Information Behavior of Humanities Students in Bulgaria, Italy and Sweden: Planning a Game-based Learning Approach for Avoiding Fake Content

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Abstract. The paper deals with the Erasmus+ project NAVIGATE - Information Literacy: A Game-based Learning Approach for Avoiding Fake Content, coordinated by the University of Library Studies and Information Technologies in Bulgaria. The focus of the project is on Bachelor's students in Humanities who either do not have the skills to distinguish fake content or do not have the desire, due to lack of time and interest, to conduct more in-depth information search. By applying a game-based approach to information literacy training in three European countries innovation can be brought into this field. The results of an empirical sociological survey conducted in the partners' institutions in Bulgaria, Italy and Sweden on students' understanding of the concepts of information and mobile literacy and the criteria used by the learners for the assessment of information are presented. Emphasis is also placed on the role of the library as a partner in the learning.

Keywords: Information literacy, mobile literacy, fake content, game-based learning, comparative survey, higher education, Bulgaria, Italy, Sweden, Erasmus+.

1 Introduction

Information literacy (IL) is the first of the five key components of digital competences defined by DIGCOMP, the European Digital Competence Framework [1]. European citizens must be able to manage information and knowledge through a conscious use of such skills. According to the new definition of information literacy officially launched on April 6 2018, by the CILIP Information Literacy Group "information literacy is the ability to think critically and make balanced judgements about any information we find and use" [2]. The widespread phenomenon of fake news/content shows that we are still

far from achieving these objectives. The information skills are now digital skills. The information consumer has become an "online" information consumer and uses sources other than traditional bibliographic sources, such as websites and social media. Aided by mobile devices, new learning platforms and other technology, students often overestimate their informational skills and try to complete their tasks using unvalidated resources. Developing educational elements to increase information literacy is critical to whether we can make the most of the new technologies or we will suffer from the inability to manage the processes we have started. If new generations do not have markers to navigate within Staged Reality, then they will be lost both literally and idiomatically [3]. In terms of using information for learning, the previous experience of the students provides the scaffolding that allows them to increase their existing knowledge. At the University of Trobe a questionnaire was sent to students to understand their previous knowledge [4]. Stanford's study (2016) of social media and websites used by students for their tasks added stimulus to the discussion, highlighting that university students have very weak assessment skills [5].

NAVIGATE (https://www.navigateproject.eu/) is an Erasmus+ project that intends to apply an innovative approach based on digital gaming to increase competences on information literacy (IL), starting from higher education students in Humanities. It involves four partner organizations (three universities and one NGO) from Bulgaria, Sweden and Italy – University of Library Studies and Information Technologies, University of Gävle, University of Parma, and Fondazione Politecnico di Milano. The project started in September 2017, and lasts for three years. A first activity aimed at monitoring students' awareness on information literacy showed a gap between reality and perceptions. The goal of the project is to use a games-based approach to improve the student learning to avoid fake content and to create opportunities for an active involvement of students**.** The objectives are also to extend training opportunities focused on the issues of information literacy for avoiding fake content, since game-based training expands the learning potential of digital environments [6]. Game-based learning is based on strong learning principes [7], [8]: it gives information "on demand" starting from people's purpose/tasks, allows people to be creators and not only consumers, and confronts players with problems that allow generalisations about reality, which is highly motivating.

The first concept of "fake" is that of manipulation of information, a fraud, the intentional spread of misinformation using social media or traditional media. Another concept of "fake" news is misinformation, inaccurate information, uncertified information. In the NAVIGATE Project we translate "fake" news as "false news", emphasizing the meaning of inaccurate and invalidated information. The fake news offer a particular case to evaluate not just an information format and a strategy of fakeness but the content of media literacy in a digital environment. There is no easy way to demarcate between "fake" and "non-fake" across all cases and this opens interesting research opportunities on learning [9]. The NAVIGATE Project focuses on literacy and educational initiatives for avoiding fake content, together with game-based technology to evaluate fact checking of information.

2 Methodology

NAVIGATE started with a comparative survey on the IL perceptions and skills of undergraduate students in Humanities from the partner institutions in Bulgaria, Italy and Sweden in order to better understand and study the particular needs of the target group in relation to IL. The results from the survey in the second phase of the project will be analysed to develop a Competency Tree Chart (a Strategy for IL Training).

The questionnaire was created with the participation of all partner institutions in the NAVIGATE project and distributed among students from the three universities involved in the partnership: University of Library Studies and Information Technologies (ULSIT), Sofia, Bulgaria; University of Parma, Italy and the University of Gävle, Sweden. The survey is inspired and is a simplification of the questionnaire used by the comparative study on the mobile and information literacy perceptions and skills of Humanities students done in 2017 by the University of Library Studies and Information Technologies (ULSIT), Bulgaria and Anadolu University, Turkey [10].

The main goal of the survey was to make a comparative analysis of the similarity in the learning behaviour in the era of digital technologies and their impact on students' managing of information flows and on the students' assessment of libraries in their digital everyday life. The survey had the following objectives: to understand the student's notions of information and mobile literacy; to assess the role of technologies in the learning process and the intensity of their use; to evaluate the student's concept of fake content and their criteria for assessment of the information sources; their level of digital competence. In the three countries the information literacy sessions are offered in different way – in Bulgaria they are integrated in the curriculum as part of mandatory or elective courses while in Italy and Sweden they are usually a part of sessions organized by the university libraries.

With regard to the methodology of respondent selection, subjects of the research were students in Humanities from three universities (in Bulgaria, Italy and Sweden), full-time, Bachelor's programs. They were selected in compliance with the educational degree, specialty, and year of study. The sample that meets the criteria listed must include in total 163 students (from each course of study in all Humanities specialties of the three universities). Their selection was done by the method of those who had responded (every fourth until the needed number had been reached). In this method the information is collected on the principle of voluntary participation in the survey. The total number of the respondents in the three universities was 423. Concerning the methodology of gathering and registration of sociological data (research tools) a quantitative survey by standardized questionnaire and online questionnaire with closed, semi-open and open questions was applied together with the Europass Digital competence self-assessment form [11]. The data was collected from December 2017 to January 2018. The information processing was done through programs of statistical data processing. Open questions were processed and analysed by the following means: manually in the traditional way; via the web tool the LIX counters Readability Index (LIX); via classification of the students' written statements within the Framework SCONUL Seven Pillars of Information Literacy [12].

3 Results from the Survey

3.1 How Students in the Library and Information and Humanities Faculties in the Three Universities Understand the Combination of the Notions Information Literacy and Mobile Literacy

The question of understanding the notion of "information literacy" was answered by the majority of the students surveyed at the three universities. However, their perceptions differ significantly as this applies most to Sweden. Students from ULSIT have formulated a total of 150 views. The highest percentage (25.3 percent) of these are related to the prevailing opinion in the public space, namely: [it] is the ability to work with information and communication technologies entirely in a technical aspect including: "to be good with computers", "working with different computer programs and applications", "skillful handling of technology and office PC programs", "to be up-to-date with technology". For 18.7 percent of the respondents, information literacy is associated with access to information, particularly: "fast", "easy", "how", "where". Another aspect of the information, namely its use, is related to the opinions of 14.7 percent of the respondents - it must be "effective" and "understandable". The ability to work with a variety of information sources and resources (knowledge of different documents, understanding and reading online information, etc.) is the basis of the understanding of 14 percent of the respondents. The notion that information literacy is a "set of skills that are needed to detect, analyze, remember and use information" and reflects another important aspect of the term is shared by 8.7 percent of the participants. For another 7.3 percent, it is related to awareness of the need for information. There are, of course, general responses: "a set of skills", "knowledge in different areas", "being literate in the information environment" and so on given by 10 percent of the respondents. For two students, the term is not associated with "anything". Those who did not respond account for 18 percent.

There are no significant differences in the views of Italian students, where the majority of respondents (33 percent) indicate the technical capacity to use the devices and tools, together with Internet and the Web as information literacy. Part of the answers (19 percent) are even provocative: the respondents say they do not know or answer in a way which reveals arrogance ("I am an expert but I have never heard of literacy") or confusion with the concept of information and communication technologies, or with the concept of teaching. Only 10 percent define information literacy as a competence including two or more SCONUL skills in the seven pillars. However not all phases in the research process are considered. The stages of identification of needs, research planning and awareness of what is already known are underestimated: only 4 percent of respondents are aware of the need to start identifying needs; 11 percent respondents plan the research process.

The research activity is considered as gathering of information: 16 percent of respondents define the indicated literacy as an activity related to the gathering of information, only sometimes combined with the evaluation of information. To evaluate information and its sources critically is considered in the definition of information literacy only by 6 percent of respondents. After collecting and evaluating the data, the

activities connected with the use of information are considered by only a few respondents: 5 percent recognize the need for management, 13 percent of respondents equate information literacy essentially as a capacity to inform others, both as communication and as sharing information.

Students' description and understanding of the term "information literacy" in Bulgaria and Italy is presented in Fig. 1, which related to the SCONUL pillars look like this:

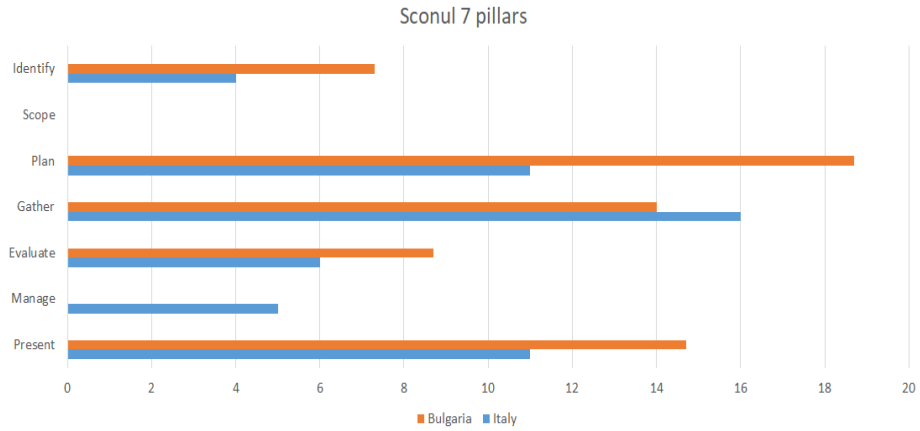

Fig. 1. Statements of the Bulgarian and Italian students regarding "information literacy" – analysis via SCONUL Seven Pillars of Information Literacy Framework

Ninety-seven Swedish respondents answered the question related to the understanding of the notion of information literacy, which when analysed via SCONUL Seven Pillars of Information Literacy Framework in Fig. 2, look like this:

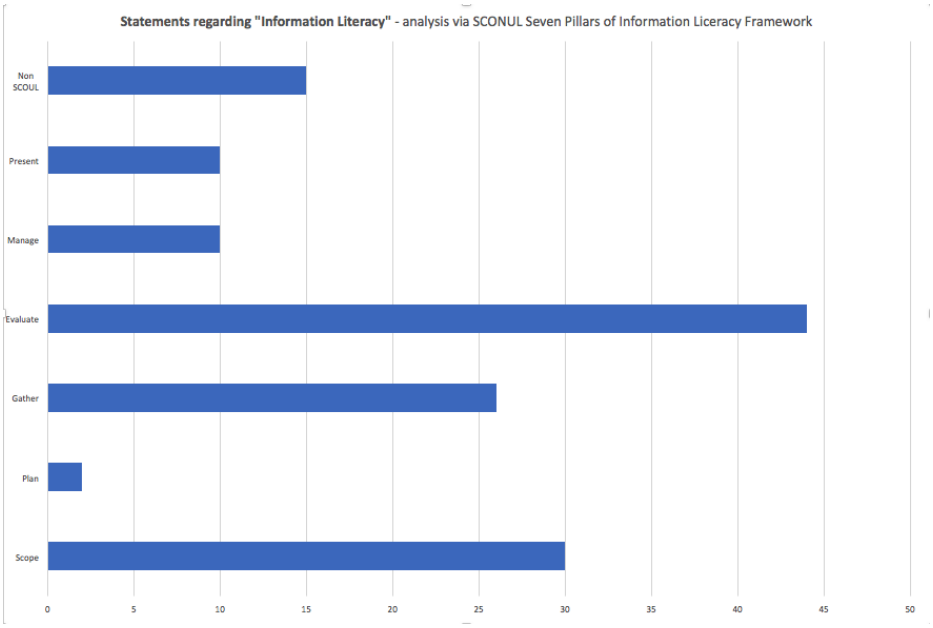

Fig. 2. Statements of the Swedish students regarding "information literacy" – analysis via SCONUL Seven Pillars of Information Literacy Framework

Fifteen students did not understand the questions. Very few (three students) understood the question as "Can construct strategies for location information and data" referring to the SCONUL's pillar "PLAN". The text readability index is 49, which means that it is classified as an intermediate, normal newspaper text. When reading the statements it appears that these are not students in an academic environment – it looks more like a school level. Some students write very briefly and do not relate their study or work with the processes around information retrieval for research. Most commonly, the statements can be interpreted as competences connected with the pillars: IDENTIFY, EVALUATE, SCOPE and GATHER. The lens/pillar "PLAN" is missing from the respondents' statements – very few of them can be associated or connote this lens. It is understood as the following: searching techniques, differences between search tools (limitations/advantages), advanced search, Boolean operators, the need to revise keywords, controlled vocabularies and taxonomies in searching. The students seem to lack this skills and area of knowledge, for example neither metadata nor open data are mentioned.

Mobile literacy provides a comprehensive introduction to literacy pedagogy within today's new media environment. It focuses not only on text literacy (reading and writing), but also on other modes of communication, including oral, visual, audio, gestural and spatial literacies. The information literacy skills base has been broadening in the mobile environment: the focus of teaching and learning in higher education today is more on critical thinking and problem solving. This growth has occurred in response

to the exponential increase in both the number of information channels that can be accessed, and the amount of information that flows through them.

The mobile technologies that have developed and become widespread in recent years have placed the concept of mobile literacy onto the agenda. Although the debate around which devices are mobile or not is evaluated differently in different contexts, according to ADL (Advanced Distributed Learning) mobile learning or "mLearning" is the use of handheld computing devices to provide access to learning content and information resources [13]. It is important to note that most of the survey participants in Bulgaria and Italy have a mobile device, which they prefer to use over their laptop and desktop PC. Also if the use of mobile devices is widespread, it is not used for learning. Laptops are preferred for studying and mobile device use for learning is limited to the search for information and reading.

Concerning the difference between information and mobile literacy, the students' responses in Bulgaria and Italy are analysed below. In Bulgaria 64.9 percent of the participants in the survey answered, and the opinions could be presented in the following way: 40 percent think it is related to mobile skills, for example: "using smart equipment and devices", "working freely and anywhere with mobile devices", "getting literate in mobile technologies, not in computers". For 13.8 percent of the respondents the difference lies in the approach whereby we find and pass on information "from one person to many" (PRESENT); 10 percent think that it is relates to computer and Internet skills (GATHER), and 2.5 percent refer to the work of the devices themselves and the technical equipment (MANAGE). 13.8 percent of the respondents answered frankly that they did not know, 11.3 percent use cliché phrases, according to another 7.5 percent "the difference between the two terms is not big" and 1.2 percent think that they are "fundamentally different".

The responses of the Italian students directly correspond to the various elements included in the term "mobile literacy". Most of the respondents (36 percent) focus on the search process (GATHER) and define mobile literacy as the capability to use the devices and the Internet: the capability to use tools thus defines mobile literacy, which is considered equivalent to digital literacy. The technological interface is seen both as an element that facilitates, and as an element that hinders: some respondents evidence the simplicity of using or the difficulty: 2 percent and 0.1 percent respectively. The main feature that many recognize with regard to the mobile literacy is the quickness (4.4 percent), and the immediacy of answers (2 percent).

It is interesting to note that defining the evaluation of the results (EVALUATE) obtained using mobile devices, there are opposing opinions. Regarding the quality of the information that is obtained, some of the respondents appreciate quantity of information (2 percent) and some instead claim the limitation of resources (0.1 percent); some consider all the information using mobile tools false (3 percent) and some think that the information on the Internet is of better quality (2 percent). Some answers (7 percent) are regarding the use and management of information (MANAGE and PRESENT) and mobile literacy is defined as: capability of presenting information using mobile devices (2 percent), inform the other (2 percent) and be informed by others (0.1 percent). Others note the flexibility needed in research (0.1 percent) and the dependence on the context in which one is located (0,1 percent). This aspect is important to be taken

into account for the following next phases of the NAVIGATE project. More than on skills, mobile literacy should be seen in different contexts, such as that of learning and teaching. In the concept of mobile literacy, the preparatory activities of the research process disappear: how to identify needs, plan and understand what is already known. The planned activities are reduced to the SCONUL pillars GATHER, EVALUATE and PRESENT. Some of the answers say: “One is the medium, the other the knowledge”, “With the mobile device, thanks to the Internet you can have all the information you want”, “Information competence with mobile devices is the ability to understand if information is truthful or not”. These different opinions reveal a positive approach to technology or, on the contrary, a negative approach to information and communication technologies, but not justified by training in information literacy that makes students independent lifelong learners. Of these 22 (24 percent) cannot define this competence. The statements of the Bulgarian and the Italian students are presented in comparison in Fig. 3.

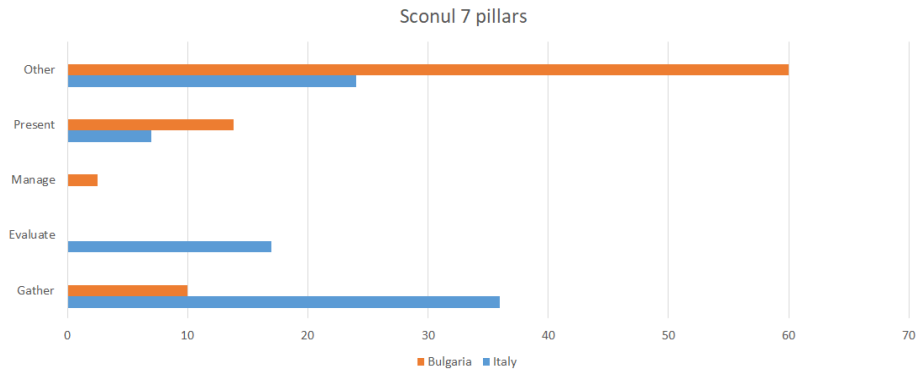

Fig. 3. Statements of the Bulgarian and the Italian students regarding “mobily literacy” – analysis via SCONUL Seven Pillars of Information Literacy Framework

It is interesting to note that the question about the difference between information and mobile literacy or the relevance of the concept of mobile literacy was not understood by the Swedish respondents. Such a problem did not appear in Italy, as well as two years earlier in Turkey [10]. This may be due to cultural differences as well as to economic and technological differences.

3.2 The Library (in the University and Out) in the Everyday Life of the Contemporary Students

A set of questions in the questionnaire is related to the skills needed to use university and other types of libraries in the students’ everyday lives, and to work with their resources, part of the totality of the concepts “information literacy” and “mobile literacy”. The intensity of visits and use, the ways to create skills to work with the

resources of the university library, the ways to form a reference and bibliographic culture, the most frequently used services are considered here. Regarding the intensity of use of library services as a whole, it can be argued that there are significant differences in the three countries, the explanations for which need to be further sought.

The survey outlined a negative picture for Bulgaria and Italy presented in Fig. 4:

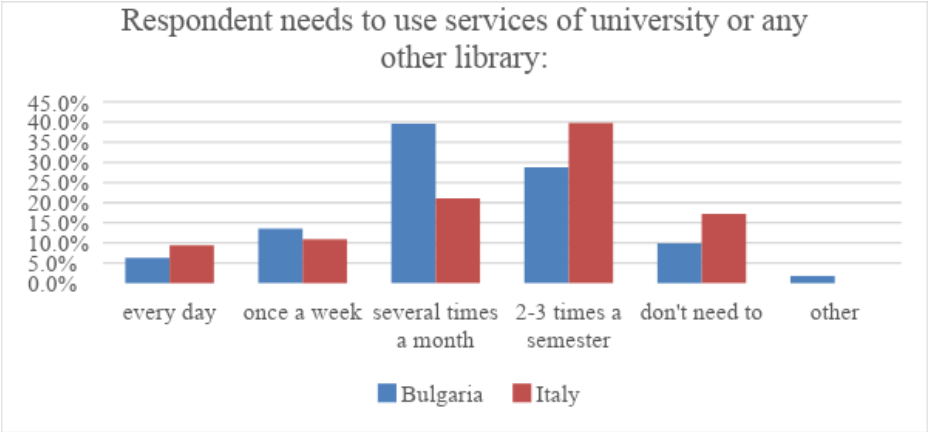

Fig. 4. Respondent needs to use services of university or any other library (Bulgaria and Italy)

In Bulgaria, a possible explanation can be found in two directions: firstly, the unpopularity of the library institution with the necessary capacity (material, technical, etc.) to support the learning process. Its unattractiveness is due both to the outdated library fund and to the lack of sufficient modern technology. The reason for this is the under-funding of Bulgarian libraries and the lack of a clear vision of their role in the educational process as a whole.

University libraries in Parma try to attract students and contribute to their success with various services: visits and use of the space, building students' skills for working with the university library resources, forming a reference-library culture, and most often with interlibrary loan and other lending services. In conclusion, we can state that all students have an electronic device and are connected, but do not use the technology for learning. The learning style is still traditional even if the textbook is downloaded on a PC. Many like to study at home but some prefer the library. However, the library is not used as a place for its services, including databases and digital resources. If libraries want to have a role for learning using mobile services, they should start to be in the workflow of students, for example offering services on mobile devices.

With regard to the results for Sweden it is confirmed that in the Scandinavian countries, compared to some other European countries, there is a significantly different attitude towards the libraries and the services they offer. This is clear from the answers of the Swedish students. For 34 percent of them, a visit to the library (university or other) is a daily ritual, 24 percent visit it once a week, and 17 percent do this a few times a month. The role of the library (university and others) in the everyday life of

contemporary students (intensity of the visits and use, their ways of building skills for working with the university library resources, forming reference-library culture, most often used services) is presented here by over 90 percent of the responses. Students' answers are divided in three main categories – every day, once per week and several days a month regarding the question "In your studies, how often do you use your university library or other library services including Internet services?". Students tend to seldom have direct asynchronous e-mail contact with the library staff. One of three visit the library on a daily basis, one of four every week and others more rarely. They order books, search for electronic resources. More students tend to search in the library catalogue more often than in journals or conference publications. The search in research databases leans more towards the statement "Sometimes" and less towards "Very often/Often" and "Rarely". About 10-15 percent of the students indicate they do not search in either in research databases, journals, or conference publications.

3.3 Criteria for Evaluating the Credibility of Internet Resources

For analysis of the results in the three countries the Guide for Evaluating Resources developed by the Berkeley Library at the University of California (http://guides.lib.berkeley.edu/evaluating-resources) and Easybib (http://www.easybib.com) are used. The results are presented in comparison in Fig. 5.

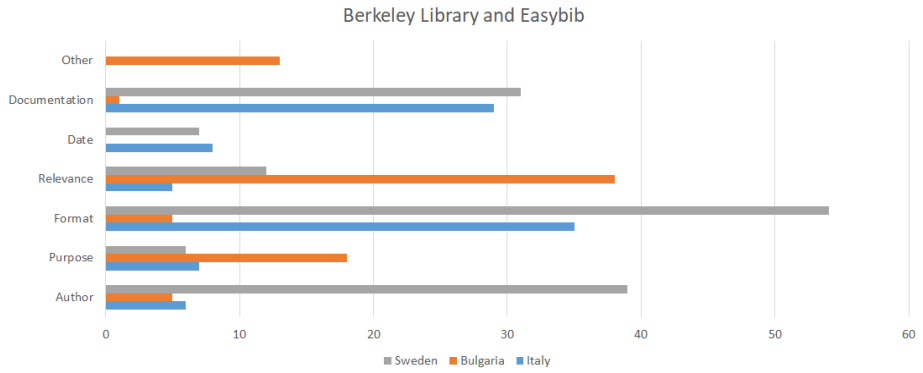

Fig. 5. Criteria for evaluating the credibility of Internet resources (Bulgaria, Italy and Sweden)

As regards the criteria used by the Bulgarian students to assess the search results on the Internet, the results can be summarized as follows: the quality of the information is a determining factor for 44 percent of the respondents, stating that it should be "credible", "relevant", "useful", "specialized", or "up-to-date". For 20.7 percent of the surveyed students, the source of information, which is "secure", "reliable" from a "verified source", is important. Popularity, in terms of "site visits", "number of positive comments", "number of views", is a determining factor for 7 percent of the participants. For an equal number of those questioned (5.7 percent) the access (quick, easy finding

of information, etc.) and the author, ("known" or "checked") are important. The volume of the material is important for 2.3 percent of the respondents, and 1.1 percent say the full description. Other views are shared by 5.7 percent of the respondents, and one participant says that "I search for information in books because there it is 100 percent true". Search criteria are not applied by 3.4 percent, explaining that "I use what is useful on the subject". They believe that criteria for assessing the results do not exist and therefore 2.3 percent of the total do not apply them, and according to another 1.1 percent "those criteria are not so many" but do not specify any more. Opinions were not shared by 50 percent of the Bulgarian students surveyed.

Many of the Italian respondents (31 percent) compare various sources of documentation and apply a selection of preferred sites (37 percent). Others check information relevance for the need of information (5 percent). Surprisingly, very few consider author reliability (6 percent), and the purpose of information (7 percent), as relevant. The presence of a date is considered relevant for 9 percent of the respondents. Other considerations include comments in forums, and ephemeral features like color and layout (5 percent). It seems that the ability to evaluate the resources is really insufficient and not adequate for assessing the quality, accuracy, relevance, credibility, format and accessibility of digital material.

The most frequent among the criteria used by the Swedish students to assess the search results on the Internet were the Publication and format followed by author and writer (Authority), and the Documentation – if the text has credible references and sources. The Relevance, Purpose and the Date of publication were less frequently cited as among the criteria applied by the respondents. The text's readability index is 39, which means that it is classified as easy to read, as used in fiction and popular newspapers. Two students express the word "Impartiality" as a criterion. This is interesting that academic student interprets and recognizes information, knowledge or the publisher as impartial. What exactly the students understands in this definition or concept is something to be investigated further. The question or term "Bias" is perhaps what is meant. It is possible they are referring to the places of the publication or author affiliation. The text's readability index was pretty low and could indicate that the students have not internalized the terms, definitions and concept - ways to talk about, discuss or to do survey plans or scientific studies. They "lack words" in the field of academic research such as critical information retrieval, information processing and data processing.

4 Conclusion

Aided by mobile devices, new learning platforms and other technologies, the survey evidenced that students often overestimate their informational skills and try to complete their tasks using unvalidated resources. A Competency Tree Chart (a Strategy for IL Training) will be developed based on the results from the survey and the Europass digital competences self-evaluation of the students. The strategy comprising various dimensions that represent the core IL skills obligatory for students in the digital age

(finding information, evaluating information, using information effectively) and support of the acquisition of such skills synthesized as a syllabus definition. At the next stage of the project implementation, the strategy for IL training (the competency tree) will be approbated at conceptual level in compliance with the game-based learning principles. One of the most effective ways to ensure that students become skilled in handling all information is to include information skills in the curriculum, centered on the library, but also put into practice in the classes and combined with the different subjects.

For this purpose the learning pathways and routes of the games to be followed by the students and by the tutors will be defined; the working modules with specific game tasks for synchronous and asynchronous learning will be planned; and the game-based learning activities will be elaborated. As a result of these activities a Game-based Model for IL Training of Bachelor's students in Humanities will be developed [14].

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