Let’s think together: Finding the best way to incorporate ChatGPT in the information literacy courses curricula

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Abstract:

Due to the fact that ChatGPT tool had an immediate impact on all spheres of life, there is a need to discuss its advantages and disadvantages for information literacy (IL) education point of view. This study aims to examine viewpoints of Croatian academic librarians, research assistants and university professors on ChatGPT and its possible utilization in teaching IL. In order to achieve stated aim, authors have conducted a qualitative study using an In-Depth interview method. Respondents were selected from a purposive sample of academic librarians, teaching assistants and university professors from the University of Zadar, University of Zagreb and University of Osijek and responses were analyzed by conducting qualitative content analysis. Results have shown that the majority of the respondents is, for time being, inclined to incorporate ChatGPT into IL courses curricula. Findings of this study can be practically applied by librarians when creating new, enhanced IL courses curricula. Also, these findings should be presented to the university administrations and interpreted as an indicator of the necessary change that is needed regarding the position of librarians in the teaching process and acknowledgment of their work.

Keywords: ChatGPT, information literacy, course curricula, university, academic librarianship

Introduction

From the mid-1970s’ when Zurkowski coined the term “Information Literacy” (Badke, 2010) till today, there is a long-standing history of cooperation between academic librarians and university professors in incorporating information literacy into curriculum (Dorner et al., 2001) and today teaching information literacy skills to students is an integral part of academic librarian’s role (Yearwood, 2015). Furthermore, a number of studies conducted by LIS scholars proved that information literacy courses have been effective in improving students writing skills and course performance (Shao & Purpur, 2016; Bowles-Terry, 2012), increasing students retention (Vance, Kirk & Gardner, 2012), reducing library anxiety (Kwon, Onwuegbuzie & Alexander, 2007; Gross & Latham, 2012).
enhancing existing and acquiring new information literacy skills (Banik & Kumar, 2019; White-Farnam & Gardner, 2014; Saunders, 2012; Samson, 2010) and developing critical thinking skills (Al-Zou'bi, 2020; Dwivedi, 2023). Alongside with the progress made in evolvement and availability of information technologies that has dramatically changed all information activities, i.e., the ways we gather, organize, store, keep, search and browse information (Saracevic, 2007), information literacy instruction evolved as well. Nowadays, academic librarians provide information literacy instructions in different forms (virtual or in-person, individual or as a part of a group) and types (one-shot instructions, one-on-one research, credit-bearing courses, or embedded librarianship) (Yearwood, 2015). Today, scope and contents of library instructions and information literacy courses curriculum have been augmented in a way that they embed the skills of locating, evaluating and effective use of both printed and on-line information resources, use of Web 2.0 distribution platforms, Web-based bibliographic reference management tools (e.g., Zotero or Mendeley) as well as the development of critical thinking skills (Nichols Hess, 2018; Luo, 2010).

Artificial intelligence has developed rapidly in recent years (Lo, 2023; Chen et al., 2022; Rahman and Watanobe, 2023) and despite of the fact that language models are not new phenomenon (Houston & Corrado, 2023), release of ChatGPT chatbot, developed by the OpenAI company, had immediate impact on all spheres of life. Generative Pre-trained Transformer-3, which is the backbone of ChatGPT (Houston & Corrado, 2023) is a large language model trained on a dataset comprising the entire Internet, 19 billion web texts and 67 billion books. By this procedure, corpus consisting out of 500 billion words was created and possibility to pull from 175 billion vectors has allowed ChatGPT to perform complex tasks and produce human like responses (Susnjak, 2022).

Ease of use, ability to instantaneously respond to ordinary human language, output of coherent believable responses (Houston & Corrado, 2023; Haque et al., 2023), along with the possibility to mimic human-like responses to text inputs (Azaria, Azoulay & Rechs, 2023) have contributed to massive popularity of ChatGPT tool and the fact that it had reached 100 million users within two months since its launch at the end of 2022 (Halaweh, 2023). As a powerful tool that is able to understand, process, and generate natural human language with a high level of complexity and fair accuracy and usability (Haque et al., 2022), ChatGPT has already entered into daily use in financing (Dowling & Lucey, 2023), tourism (Carvalho & Ivanov, 2023), business administration, legal practice (Ajevski et al., 2023), engineering (Prieto, Mengiste & Garcia de Soto, 2023), medicine (Sallam, 2023) etc. as well as in academia (Strzelecki, 2023). Considering the fact that ChatGPT is already in use by students and scholars at universities worldwide (Dwivedi et al., 2023; Lo, 2023; Huang & Tan, 2023), it is necessary to discuss its advantages and disadvantages from the information literacy education point of view.

**Literature review**

As we have stated in the introduction, language models are not a new phenomenon (Houston & Corrado, 2023) and natural language processing (NLP) as well as development of large language models (LLM) have achieved significant success in the last few years (Rahman & Watanobe, 2023). However, the immediate impact that ChatGPT tool had on all spheres of life has put ChatGPT in the spotlight of researches from all fields of science. Due to its novelty, there is a lack of robust, academic literature (Houston & Corrado, 2023) on the ChatGPT topic. Also, it should be noted that conducting comprehensive scientific research,
especially when utilizing quantitative methods (e.g., survey on a large sample of respondents), is a time-consuming effort (Dwivedi et al., 2023). This, alongside with the fact that peer-review process often tends to be long-lasting, sometimes results in long periods of waiting for new, peer-reviewed papers to be published.

On the other hand, this gap in literature is being filled on daily basis by newly published research papers, preprints, editorials, discussions and opinion pieces. Bearing in mind that this paper aims to examine the possibilities of incorporating ChatGPT into information literacy university courses, in this literature review we will put emphasis on studies discussing the impact of ChatGPT on higher education and academic libraries and its possible applications in facilitating the needs of students, professors and librarians. Also, we will list advantages and drawbacks of ChatGPT in regard to higher education and academic libraries.

The term “Artificial Intelligence”, as well as its acronym AI, has been coined by J. McCarthy in 1955 and it is most commonly defined as “field of computer science dedicated to creation of systems performing tasks that usually require human intelligence” (Jakhar & Kaur, 2020, p. 1). Studies which examined possible emergence of AI-based tools and possibilities of their application in academic libraries, their advantages and disadvantages, as well as the perceptions of academic librarians towards their use, precede the creation of ChatGPT.

Cox et al. (2019) have conducted qualitative research on a sample of 33 library directors, library commentators and experts in education and publishing and found that library leaders are well aware of the potential impact that AI could have on academic libraries in regard to collection development, changes in learning and teaching, changes in users’ information behavior and changes in scholarly communication and research. This conclusion is in the line with one previously made by Arlitsch and Newell (2017) who have clearly stated that AI will transform library services and forever alter the mix of skills and tools that will be required to serve library users. This is comparable to the findings made by Ali, Bin Naeem & Bhatti (2020) who have listed similar possible uses and ramifications of AI and pointed out that academic librarians have an excellent opportunity to collaborate with other key stakeholders in developing AI. This possibility has also been recognized by Cox et al. (2019), according to whom libraries are well placed to manage the process introducing AI. It is important to point out that Cox et al. (2019) have correctly predicted that libraries could be left outside the focus of development of AI. Today, four and a half years after the study by Cox et al. (2019) was published, we are witnessing the situation where the launch of ChatGPT has instigated market competition between most powerful multinational technology companies. In competition with companies who have practically unlimited financial resources, all the necessary IT infrastructure as well as a large number of highly skilled employees, universities and university libraries, however reputable they may be, will be pushed to the sidelines. In that regard, predictions made by Cox et al. (2019) turned out to be correct. In August 2022, on a cusp of a breakthrough of ChatGPT, Kaushal and Yadav (2022) have conducted a research that examined possible use of chatbots in academic libraries in Pakistan and found out that majority of stakeholders are in favor of using the assistance of chatbots in academic libraries. Furthermore, Kaushal and Yadav (2022) point out that use of chatbots can liberate librarians from laborious and repetitive work which agrees with the conclusions previously made by Cox et al. (2019) and Ali, Naeem and Bhatti (2020).

As can be seen from the analysis and comparison of studies conducted prior to the discovery of ChatGPT, LIS scholars have been actively considering the potential applications of AI-
powered tools in academic libraries, including their potential impact on students’ information literacy and information behavior.

**ChatGPT in higher education and academic libraries**

One of the fields of science that has historically been strongly influenced by the development of information technologies is the field of education, where higher education stands out in particular. As mentioned earlier, IT has completely changed our information behavior (Saracevic, 2007) and AI technologies have had significant impact on the way we learn (Chen et al., 2020). Constant evolution of IT provides scholars with powerful tools that, if used correctly, can help facilitate easier access and use of information needed for teaching and learning. On the other hand, the fact that students today have access to the plethora of information and software including readily available tools that can generate texts and information as well as tasks and solutions to exercise and learn, poses a significant challenge not only to conventional learning methods but for academic libraries and librarians as well.

According to Atlas (2023), ChatGPT is precisely that kind of all-encompassing tool given that it can generate prose and scientific texts, summarize information, create and evaluate test and quizzes, suggest research topics, questions and methods, check grammar and style, etc. Due to the fact that university students are comfortable in adopting new technologies like ChatGPT (Strzelecki, 2023), Halaweh (2023) proposes strategies for responsible implementation of ChatGPT into higher education and points out that universities should take proactive approach towards ChatGPT and instead of ignoring it or preventing its use, should instead work on the regulation of its use and responsible usage. Cotton et al. (2023), as well as Torph (2023) also advocate development of policies and procedures that will ensure ethical and responsible usage of ChatGPT while Crawford, Cowling and Allen (2023) argue that effective teacher leadership is a way to ensure responsible and ethical use of ChatGPT.

Lo (2023) has carried out thorough review of the literature on ChatGPT topic published during the first three months of its release (December 2022 to February 2023) and found that literature suggests that ChatGPT can serve as an assistant for both instructors and students but that it needs to be used with caution. Lo (2023), similar to Halaweh (2023) calls for prompt action from educational institutions in order to regulate the use of ChatGPT and prevent its misuse. Positive approach to the use of ChatGPT in higher education is also advocated by Rahman and Watanobe (2023) who have concluded that ChatGPT could be useful to educators in lesson planning, answering learners’ queries as well as a help in evaluation learners’ assignments. Perspectives on opportunities, challenges and implications of ChatGPT have been examined from a multidisciplinary point of view in an opinion paper from Dwivedi et al. (2023). This paper presents the viewpoints of 43 contributors from various fields of science who have shared different opinions on possibilities and limitations of ChatGPT. It should be noted that, to the best of our knowledge, this is the only paper in which authors, among other drawbacks, explicitly point out that ChatGPT could deepen the existing digital divide and inequity. Also, Dwivedi et al. (2023) urge that now, more than ever, emphasize must be put on developing students’ critical information literacy skills and adding value behind ChatGPT. Furthermore, Dwivedi et al. (2023) also stress out that users must keep in mind that ChatGPT is not an entity at all, but rather a complex tool and, as a result, it suffers from significant limitations. Conservative approach to the use of ChatGPT is exemplified by the statement that “there is a long way before AI platforms such as ChatGPT could be capable to lead independently to meaningful product, process or business model innovation (Dwivedi et al., 2023, p.6). Cautious approach to ChatGPT and its use is also advocated by Azaria, Azoulay and Reches (2023) who
acknowledge that ChatGPT could be used as an automated assistant in diverse domains but also point out that ChatGPT has some significant drawbacks when it comes to flaws in logical reasoning, output of incorrect and/or fictitious answers as well as references and lastly, copyright and ethical concerns. Azaria, Azoulay and Reches (2023) conclude that ChatGPT should be perceived and used as a tool that augments human capabilities and conclude that ChatGPT should never supersede human expertise and knowledge.

Use of ChatGPT and the possibilities that it offers is strongly endorsed by Javaid et al. (2023) who have concluded that although “it will not replace teachers” (p.1), ChatGPT “has shocked educational institutions around the globe” because it “would be both the best instructor and the best student” (Javaid et al., 2023 p. 1-3). Furthermore, Javid et al (2023., p. 10) refer to ChatGPT as to “freakishly powerful instrument” that “provides exceptionally high-quality findings”. It is important to note that Javaid et al. (2023) despite of the fact that they strongly advocate use of ChatGPT in all areas of higher education clearly state that, according to them, development of academic writing skills is essential in order to foster critical thinking and that it will play a crucial role in education, even in the age of AI. Here we can see very positive attitude by Javid et al. (2023) towards the future of academic writing (in a sense in which we have known it before ChatGPT) which contradicts rather grim attitude by Marche (2022) who claims that college essay is “dead”.

Farrokhnia et al. (2023) have utilized SWOT analysis framework in order to outline strengths, weaknesses, opportunities and threats that ChatGPT could have on educational practice and research. According to their findings, strength of ChatGPT lies in generating relatively plausible responses, which is in accordance with conclusions made by Haque et al. (2022) and Kasneci et al. (2023) who have attributed this kind of performance to the large amount of data on which ChatGPT has been trained. Other strengths that ChatGPT possess are self-improving capability which is also pointed out by Azaria et al. (2023) and Shen et al. (2023) and capability to provide personalized and real-time responses based on the context of a given prompt (Haque et al., 2022; Houston & Corrado, 2023). Opportunities for education arise from the fact that ChatGPT could increase accessibility of information, which is in our opinion, doubtful due to the fact that ChatGPT still does not have access to databases and library catalogues. Moreover, ChatGPT training data was cut off in 2021 (Houston & Corrado, 2023) so there is also absence of data that needs to be considered. Also, ChatGPT could facilitate personalized learning, complex learning and, finally, decrease teaching workload (Farrokhnia, 2023).

While there is a number of opportunities that ChatGPT can offer to higher education and to academic libraries, there are also some significant drawbacks that should be noted. Although, at first it seems to be “freakishly powerful instrument”, as said by Javaid et al. (2023), ChatGPT lacks a deep understanding of the meaning of the contents that it outputs (Gao et al., 2023, Azaria, Azoulay & Reches, 2023) and the longer the response is, it is more likely that it will lack logic or contradict itself (Mills, 2023). Concerns by Mills (2023) have been proven correct by Azaria, Azoulay and Reches, 2023) who have also claimed that ChatGPT lacks in logical reasoning and proved that claim by prompting logic queries that ChatGPT failed to resolve. Also, there are difficulties in evaluating the quality of responses. As Farrokhnia et al. (2023) point out, ChatGPT lacks the human ability to assess the credibility of data that provides and therefore outputs incorrect information. This occurrence referred as “hallucinating” (Alkaissi & McFarlane, 2023) occur in about 20% of cases (Houston & Corrado, 2023). Given the fact that ChatGPT provides incorrect answers with high level of self-confidence (Azaria, Azoulay & Reches, 2023), the results that ChatGPT provides should be “carefully double-checked as
the software appears to be generating incorrect content, based on an incorrectly reported source of ideas” (Dwivedi et al., 2023, p. 5).

Furthermore, ChatGPT has already become notorious when it comes to fabricating references. As Choi et al. (2023) have put it, ChatGPT tends to fabricate references that seems plausible but do not point to real-world sources which concurs with the claim made by Dwivedi et al. (2023) who explicitly state that “when asked to provide references and sources to back the arguments of the essay, the software simply pulled together a list of 5 references with wrong titles associated wrongly to authors, journals and publication year” (p. 5). Sallam (2023) has reviewed 60 ChatGPT articles form different scientific fields and found various concerns, from plagiarism to incorrect responses and inaccurate citations which concur with findings made by Nisar and Aslam (2023) who also concluded that ChatGPT provides answers that lack references and sources. Furthermore, Lao (2023) recognize reliability as one of five major issues associated with the use of ChatGPT in education and in order to support this claim listed several studies that have proven the tendency of ChatGPT to fabricate references (e.g., Mogali, 2023; Szabo, 2023; Jalil et al., 2023).

From this brief literature review it can be seen that a common position has not yet been agreed upon in the international scientific community (and probably never will be) given the fact that researches' findings and opinions vary from those who are vigorously in favor of ChatGPT utilization in education and research (Javaid et al., 2023) to those who object the use of ChatGPT (Torph, 2023).

ChatGPT, with all its pros and cons, is here to stay, and in that regard, academic librarians, teaching assistants and professors who teach information literacy should think together and try to find out the best way to incorporate ChatGPT into information literacy curricula. Consequently, aim of this study is to gain insight into viewpoints of Croatian academic librarians, teaching assistants and university professors on possible utilization of ChatGPT in teaching information literacy. In addition, authors are interested to learn opinions of academic librarians, teaching assistants and university professors towards ChatGPT in regard to its advantages and drawbacks, its use in academia and the impact that ChatGPT will have on academic libraries and librarians.

It is expected that librarians will be more prone to use ChatGPT as a tool in teaching information literacy than teaching assistants and professors. Furthermore, it is expected that overall attitude towards incorporation of ChatGPT into information literacy courses curricula and its use in teaching information literacy will be mostly negative.

Methodology

In order to achieve the stated aim of this research authors have decided to use In-Depth Interview method. In-Depth Interview method is qualitative research technique primarily focused on discussing new perspectives and gaining better and more comprehensive insight on the particular subject, problem or idea (Milas, 2009). In regard to the level of structure, we have decided to use semi-structured interview in which we have combined pre-arranged set of open-ended questions with the opportunity to ask additional questions (Slislović & Burić, 2020). Questions were arranged in four thematic units covering in order to cover all aspects of researchers’ interest. Thematic units where following:

1. General knowledge of ChatGPT tool: possibilities, drawbacks, threats
2. ChatGPT in a relation to higher education institution, university students, academic libraries and academic librarians
3. ChatGPT and Information Literacy teaching
4. The role of academic librarian in IL teaching

During the interviews, researcher did not explicitly adhere to the question schedule of questions, but used the possibility of adjusting the order of questions that a semi-structured interview allows. Also, with regard to the views expressed by the respondents during the interview, the examiner asked additional questions with the purpose of further clarifying some views and thoughts. Considering the specificity of research topic we conducted the interviews with a purposely selected sample of respondents consisted out of academic librarians, specifically teaching librarians, research assistant and university professors who teach Information Literacy at the Department of Information Sciences at the University of Zadar, Department of Information and communication sciences at the Faculty of humanities and social sciences, the University of Zagreb and the Department of Information Sciences at the Faculty of humanities and social sciences, the University of Osijek, and from the National and University Library in Zagreb, respectively.

The initial sample consisted of 15 respondents who were sent personalized messages via e-mail in which they were asked to participate in the research as experts whose opinion is important for the research of the topic. Also, an explanation of the research topic and objectives was included in e-mail and sent to all potential respondents. The first call for participation was sent to potential participants on 14th of June and the second call was sent on 19th of June.

Finally, eight respondents agreed to participate in the research (three from the University of Zadar, two from the University of Osijek, two from the University of Zagreb and one from the National and University Library in Zagreb) and the interviews were conducted from 19th of June till 10th of July in person or on-line using Zoom and Skype tools. With the previous agreement of participants, interviews were audio recorded and total length of recordings was 347 minutes. In order to conduct qualitative content analysis, recordings were later listened and transcribed.

Results

While conducting interviews, authors have found that respondents have identified a range of minor and major impacts that ChatGPT will have or already has in regard to higher education, university students, academic libraries and their services, especially reference service. Also, respondents discussed the possibilities as well as pros and cons of incorporating ChatGPT into IL courses curricula. Furthermore, respondents have discussed the influence that ChatGPT and AI-generated tools will have on academic librarians. Finally, the respondents took a unanimous firm position in relation to the involvement of librarians in higher education teaching of information literacy and the way in which this participation should be institutionally regulated and adequately acknowledged.

In a response to the first set of questions, all respondents stated that they knew what ChatGPT was and, with exception of one of them, all have tried to use it. When asked to share their first impressions on ChatGPT, some of the answers were following:

“It seems pretty powerful.”
“I have tried it and the answers seemed coherent.”
“It seems quite knowledgeable”
“I have tried it and I am using it already”

In regard to the possibilities that ChatGPT could offer, most respondents agreed that ChatGPT could be useful in generating formal and non-specific texts:

“… ChatGPT tool proved to be very useful in generating some generic formulations that I needed for filling out the project application. In that sense, it is very useful in a way that it offers some phrases or formulations that can be used later on.”

“… I have realized that ChatGPT is rather good in performing some tasks such as generating invitation texts or as tool that I will use to check English spelling and grammar. In that sense, it can be very useful and I am already using it”

From these two responses is obvious that ChatGPT has already found purpose in performing some time-consuming tasks.

Also, number of respondents stated that they would also likely use ChatGPT in performing certain tasks such as:

“… to gather information on some thoroughly researched topic…we should bear in mind that there is a large set of data that ChatGPT was trained on…”
“… as a starting point in research.”
“… to collect data in a quick and simple way.”

When asked to point out some flaws of ChatGPT that could be noticed at first glance, respondents pointed out output of incorrect responses:

“… in one particular moment, tool has started to fabricate answers…”
“… we should keep in mind that there is a pressure on ChatGPT to output an answer and in that regard, tool tends to output incorrect or fabricated answers…”

The respondents were much more detailed in their answers when answering to the questions from second set of questions which were oriented on the use of ChatGPT in higher education concluding that advantages of ChatGPT are:

“… it can provide some initial information on the subject…”
“… it provides ad-hoc information when needed…”
“… it can be useful in summarizing literature.”
“… it is useful when writing literature reviews.”
“… it is very helpful when there is a need to rephrase something, especially for non-native speakers of English language.”

When it comes to the drawbacks of ChatGPT, respondents have pointed out several flaws of which we will list most pronounced ones such as specific domain knowledge and ability to contextualize information:

“When it comes to specific domain knowledge, I do not have enough trust in ChatGPT tool.”
“It is just top of the iceberg. I am much more interested in the contents that are on the deep web and that ChatGPT, at least for now, does not have access to.”
“...if there is a need to approach the topic from the different perspectives, it is questionable whether the ChatGPT can do it in a way that I can trust”

All interviewees have pointed out that the most significant drawback of ChatGPT is the fact that it fabricates references.

“... when I prompted a query looking for references, ChatGPT has simply provided five non-existent references...

“... most of the teaching staff that I talked to told me that they tried to use it (ChatGPT) and that they realized that it provides incorrect and fabricated references.”

“... it is very important to nurture critical approach towards ChatGPT, bearing in mind that is notorious for fabricating references and listing non-existing sources.”

When asked for their opinion on the topic of whether students already use ChatGPT as assistance in writing seminar papers, the majority of interviewees answered affirmatively.

“... students are definitely using ChatGPT, there was even a case when one of the colleagues suspected that student has used ChatGPT to write Master thesis.”

“...the student submitted seminar paper with not a single reference. None. Paper was very eloquently written, but not a single reference. Not even a single grammatical error typical for students. That was a red flag – something is happening here!”

“... I have already heard that students are using ChatGPT as a help in writing their papers and not a long time ago, one of the professors came to me to check one student paper using Turnitin and the paper wasn’t recognized as plagiarism. Nevertheless, professor who knows the student and is acquainted with him – knows that student is not an author of the paper.”

In this regard, part of the respondents has called for universities to regulate the use of ChatGPT:

Researcher: “In your opinion, should universities in some way regulate the use of ChatGPT?”

Respondent: “It would certainly do.”

“Guidelines should be adopted at the institutional level.”

“It should be determined in some way what the tool can and cannot be used for. In theory, it is a good idea; the question is how it will work in practice”

“It is necessary to regulate the use of ChatGPT on the level of academic practices.”

Despite of the fact that there is evidence of misuse, none of the respondents did not advocate ban of ChatGPT at universities. As one of the respondents put it:

“...banning ChatGPT would be like banning an axe. You cannot ban technology; it is up to us to teach the students that, as it is said in Spiderman, with great power comes great responsibility.”

Another responded reasoned:

“There is no point in banning ChatGPT – the students will use it anyway.”

In a relation to academic libraries and their services, especially reference services as well as in relation to the role of academic librarians, ChatGPT, according to the responses given by interviewees, does not pose as a threat.
When asked will ChatGPT and AI in general change the nature of academic librarianship and reference service in particular, responders have provided various answers such as:

“... ChatGPT is a good thing and if we (academic librarians) could work together with IT experts on its utilization, we could do a lot with it.”
“In my opinion, librarians should use ChatGPT in order to gain domain knowledge and in order to get acquainted with the information they are not necessarily familiar with.”

In response to the question whether the ChatGPT is a threat to the librarians and whether the fear that ChatGPT would replace librarians is justified, respondents replied:

“We (academic librarians) don’t need to fight against ChatGPT, we need to integrate ChatGPT into our practice and use it as a tool in providing better services to our users.”
“Definitely no, I see it (ChatGPT) as an auxiliary tool that will help us achieve better results.”
“I don’t see a chatbot as a librarian for a long, long, time.”
“ChatGPT will probably be able to take over some small portion of generic jobs but I wonder, what are those jobs? ChatGPT is definitely not trained well enough to be used as a cataloguing tool and does not have the perception of how complex bibliographic universe is. When it comes to reference service, I also doubt that ChatGPT will ever be able to provide the same quality referral service as a well-trained librarian which also understands the specific needs of users.”

When asked for their opinion on possible incorporation of ChatGPT into information literacy courses curricula responses varied:

“For now, I think that the incorporation of ChatGPT into IL courses curricula could be dangerous in a sense that the students could understand that ChatGPT is something trustworthy, a tool that will provide them with relevant information which is not always true. In this phase, no.”
“In my opinion, it will take some time before ChatGPT becomes a part of IL courses curricula.”
“Yes, it should be included and the students should be informed on its possible applications as well as about its drawbacks, especially when it comes to referencing. Also, in my opinion, university staff should also attend courses or workshops in which they will be acquainted with the ChatGPT tool.”
“It should be incorporated, but I am not sure in which way. Maybe we should wait and see what kind of position the university will take towards ChatGPT at the institutional level.”
“I will mention it (ChatGPT), but, for time being, I will not include it into curricula in a way, that, for example, I have included databases.”

Finally, when responding to the last set of questions regarding the engagement of librarians in teaching information literacy, along with the responses on the ways how librarians could improve their teaching role, respondents expressed a high level of dissatisfaction and even frustration when it comes to valuing the knowledge and skills of librarians by university administration, the role of the academic librarian in the in-class teaching and the fact that their participation in class is minimal. Furthermore, respondents have expressed their disappointment in regard to formal and legal position of academic librarians within the universities:
“Academic librarians have far more knowledge and competencies but there is a lack of institutional framework that would position librarians in a right place.”

“Although intracurricular (embedded) librarianship is not a part of Croatian academic tradition, there is a need to include librarians into teaching. Librarians have more than enough skills and will to participate in the in-class teaching. In that regard, it is necessary to redefine the role of academic librarians, as well as their work duties. In my opinion, there is a lack of will on the institutional level when it comes to integrating librarians into teaching process. Furthermore, this issue should be also addressed from a legal and financial point of view because librarians are not additionally paid for their participation in IL courses teaching.”

“... I have never seen a dime from my participation in IL courses teaching...”

“... people are surprised when I say to them that I do not receive any compensation for my work.”

“... the problem is the fact that we (academic librarians) cannot be officially selected to be lecturers.”

“In regard to participation in IL but also in other courses, like for example Academic Writing or Research Methodology courses, position of a librarian is not regulated in a proper way and it is most definitely, not valued at it needs to be.”

“... the fact that mine work IL courses teaching has never been appropriately appreciated along with the fact that I have never seen a dime from it and, on top of everything, that I never had the opportunity to be elected as a lecturer at my own institution is one of the reasons why I have left my job at the university.”

“... it's a matter of principle, not money. Our (academic librarians) status needs to be resolved at an institutional level.”

One of the respondents has connected questions previously asked on ChatGPT, its use, effects and possibilities in incorporation into IL courses curricula and pointed:

“... ChatGPT is not a threat to librarians. Librarians are threat to librarians! The problem is that we (academic librarians) are perceived as a nine-to-five employees and the fact is that we need to “go beyond library walls” and become an equal participant in the teaching process. If we don’t do that by ourselves, nobody will do it for us.”

Discussion

Aim of this study was to gain insight into viewpoints of Croatian academic librarians, research assistants and university professors on ChatGPT tool and its possible incorporation into IL teaching courses. Furthermore, researcher was interested in the respondent’s attitudes towards ChatGPT in regard to its advantages and drawbacks, its use in academia and the impact that ChatGPT will have on academic libraries and librarians. Also, the issue of the formal position of librarians as lecturers at the universities emerged when researchers and respondents discussed fourth set of questions regarding the role of academic librarians in IL teaching. Respondents identified this problem as extremely significant and stressed out that there is an urgent need in resolving it.

After conducting qualitative content analysis of the transcribed interviews, we can conclude that Croatian academic librarians, research assistants and university professors have mostly negative attitude towards possible incorporation of ChatGPT into IL courses curricula. Also, based on the analysis of the interviews, authors have concluded that there is no significant difference between librarians, teaching assistants and university professors in the context of tendency to use ChatGPT in IL teaching. These attitudes stem from the fact that the respondents
are familiar with the most significant drawbacks of ChatGPT, where lack of sources and fabrication of references stands out in particular. This kind of conservative approach is on the line with the conclusions Halaweh (2023) and Lo (2023) and in opposition to the viewpoints of Javaid et al. (2023). In regard to false referencing, findings of this study concur with the findings of Dwivedi et al. (2023), Azaria, Azoulay and Reches, (2023) and Choi et al. (2023) who have all found that ChatGPT tends to fabricate references. When it comes to advantages and possibilities that ChatGPT has to offer, Croatian librarians and scholars pointed out that ChatGPT, in response to the prompts that do not require higher-order thinking skills, generate plausible answers and seem quite knowledgeable which was previously stated by Haque et al. (2023) and Houston and Corrado (2023). Majority of Croatian academic librarians and LIS scholars think that students are already using ChatGPT as a help in writing their seminar papers and even Master thesis and, such as Cotton et al. (2023), Torph (2023) and Halaweh (2023) do, call for development of policies that will assure that ChatGPT is used in a responsible and ethical manner.

When it comes to the impact of ChatGPT on academic libraries and its services, especially reference service, respondents have stated that there probably are some tasks that ChatGPT will be most likely able to perform but that ChatGPT, in their opinion is not a threat to librarians. According to the responses, academic librarians should perceive ChatGPT as an auxiliary tool that can be used to improve library services. This conclusion is in complete agreement with conclusion made by Houston and Corrado (2023), who are, to the best of author’s knowledge, along with Lund & Ting (2023) only authors who have tried to examine implications of ChatGPT on academic libraries. Furthermore, Cox and Tzoc (2023) have also stated that ChatGPT is simply an extension of current reference service or as one of respondents has put it: “there will always be new tools, but also, there will always be room for professional development in order for us (academic librarians) to manage and use those tools.”

Lastly, when discussing the role of academic librarian in IL teaching, respondents’ stances are unanimous. Croatian librarians should partake great deal more in the in-class IL teaching due to the fact that they have enough knowledge, skill and will to be equal shareholders in the educational process. These reflections are in the agreement with the conclusions of Golenko (2016) who has found that intracurricular (embedded) model of information literacy teaching is most effective model in teaching information literacy. Furthermore, it is stated that academic librarians and university professors need to cooperate in order to create curriculum for new IL courses as this kind of cooperation has proven to be successful over the decades (Drum et al., 1993; Knight, 2006; Samson, 2010).

Conclusion

This study aimed to examine the viewpoints of Croatian academic librarians, research assistants and university professors in regard to use of ChatGPT in academia, its possible incorporation in IL teaching courses as well as its effects on academic libraries and academic librarians. Qualitative content analysis has shown that overall attitude towards incorporation of ChatGPT into IL courses curricula is mostly negative and, thereby, second researchers’ assumption has proven to be correct. Furthermore, qualitative content analysis indicated that there is no significant difference between academic librarians, research assistants and university professors when it comes to inclination to use ChatGPT tool in teaching information literacy. Also, during the interviews, it was brought to authors attention that there is permanent problem concerning academic librarians teaching status at institutional level. This problem should be addressed as soon as possible in order to ensure that students attend the highest quality IL
courses in creation and teaching of which academic librarians have a vital role. Also, adequate recognition of academic librarians’ knowledge, skills, and competences should serve as a turning point in changing the paradigm according to which academic librarian is an administrative, nine-to-five employee.

ChatGPT is a powerful tool and, due to the fact that is under constant development, will be even more powerful. If not in a year or two, in a foreseeable future it will have to be integrated into IL courses curricula because, in our opinion, it will be used as frequent as current search engines like Google. ChatGPT is not a threat to higher education, academic libraries or librarians; ChatGPT is an opportunity for university professors to direct their students into conducting original researches and collecting, processing and interpreting field data. Also, academic librarians should take advantage of ChatGPT phenomenon to consolidate their position as information experts, who unlike ChatGPT, are able to contextualize information and possess higher-order thinking skills. Well-trained, empathic librarian with highly developed critical thinking skills will not be superseded by chatbot in a foreseeable future, no matter how well trained chatbot could be.

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