebiyat Fakültesi Öğrencilerine Genel Bakış Education. in Emergency at Coronavirus: Overview of Faculty of Letters Students Included to Distance Education System from Different Regions of Turkey. Turkish Studies, 15(4), 1367-1394

Annexes

SURVEY - DIGITAL LITERACY SKILLS of HEI STUDENTS

ERASMUS+ KA2 STRATEGIC PARTNERSHIPS IN HIGHER EDUCATION

Project "Key to Information Treasure in Digital World- Digital Literacy in Higher Education" – DIGI KEY,

No 2021-1-BG01-KA220-HED-00003116411:15

SURVEY- DIGITAL LITERACY SKILLS of HEI STUDENTS

This survey is prepared to find out about information literacy practices and digital information literacy skills of university students. Findings will be used to create an educational course curriculum within an Erasmus+ KA2 project (Project no: 2021-1-BG01-KA220-HED-00003116411:15). Findings in both directions (positive and negative) are equally valuable. Please do not hesitate saying "no idea at all", if that is the case, while answering the test questions.

It will take approximately 10-15 minutes to finish the survey.

Thank you for your participation!

Part 1: Information Literacy Practices

Q. How often do you use these sources for your course-related studies?

	Always	Often	Sometimes	Rarely	Never
General search engines (e.g., Google, Bing, Yahoo!, Ask.com)					
Google Scholar					
Library catalogs					
Wikipedia					
Other encyclopedias (e.g., Britannica, either online or print)					
Governmental Websites (.gov sites)					
Library databases (e.g., WoS, EBSCO, JSTOR)					
Blogs					
Social networking sites (e. g. Facebook)					
Video sharing sites (e.g., YouTube, TeacherTube, etc.)					
Slide sharing sites (e.g., Slideshare)					
Online forums					

Q. When you find a source "out on the Web", do you consider?

	Always	Often	Sometimes	Rarely	Never
How current the Website is					
Author's credentials (e.g., title, degrees, affiliation)					
Whether the Website content acknowledges different viewpoints (i.e., not biased)					
What the URL (i.e., .edu, .org, .gov) is and what it means					
Whether the Website has links to other resources on the Web					
Whether the Website has bibliography/reference list					

Q. How often do you use each of these tools for preparing course-related assignments?

	Always	Often	Sometimes	Rarely	Never
Highlighting feature of word processors					
Track-changes feature of word processors					
Spell checkers					
Digital "sticky notes" (e.g., Post-It digital notes)					
Citation management tools (e.g., RefWorks, EndNote, EasyBib)					
Social bookmarking (e.g., digg, delicious)					
Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)					
Document sharing programs (e.g., Google Documents)					
Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)					
Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)					
Presentation tools (e.g., Power point, Prezi, etc.)					

Part 2: Digital Information Literacy Test

Q. In which list have the information sources been correctly ordered from the least to the most formally established and verified?

☐ **blog, magazine, wikipedia, scholarly journal**

☐ blog, scholarly journal, wikipedia, magazine

☐ wikipedia, magazine, blog, scholarly journal

☐ scholarly journal, blog, magazine, wikipedia

☐ no idea at all

Q. Information on the Web:

☐ is almost always trustworthy

☐ should never be used

☐ **can sometimes be valuable, but must evaluated carefully**

☐ is almost entirely corporate information

☐ no idea at all

Q. Which of these items are NOT be found in the library catalog?

☐ journals

☐ books

☐ media

☐ **articles**

☐ no idea at all

Q. Which one of these statements about Academic Databases is *not* true?

☐ they always contain citations and sometimes also include abstracts and full text

☐ **they only index items owned by your university library**

☐ they often specialize in subject or type of material

☐ they allow you to search for articles by subject

☐ no idea at all

Q. You want to find information on the medicinal plant oregano, which is also known as wild marjoram in traditional herbal medicine. Its scientific name is Oreganum Vulgare. What is the most appropriate search query in a database?

☐ "oregano wild marjoram Oreganum vulgare"

☐ oregano AND wild marjoram AND Oreganum vulgare

☐ oregano OR wild marjoram AND Oreganum vulgare

☐ **oregano OR "wild marjoram" OR "Oreganum vulgare"**

☐ no idea at all

Q. You are interested in the topic of sweetening and sweeteners, and you find the appropriate English terms: sweet, sweeten, sweetener, sweeteners, sweetening. What is the most appropriate search strategy?

☐ **right-hand truncation, using the term sweet*** (if applicable)

☐ an exact search, in this case: "sweet sweeten sweetener sweeteners sweetening"

☐ searching with parenthesis: (sweet sweeten sweetener sweeteners sweetening)

☐ using the operator AND, i.e.: sweet AND sweeten AND sweetener AND sweeteners AND sweetening

☐ no idea at all

Q. You want to search for competitive intelligence on Google, what is the most appropriate search strategy?

☐ +competitive +intelligence

☐ competitive intelligence

☐ **"competitive intelligence"**

☐ competitive with intelligence

☐ no idea at all

Q. How do you search for pdf files of Harry Potter on Google?

☐ **filetype:pdf "harry potter"**

☐ pdf harry potter

☐ harry potter pdf

☐ Pdf file harry potter

☐ no idea at all

Q. Which of the following is correct about Google search results?

☐ ranking of the results is arbitrary

☐ everybody who conducts the same search gets exactly the same results

☐ **search results are manipulated by algorithms which are based on search history, location, etc.**

☐ hits on top are the best

☐ no idea at all

Q. What is the appropriate procedure for using information from the Internet?

☐ you only cite information which has a copyright sign ©

☐ you do not have to cite information from the Web, as such information is freely available

☐ you do not have to cite information from the Web, unless Website has an author

☐ **you have to cite all the information taken from the web**

☐ no idea at all

Q. You want to use a photo you have found on Internet.

☐ you use it freely

☐ **you check the license attribution and use it accordingly**

☐ you use it with a small modification

☐ you pretend like it is yours

☐ no idea at all

Q. Which of the following helps you to avoid plagiarism?

☐ **Use quotation marks around the sentences you copied word-by-word and cite the source**

☐ Copy the sentences word-by-word and cite the source

☐ Change the sentences, no need to cite the source

☐ Use quotation marks around the sentences you copied word-by-word, no need to cite

☐ no idea at all

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Project "Key to Information Treasure in Digital World- Digital Literacy in Higher Education" – DIGI KEY,

No 2021-1-BG01-KA220-HED-00003116411:15

SURVEY - DIGITAL LITERACY SKILLS OF POSTGRADUATE, DOCTORAL STUDENTS, ASSISTANTS, LECTURERS AND STAFF

This survey is prepared to find out about information literacy practices and digital information literacy skills of postgraduate, doctoral students, assistants, lecturers and staff. Findings will be used to create an educational course curriculum within an Erasmus+ KA2 project (Project no: 2021-1-BG01-KA220-HED-00003116411:15). Findings in both directions (positive and negative) are equally valuable. Please do not hesitate saying "no idea at all", if that is the case, while answering the test questions.

It will take approximately 10-15 minutes to finish the survey.

Thank you for your participation!

Part 1: Information Literacy Practices

Q. How often do you use these sources for your course-related studies?

	Always	Often	Sometimes	Rarely	Never
General search engines (e.g., Google, Bing, Yahoo!, Ask.com)					
Google Scholar					
Library catalogs					
Wikipedia					
Other encyclopedias (e.g., Britannica, either online or print)					
Governmental Websites (.gov sites)					
Library databases (e.g., WoS, EBSCO, JSTOR)					
Blogs					
Social networking sites (e. g. Facebook)					
Video sharing sites (e.g., YouTube, TeacherTube, etc.)					
Slide sharing sites (e.g., Slideshare)					
Online forums					

Q. When you find a source "out on the Web", do you consider?

	Always	Often	Sometimes	Rarely	Never
How current the Website is					
Author's credentials (e.g., title, degrees, affiliation)					
Whether the Website content acknowledges different viewpoints (i.e., not biased)					
What the URL (i.e., .edu, .org, .gov) is and what it means					
Whether the Website has links to other resources on the Web					
Whether the Website has bibliography/reference list					

Q. How often do you use each of these tools for preparing course-related assignments?

	Always	Often	Sometimes	Rarely	Never
Highlighting feature of word processors					
Track-changes feature of word processors					
Spell checkers					
Digital "sticky notes" (e.g., Post-It digital notes)					
Citation management tools (e.g., RefWorks, EndNote, EasyBib)					
Social bookmarking (e.g., digg, delicious)					
Alerting services (e.g., programs that send out automatic Web feeds for newly appearing content)					
Document sharing programs (e.g., Google Documents)					
Wiki server providers for creating and sharing Web content (e.g., Wikia, PBWorks, Wetpaint - other than Wikipedia)					
Blog server providers for creating and sharing Web content (e.g., Blogger, LiveJournal, Wordpress)					
Presentation tools (e.g., Power point, Prezi, etc.)					

Part 2: Digital Information Literacy Test

Q. In which list have the information sources been correctly ordered from the least to the most formally established and verified?

☐ **blog, magazine, wikipedia, scholarly journal**

☐ blog, scholarly journal, wikipedia, magazine

☐ wikipedia, magazine, blog, scholarly journal

☐ scholarly journal, blog, magazine, wikipedia

☐ no idea at all

Q. Information on the Web:

☐ is almost always trustworthy

☐ should never be used

☐ **can sometimes be valuable, but must evaluated carefully**

☐ is almost entirely corporate information

☐ no idea at all

Q. Which of these items are NOT be found in the library catalog?

☐ journals

☐ books

☐ media

☐ **articles**

☐ no idea at all

Q. Which one of these statements about Academic Databases is *not* true?

☐ they always contain citations and sometimes also include abstracts and full text

☐ **they only index items owned by your university library**

☐ they often specialize in subject or type of material

☐ they allow you to search for articles by subject

☐ no idea at all

Q. You want to find information on the medicinal plant oregano, which is also known as wild marjoram in traditional herbal medicine. Its scientific name is Oreganum Vulgare. What is the most appropriate search query in a database?

☐ "oregano wild marjoram Oreganum vulgare"

☐ oregano AND wild marjoram AND Oreganum vulgare

☐ oregano OR wild marjoram AND Oreganum vulgare

☐ **oregano OR "wild marjoram" OR "Oreganum vulgare"**

☐ no idea at all

Q. You are interested in the topic of sweetening and sweeteners, and you find the appropriate English terms: sweet, sweeten, sweetener, sweeteners, sweetening. What is the most appropriate search strategy?

☐ **right-hand truncation, using the term sweet*** (if applicable)

☐ an exact search, in this case: "sweet sweeten sweetener sweeteners sweetening"

☐ searching with parenthesis: (sweet sweeten sweetener sweeteners sweetening)

☐ using the operator AND, i.e.: sweet AND sweeten AND sweetener AND sweeteners AND sweetening

☐ no idea at all

Q. You want to search for competitive intelligence on Google, what is the most appropriate search strategy?

☐ +competitive +intelligence

☐ competitive intelligence

☐ **"competitive intelligence"**

☐ competitive with intelligence

☐ no idea at all

Q. How do you search for pdf files of Harry Potter on Google?

☐ **filetype:pdf "harry potter"**

☐ pdf harry potter

☐ harry potter pdf

☐ Pdf file harry potter

☐ no idea at all

Q. Which of the following is correct about Google search results?

☐ ranking of the results is arbitrary

☐ everybody who conducts the same search gets exactly the same results

☐ **search results are manipulated by algorithms which are based on search history, location, etc.**

☐ hits on top are the best

☐ no idea at all

Q. Which statement on GMO (Genetically Modified Organisms) is not the author's personal opinion?

☐ GMO will bring about a global food crisis.

☐ **according to inventories, 15 new GMOs were registered in the EU in 2013.**

☐ GMO experimentation should be banned.

☐ most GMO researchers have been paid off by large corporations, such as Monsanto.

☐ no idea at all

Q. What is the correct sequence of the elements in a research article?

☐ Abstract-Bibliography-Introduction-Methods-Results-Discussion-Conclusions

☐ **Abstract -Introduction-Methods-Results-Discussion-Conclusions-Bibliography**

☐ Abstract-Conclusions-Introduction- Bibliography-Methods-Results-Discussion

☐ Introduction-Results-Discussion-Conclusions-Methods-Bibliography-Abstract

☐ no idea at all

Q. What is the appropriate procedure for using information from the Internet?

☐ you only cite information which has a copyright sign ©

☐ you do not have to cite information from the Web, as such information is freely available

☐ you do not have to cite information from the Web, unless Website has an author

☐ **you have to cite all the information taken from the web**

☐ no idea at all

Q. You want to use a photo you have found on Internet.

☐ you use it freely

☐ **you check the license attribution and use it accordingly**

☐ you use it with a small modification

☐ you pretend like it is yours

☐ no idea at all

Q. Which of the following helps you to avoid plagiarism?

☐ **Use quotation marks around the sentences you copied word-by-word and cite the source**

☐ Copy the sentences word-by-word and cite the source

☐ Change the sentences, no need to cite the source

☐ Use quotation marks around the sentences you copied word-by-word, no need to cite

☐ no idea at all