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ACADEMIC RESEARCH SKILLS OF UNIVERSITY STUDENTS

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Abstract: *The paper analyzes questionnaires administered to 135 English Language students in all four years with an attempt to elaborate how developed the students' academic research skills are and investigate if they correlate with the years of study. Furthermore, the results are compared to students' general habits concerning internet use to prove that they do not correlate with academic research skills.*

Key words: *academic research skills, information literacy, virtual/digital libraries.*

1. Introduction

Regardless of the field of higher education and scientific research, academic writing plays a very important role as a way to transfer known information and note down new information and research results. One of the first steps in academic writing, besides the formulation of a research question, is certainly finding references and relevant sources of information that will be of use to the writer as a foundation for the new research. Although it may not seem so at a first glance, this is one of the most necessary skills in the field of academic writing, especially in the 21st century, when there is so much available online that it is sometimes difficult to choose with certainty a good, relevant and reliable source. In other words, research skills are among the most necessary skills in the field of academic writing.

This is also true for students who, as beginners in the field of academic writing, have to learn much and develop their ability to do research, i.e. find the necessary sources and make use of them, and then to shape the knowledge they have gathered into academic assignments (projects, seminar papers, presentations). In order to complete their academic tasks, students have to do research and preparation, which primarily involves finding sources of information and using them properly. Unlike experienced scientific workers and writers, students do not have any academic practice to rely on and they do not have enough width in an academic field to assume a critical view of what they find, especially online. For that reason academic research skills are among the most important general skills that students should master during their studies.

2. Development of Academic Research Skills

With the advent of World Wide Web, students today have a plethora of opportunities to learn throughout their lives, both in formal and informal environments, as motivated by their personal, professional, family, work and community needs, interests or responsibilities (Lemke, 2003). In light of this, university becomes just one node among the learning contexts available to students (Barron, 2006). The role of educators in this evolving ecology of learning needs to include at least two new features. First of all, teachers need to have a sufficient understanding of their students' informal learning habits and daily routines in using the Internet, in order to successfully integrate it with formal learning contexts. Secondly, teachers need to help students develop experience and skills in navigating, interacting and learning within digital environments. Information literacy, as a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ALA, 2000:2) becomes a prerequisite for an academically skilled internet user.

One possible problem that immediately springs to mind is that due to the enormous quantity of information available online; it is impossible for inexperienced students to choose with certainty good, valid and reliable sources. This kind of research does not involve traditional filters of credibility such as a library or a publisher (Radić-Bojanić and Topalov, 2012:34), who perform the process of selection prior to presenting material to their users. For that reason online researching, as many teachers have witnessed when checking their students' assignments, is reduced to the first few links in a Google search, one of which is usually Wikipedia (Radić-Bojanić, 2012).

When discussing material for the development of research skills with students, Manning et al. (2007:306-322) say that students must be aware of a range of sources of information (university libraries, virtual and digital libraries, other online sources...), be able to identify the strengths and weaknesses of different sources, and be able to note down bibliographic details for books, articles and websites that they used in the process of preparation and research. Considering the vast quantity of data and variety of sources that can be found online, students should develop the skill of assessing the credibility of materials they find and make judgments regarding the status and relevance of a large number of texts (Alexander et al., 2008: 124).

The factors that Alexander et al. (2008) mention and which are criteria for assessing first the credibility and the relevance of the sources found are the following: authority, ease of access, reliability, amount of information, and time. Authority refers to the type of source or the platform where a certain article or text is found. For example, the authority of a text found on someone's blog vastly differs from a text found via ScienceDirect or JStor. Ease of access, one of the most important features when students do research online, is often misleading: texts that are easy to access, i.e. free of charge, usually do not carry scientific weight, unless it is open access journals; conversely, articles downloaded via academic platforms are not so easily accessible and often require a payment unless downloaded via an academic or university network, but they present proper scientific sources of information. This leans onto the next criterion, reliability, which can often be assessed simply by looking at the domain

which hosts a text: if the domain is an academic one, e.g. .edu, then the probability that the text is credible and relevant is higher. The amount of information found in a text can also be a tell-tale sign of how academically appropriate it is because the fact that a text refers to other academic sources implies scientific weight visible in its list of references. Finally, the time when a text is written and published also plays a significant role since outdated sources do not provide the latest and most relevant information regarding a subject matter or a field.

2.1. Research Context

In order to establish how developed students' research skills are in a university academic context, a research was undertaken at the Faculty of Philosophy, University of Novi Sad, Serbia, with 135 students in all four years of studies of English at the Department of English Language and Literature. The researchers administered a questionnaire with twenty-two multiple choice items, with the aim to establish if the students' academic research skills correlate with the years of study and if they correlate with students general habits concerning internet use.

The grouping factor for all one-way ANOVAs in data processing was the independent variable of Study Year. Dependent variables included reported use of Electronic Resources, Difficulty of Use (of digital and/or virtual libraries), Pages of Search Results that the students check when performing an online search, Hours Spent Online, the inclination to use Chatrooms, Blogs, Music, News, Games, Livestream, Social Networks, E-Shopping on the Internet, and the Faculty Related use of the Internet.

2.2 Results

In looking at students' readiness to use electronic resources, the amount of difficulty with which they use digital/virtual libraries and the number of pages they refer to when doing an academically related online search, planned one-way ANOVAs were performed for all variables (Table 1).

	1st year		2nd year		3rd year		4th year			
	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	*F*	*p*
Electronic Resources	2.2	0.78	2.59	0.67	2.52	0.67	2.07	0.86	3.115	0.029
Difficulty of Use	2.48	0.87	2.73	0.94	2.64	0.82	2.64	0.56	0.591	0.622
Pages of Search Results	2.56	0.98	3.18	1.56	3.27	1.15	3.93	0.72	9.933	0.000

Table 1: One-way ANOVAs for use of digital/virtual libraries

The results indicate firstly that there is a statistically significant difference between students studying at different years in terms of their readiness to use electronically available resources (F=3.115, p=0.029). Further testing using LSD post-hoc tests revealed specifically which group differs from others. The results indicate that fourth year students show a statistical difference with respect to first year students (mean difference=-0.391, p=0.045), second year students (mean difference=-0.591, p=0.017) and third year students (mean

difference=-0.443, p=0.024). Secondly, the results of one-way ANOVA reveal that there is no statistical difference between students in terms of the perceived difficulty of use. Lastly, there is a statistical difference in terms of the number of pages the students consult when they search the internet for study related reasons (F=9.933, p=0.000). Additional tests on the variable Pages of Search Results revealed specifically which group differs from others. Namely, comparisons using LSD post-hoc found a statistical difference between the first and the third years (mean difference=0.715, p=0.02) and the first and the fourth years (mean difference=1.37, p=0.000).

The results of the second part of research focusing on students' everyday habits in using the Internet, both for academic and non-academic purposes, reveal, first of all, that 99.25% of the respondents use the Internet every day, with over a third of students using it for three or more hours every day (25.18% of respondents use it between three and four hours, whereas 8.88% of students use it for more than four hours every day).

Results of one-way ANOVAs reveal that the statistical difference between the respondents has been identified with variables News (F=2.88, p=0.039) and Faculty Related Activities (F=2.784, p=0.044) (Table 2).

	1st year		2nd year		3rd year		4th year			
	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	*F*	*p*
Hours Spent Online	3.22	1.15	2.82	1.18	2.69	1.23	2.61	1.34	2.052	0.110
Chatrooms	3.78	1.58	3.82	1.56	4.07	1.55	3.54	1.75	0.529	0.663
Blogs	3.02	1.38	3.23	1.31	3.55	1.12	3.68	1.36	1.953	0.124
Music	1.63	1.06	2.09	1.27	1.68	1.11	1.64	1.13	0.977	0.406
News	2.57	1.28	3.23	1.51	3.19	1.47	2.36	1.45	**2.880**	**0.039**
Games	3.78	1.59	4.14	1.31	3.87	1.59	4.14	1.18	0.527	0.665
Livestream	2.71	1.32	3.09	1.27	2.45	1.57	2.5	1.32	1.106	0.349
Social Networks	1.59	1.06	1.77	1.07	2.16	1.66	1.79	1.34	1.284	0.283
E-Shopping	4.39	1.15	4.68	0.89	4.58	1.06	4.89	0.31	1.702	0.170
Faculty Related Activities	2.1	0.98	1.77	0.97	2.52	1.29	1.89	0.83	**2.784**	**0.04**

Table 2: One-way ANOVAs for use of the Internet

Additional post-hoc tests using LSD indicate that the difference in results for variable News is statistical between the second and the fourth year (mean difference=-0.87, p=0.031) and the third and the fourth years (mean difference=-0.836, p=0.024). For variable Faculty Related Activities, LSD post-hoc reveals that the difference is statistical between the second and the third years (mean difference=0.743, p=0.011) and the third and the fourth years (mean difference=0.623, p=0.022).

Pearson's correlation between the year of study and the students' reported use of digital and/or virtual libraries revealed a statistical result for variable Search Result Pages (r=0.427, p=0.000), indicating that older and more experienced students consult two or more pages of search results, whereas younger students tend to stop after the first three results, occasionally checking the first full page (Table 3).

		Study Year	Electronic Resources	Difficulty Of Use	Search Result Pages
Study Year	*r*	1	-.011	.078	**.427****
	p		.900	.367	.000
Electronic Resources	*r*	-.011	1	**.179***	.081
	p	.900		.039	.357
Difficulty Of Use	*r*	.078	**.179***	1	-.082
	p	.367	.039		.349
Search Result Pages	*r*	**.427****	.081	-.082	1
	p	.000	.357	.349	

Table 3: Pearson's correlations for use of digital/virtual libraries

The results also indicate that students who use more of electronic resources tend to find the use of digital and/or virtual libraries easier (r=0.179, p=0.039).

Pearson's correlation for data regarding the respondents' everyday habits in using the Internet, motivated either academically or otherwise, reveals a number of interesting statistically significant results (Table 4).

		Study Year	Hours Online	Chat-rooms	Blogs	Music	News	Games	Live-stream	Social Networks	E-Shopping	Faculty Pedagogic
Study Year	*r*	1	**-,204***	-.024	**,207***	-.005	.000	.076	-.084	.107	**,177***	.009
	p		.019	.781	.017	.953	.996	.388	.336	.223	.042	.920
Hours Online	*r*	**-,204***	1	.157	.165	-.058	.015	**,275****	.137	.168	**,174***	-.088
	p	.019		.075	.059	.510	.865	.002	.118	.056	.047	.318
Chatrooms	*r*	-.024	.157	1	**,208***	-.061	-.035	.097	-.092	.096	.130	.030
	p	.781	.075		.017	.492	.689	.276	.294	.274	.140	.735
Blogs	*r*	**,207***	.165	**,208***	1	.086	-.023	.038	.034	.047	.025	.060
	p	.017	.059	.017		.324	.791	.665	.702	.589	.777	.498

Music	*r*	-.005	-.058	-.061	.086	1	**,285****	-.058	**,226****	**,203***	**-,358****	**,204***
	p	.953	.510	.492	.324		.001	.512	.009	.020	.000	.019
News	*r*	.000	.015	-.035	-.023	**,285****	1	-.132	.091	**,244****	**-,180***	.110
	p	.996	.865	.689	.791	.001		.135	.302	.005	.039	.207
Games	*r*	.076	**,275****	.097	.038	-.058	-.132	1	.097	-.134	**,248****	**-,422****
	p	.388	.002	.276	.665	.512	.135		.271	.128	.005	.000
Livestream	*r*	-.084	.137	-.092	.034	**,226****	.091	.097	1	.073	**-,177***	-.025
	p	.336	.118	.294	.702	.009	.302	.271		.404	.042	.780
Social Networks	*r*	.107	.168	.096	.047	**,203***	**,244****	-.134	.073	1	**-,201***	**,296****
	p	.223	.056	.274	.589	.020	.005	.128	.404		.021	.001
E-Shopping	*r*	**,177***	**,174***	.130	.025	**-,358****	**-,180***	**,248****	**-,177***	**-,201***	1	**-,444****
	p	.042	.047	.140	.777	.000	.039	.005	.042	.021		.000
Faculty Rel. Activ	*r*	.009	-.088	.030	.060	**,204***	.110	**-,422****	-.025	**,296****	**-,444****	1
	p	.920	.318	.735	.498	.019	.207	.000	.780	.001	.000	

Table 4: Pearson's correlations for use of the Internet

The year of study appears to be positively correlated with the use of blogs (r=0.207, p=0.017) and with shopping over the Internet (r=0.177, p=0.042), and negatively correlated with the amount of time spent on the Internet (r=-.0204, p=0.019). Students who use the Internet for faculty related activities also tend to listen to music online (r=0.204, p=0.019) and use social networks more often (0.296, p=0.001). On the other hand, they play less games online (r=-0.422, p=0.000) and seem to rarely shop online (r=-0.444, p=0.000). The highest number of statistical returns was shown for variable E-Shopping, which positively correlates with Study Year as indicated previously, with Hours Online (r=0.174, p=0.047) and with Games (r=0.248, p=0.005), and negatively with Music (r=-0.358, p=0.000), News (r=-01.180, p=0.039), Livestream (r=-0.177, p=0.042), Social Networks (r=-0.201, p=0.021) and Faculty Related Activities, as stated previously.

2.3 Discussion

Some of the most interesting and relevant results of the research presented above will be discussed in this section.

The overall impression that students are convinced they are skilled at using digital and

virtual academic resources has been confirmed in the questionnaire. Namely, there is no statistical difference between students in terms of the perceived difficulty of use, which means that students in all four years of studies are sure that their academic skills concerning online research are at a very proficient level and, hence, there is no need for improvement. Unfortunately, this conviction is not corroborated by other results of the questionnaire analysis, because students, especially in first two years, do not conduct a comprehensive, deep online search. Instead, they tend to stop after the first three results, occasionally checking the first full page. The situation is only slightly different with older and more experienced students, who consult two or more pages of search results. This is very indicative of a grave lack of awareness of the difficulty of use of online resources, which certainly does not lead to learning or practice of academic research skills.

This finding, i.e. the number of pages students check when doing an academically related online search, reveals an interesting fact: since students in the third and fourth years view a greater number of pages and sites, it seems that experience in academic research is an important factor. In other words, educational and academic experiences, as well as their teachers' feedback concerning various academic assignments they had done, have taught older students the necessity to undertake a deeper online search.

The factor of academic experience is also crucial when it comes to the frequency and readiness to use electronic resources. Students who use more of electronic resources tend to find the use of digital and/or virtual libraries easier, which can be explained by more practice they have in terms of online researching and probably more instructions they have received from their teachers. Furthermore, because of the same reason, older students find the use of electronic resources to be easier than younger students.

Students' academic research skills are much better understood if contextualized by their everyday habits in using the Internet, both for academic and non-academic purposes. The rate of daily Internet usage is extremely high, with over a third of students using it for three or more hours every day. The most frequent reported online activities for all students seem to be reading the news and doing faculty related activities, but students also frequently visit blogs (which may be due to the fact that blogs are often used by their teachers as a mediated space for communication, giving assignments and material exchange).

To sum up, students seem to spend a lot of time online, doing a variety of things, which gives them the impression that they are skilled at doing academic research. In reality, when asked about digital/ virtual libraries and online research in general, they show very little knowledge because, in essence, their real research skills are quite limited. They do not tend to do deep research and their ability to delimit valid and invalid sources is not big.

3. Conclusion

On the basis of research results, it can be concluded that there is a dire need to educate students and develop their skills of academic research. They should first be taught what online resources they have at their disposal and how they can find them. Then they should learn how to use different search engines and data bases as well as what kinds of results they can get and what to do with them. Finally, this kind of education would gradually develop students'

critical thinking and raise awareness with regard to the academic credibility of different sources. In the long term, this would prevent problems that all university teachers face, such as plagiarism, and it would teach students to value authorship and copyright.

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