ONLINE PROFESSIONAL DEVELOPMENT FOR LIBRARIANS IN THE WORKPLACE AND THE PROBLEM OF MULTITASKING

INTERNETSKO STRUČNO USAVRŠAVANJE KNJIŽNIČARA NA RADNOM MJESTU I PROBLEM VIŠEZADAĆNOSTI

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UDK / UDC: 023.5:[37:004.738.5:331.36]
Izvorni znanstveni rad / Original scientific paper
https://doi.org/10.30754/vbh.68.2.1508
Primljeno / Received 30. 5. 2025.
Prihvaćeno / Accepted 21. 6. 2025.

Abstract

Objective. This survey aimed to identify which activities that can lead to multitasking librarians do at the same time as their online professional development at work, and how often they perform them.

Approach/Methodology/Design. The survey was conducted using quantitative methodology, with a survey questionnaire as the measurement instrument, which examined the age of the respondents, the type of library where they work, the location from where they attend online professional development and the activities they carry out during their online professional development. The survey included 593 librarians

employed in 2024 in one of the different types of libraries included in the COBISS system.

Results. The results indicate that participants do perform additional tasks during their professional development sessions, but only occasionally or rarely. The performance of additional activities varies statistically significantly between participants according to the type of library they work in and their age, and the performance of some activities also varies according to the location where they are receiving the training. The most frequently reported multi-tasking activities during the online professional development are additional work tasks, interaction with co-workers and reading and writing e-mails unrelated to the training. Participants with the highest reported rates of multitasking are from the national library and special and higher education libraries. In terms of age, younger participants (aged between 20 and 39) were the most frequent multitaskers.

Limitations. The data were not collected immediately following a single online professional development session and was gathered retrospectively, which may have caused participants to have difficulty recalling information. Additionally, the use of a survey questionnaire may introduce response bias.

Practical Application. The results of the survey can help us to be aware of these issues when planning online professional development sessions.

Social Significance. Addressing the problem of multitasking may help discourage such behaviour among learners, and alert online professional development planners to the problem of an inappropriate learning environment that allows too many distractions.

Originality/Value. The article presents previously unknown information and data about the implementation of multitasking performed by librarians from various types of libraries while engaging in online professional development at the workplace.

Keywords: online training, professional development, librarians, multitasking

Sažetak

Cilj. Svrha istraživanja bila je ispitati koje aktivnosti koje mogu dovesti do višezadaćnosti knjižničari istodobno izvode dok se internetski stručno usavršavaju na radnom mjestu i koliko često to čine.

Pristup/metodologija/dizajn. Istraživanje je provedeno kvantitativnom metodologijom gdje je kao mjerni instrument korišten anketni upitnik koji je provjeravao dob ispitanika, vrstu knjižnice u kojoj su zaposleni, lokaciju s koje sudjeluju u internetskim stručnim usavršavanjima i aktivnosti koje izvode tijekom usavršavanja. U istraživanju je sudjelovalo 593 knjižničara koji su tijekom 2024. godine bili zaposleni u nekoj od različitih vrsta knjižnica koje sudjeluju u COBISS sustavu.

Rezultati. Rezultati su pokazali da sudionici tijekom usavršavanja obavljaju dodatne zadatke, ali se to događa povremeno, odnosno rijetko. Izvođenje se dodatnih aktivnosti među sudionicima statistički značajno razlikuje ovisno o vrsti knjižnice u kojoj

su zaposleni i njihovoj dobi, a obavljanje nekih aktivnosti ovisi i o lokaciji s koje se usavršavaju. Tijekom sudjelovanja u internetskom stručnom usavršavanju najčešće se kao oblik višezadaćnosti pojavljuju dodatni službeni zadaci, interakcija s kolegama te čitanje i pisanje elektroničke pošte koja nije vezana za obrazovanje. Sudionici koji prijavljuju najvišu razinu višezadaćnosti dolaze iz nacionalne knjižnice te specijalnih i visokoškolskih knjižnica. Po dobi u izvođenju višezadaćnosti prevladavaju mlađi sudionici (između 20 i 39 godina).

Praktična primjena. Rezultati istraživanja mogu nam pomoći u osvještavanju problematike višezadaćnosti prilikom planiranja internetskog stručnog usavršavanja.

Ograničenja. Podaci nisu prikupljeni nakon završetka internetske stručne obuke, već su prikupljeni retrospektivno, što je kod sudionika moglo uzrokovati poteškoće s prisjećanjem. Korištenje anketnog upitnika može također dovesti do pristranosti u odgovorima.

Društveni značaj. Razmatrajući problem višezadaćnosti, polaznike možemo učinkovitije odvratiti od takvih navika, a organizatorima internetskih stručnih usavršavanja skrenuti pozornost na problem neodgovarajućeg okruženja za učenje koje dopušta previše ometajućih čimbenika.

Originalnost/vrijednost. Članak predstavlja dosad nepoznate informacije i podatke o provođenju višezadaćnosti koju knjižničari iz različitih vrsta knjižnica izvode tijekom internetskog stručnog usavršavanja na radnom mjestu.

Ključne riječi: internetsko obrazovanje, stručno usavršavanje, knjižničari, višezadaćnost

1 Introduction

Due to the development of new technologies in the library profession, it is essential for librarians to stay up to date in order to succeed in the workplace and their work. Alongside formal professional training, there is also a need for ongoing informal professional development, which librarians typically undertake in the workplace, through independent web browsing, reading literature, interacting with each other and working with users (Li, 2001). The term *training* usually refers to education or instruction that takes place in educational institutions such as schools, adult education centres, training centres, etc., with the aim of obtaining an education. The term *professional development* is used when referring to short-term, focused training sessions with clearly defined objectives that follow formal education. Professional development is designed to update existing knowledge or acquire new competencies. Librarians who have the support of their employer and engage in informal professional development demonstrate high levels of responsibility, enthusiasm for learning and display a higher growth mindset (Maestas, 2023). Malik et al. (2023) emphasize the importance of continuing education in all aspects of librarianship and argue that librarians often rely on learning opportu-

nities outside formal education to improve their research skills and competencies. For short-term knowledge acquisition, online learning without the intervention of a lecturer is preferred, while for long-term knowledge acquisition, online or on-site lectures are more appropriate (Dalston, 2009).

In the past, participants attended professional development courses in person, but nowadays online professional development sessions are becoming increasingly popular. The rapid development of information and communication technology (ICT) has also led to a significant shift toward web-based professional development sessions. Bregar et al. (2020) define distance learning as an educational process in which the provider and the learners are physically separated. Možina et al. (2022) go on to argue that it is perhaps the development of the internet that has led to the most important difference between distance learning in the past and today, with the rise of online learning environments that are increasingly personalised. While distance learning was already thriving before the COVID-19 pandemic, online professional development reached its peak during the pandemic. Librarians who undertook online CPD using the self-paced learning modules were satisfied with the format, as it allowed them to learn according to their schedule, but difficulties arose in submitting assessment assignments and navigating through the learning content itself, when learners were unsure how to proceed (Duggan, 2018). Slovenian librarians are satisfied with and positively accept online professional development (Dornik, 2021; Dornik and Batič, 2022).

In a study on the professional development needs of Slovenian librarians conducted by the National and University Library in 2021, Marinšek (2023) found that a mixed form of online training combined with classroom-based training is still predominant, followed by online training and, in last place, classroom-based training. The arguments against classroom-based training stated by the librarians in the survey are mostly lack of time, too much time away from the workplace, travel costs, lower concentration and difficulty in following the content. Disadvantages of online training include lack of personal contact and interaction between participants, reduced concentration and attention, inadequate assistance with exercises, hesitation to ask questions, and too many distractions (e.g. technical issues, internet connection problems, interruptions at work), as well as lower motivation (Marinšek, 2023).

2 Synchronous and asynchronous mode of online training

Online training can be delivered in synchronous or asynchronous mode. Synchronous delivery is characterised by the simultaneous presence of the learner and the training provider. This is made possible by videoconferencing software such as Zoom, Microsoft Teams, Skype and others. The teaching mode is quite similar

to live classroom teaching, but the participants are not present in the same room. In asynchronous delivery, however, there is no direct communication between the instructor and the participants. This type of training can be accessed online through Learning Management Systems (LMS) such as Moodle. It is up to each participant to decide when to undertake an activity. Communication is indirect through forums or e-mail. Both types of online learning have their advantages and disadvantages. Asynchronous delivery requires higher learning motivation, self-efficacy, self-regulation and competencies from the participants, including digital literacy, ICT skills and previous experience with this type of online training (Možina et al., 2022). However, it offers greater flexibility and time regulation, multiple viewing of learning materials and the possibility to take a break during the course (Kavšek, 2024). For asynchronous delivery, the authors suggest dedicated and well-designed video recordings of the explanation of the learning content, rather than recordings made during lectures, in which classroom lectures are simply reused for convenience or less efficient delivery by the lecturer (Wood et al., 2021). Pre-recorded videos of lectures allow learners to view the desired content at any time, while panning and stopping within the recording increases the personalisation of learning. Moodle allows online course designers to use a variety of activities in the design of the online classroom that support personalised learning in different ways and differ according to the level of personalisation support (Batič and Licardo, 2024). However, in order to successfully integrate the appropriate activity or activities, it is crucial to include a design process beforehand to ensure an educational structure that supports personalised learning (Papanikolaou and Boubouka, 2020). Asynchronous online training is typically considered the optimal choice among adults, non-traditional students, part-time students who choose to do so due to full-time employment and family commitments (Radford et al., 2015). Aldowah et al. (2020) highlight the problem of the lack of face-to-face contact, which is absent in virtual learning environments that are entirely online, and which can result in faster drop-out (Aldowah et al., 2020). Radovan and Kristl (2020) state that drop-out rates are not only dependent on students' social and economic circumstances, as it is increasingly believed that drop-out is also affected by poorer motivation resulting from the absence of face-to-face contact (Garrison et al., 1999; Radovan and Kristl, 2020). In constructivist theory, learning is conceptualised as a social process that requires communication between teacher and learner as well as among participants, but this social process cannot be fully replaced by modern technology; however, it can be closely approximated through continuous developments of modern information technology (Bates, 2005). Synchronous delivery facilitates face-to-face communication between the lecturer and the learners, and between the learners (Schwarz et al., 2022). Although synchronous and asynchronous delivery differ in how the material is presented, there is no significant difference in final assessment outcomes, which is the most important indicator of training success. However, there is a difference in the social relevance

of the training, which is perhaps too often neglected in asynchronous delivery (Battista et al., 2023; Collins, 2011).

The advantages of guided learning over asynchronous learning only start to diminish once learners have enough knowledge to work independently. It is important that learners achieve success, which leads to self-efficacy, a sense of achievement and further motivation to learn (Kirschner et al., 2020). Thus, asynchronous learning can be more easily introduced for adults who are undergoing further professional development and have already acquired the basic knowledge and skills to work independently than for less experienced learners who are acquiring knowledge for the first time.

3 Online professional development at the workplace

Synchronous online training is mostly delivered during learners' working hours, meaning that their learning environment is their workplace. Learners face additional challenges during online education, such as multitasking, mind wandering, use of digital devices, unexpected distractions, and recurring distractions that divert their attention (Wang, 2022). Multitasking in this context may involve reading and writing e-mails, making phone calls or completing additional regular work tasks. External distractions can include background noise, the presence of other people, and interaction with them. All of these contribute to interruptions during training.

Federman (2019) divides interruptions into three key dimensions: timing, content and urgency. The timing dimension includes the number and duration of interruptions, and the time at which the interruption occurred, e.g. at the beginning, middle or end of training or skill acquisition. In terms of content, interruptions are divided into relevance of the interruption to the primary task, and the complexity of the interruption (level of information processing). The urgency dimension concerns the mode of delivery (synchronous: face-to-face conversations and phone calls; asynchronous: voice messages and e-mail), as well as the source and relevance of the interruption (e.g. colleagues, supervisors, family members, clients, friends), where the status of the person initiating the interruption and the potential consequences of not responding are also relevant. Federman (2019) further categorises interruptions by how they affect learning performance. Cognitive interruptions refer to all aspects that generate information overload and interfere with encoding, so that educational content is processed only in short-term working memory and repetition of information for retention purposes is prevented. Indeed, the amount of information that people can simultaneously retain and process in working memory is limited to approximately seven plus or minus two units (Miller, 1956). Motivational interruptions can affect self-efficacy and effective progres-

sion through education, and interruptions increase the gap between desired and actual behaviour, and increase the time to achieve goals. Affective, uncontrolled and unpredictable interruptions can lead to information overload and induce stress. Moderate levels of arousal can enhance task performance, but extremely high levels can only make it worse. High levels of stress can divert attention away from the training towards negative thoughts about the training performance or the interrupted task. Federman (2019) also discusses interruptions during online training that are self-initiated by participants, such as taking breaks or completing an additional task that does not arise from an external distraction. Here, negative emotions are more likely to trigger self-initiated interruptions (Adler and Benbunan-Fich, 2014).

Multitasking is significantly more common in online training than in classroom training (Aivaz and Teodorescu, 2022; Lepp et al., 2019). This may be caused by the absence of a lecturer and the resulting reduced supervision of participants, as well as environmental distractions, such as non-education-related communication and the concurrent performance of additional tasks. Multitasking and age of participants are negatively correlated, meaning that older participants will perform fewer concurrent tasks than younger participants (Lepp et al., 2019). Hattie (2014) states that younger learners are often referred to as digital natives, as they have been born and grew up in the age of information and communication technology, and thus having developed better multitasking skills. However, he points out that learners should be discouraged from multitasking, especially when it comes to any form of learning, as divided attention makes it impossible to learn effectively, even though many think they can do several things at once. Learners who believe they will be able to do multiple tasks simultaneously show reduced overall final performance (Hattie, 2014). When we perform multiple tasks simultaneously, we switch between them, waste time and make mistakes. While switching, we unconsciously shift our attention between tasks. The brain activates a rule to complete the processing of the first task, leaving the schema that was in use and triggering another rule that initiates the processing of the second task with its new schema. Such switching between tasks takes time, and the allocation of attention requires additional working memory capacity (Kirschner et al., 2020).

Automated cognitive processes require fewer cognitive resources than non-automated ones, meaning that performing simple tasks simultaneously does not lead to cognitive overload. The presence of distractions and additional demands has a greater negative impact when learning new things than when applying existing knowledge (Adler and Benbunan-Fich, 2014; Hattie, 2014). When learning complex or new material, learners have to process a greater number of information and interactions simultaneously, which can lead to an overload of working memory and, consequently, poorer learning performance (Sweller, 2010).

Multitasking is more common in media that provide instant emotional gratification, such as apps or social media. Technology breaks can also be effective in reducing multitasking: after a period of learning without multitasking, there is a break during which students can check text messages or social networks (Kostic et al., 2022). In a study of online meeting delivery, findings showed multitasking is more prevalent when the microphones and webcams are turned off (Cao et al., 2021). Learners prefer passive participation in online training and often keep webcams turned off (Dennen et al., 2022). Furthermore, in exercises where learners cannot control the speed of information delivery, multitasking is more common, even when learners show a high level of interest in the topic (Jamet et al., 2020).

Psychology is also concerned with the provision of quality education in the workplace, e.g. the psychology of learning and the psychology of work and organisation (Deutscher and Braunstein, 2023). Indicators of quality education are not only performance outcomes, but also how participants experience education, how they feel during the delivery and whether they are exposed to additional distractions and stresses, which are addressed by the psychology of learning.

Multitasking can lead to increased cognitive load, which can also result in cognitive overload. Sweller (1998) pioneered the Cognitive Load Theory (CLT), a theoretical model of learners' working memory, and the different types of load that can fill their memory capacity. The theory introduces three types of cognitive load, depending on the working memory requirements in different educational settings: (1) Intrinsic Cognitive Load (ICL), which depends on the individual's prior knowledge and the difficulty of the learning material; (2) Extraneous Cognitive Load (ECL), which depends on the way the material is delivered; and (3) Germane Cognitive Load (GCL), which is actually needed for learning to take place. The model assumes that educational materials have an irreducible complexity, which arises from the number of information units and the number of their connections, also called the interactivity of the elements (Sweller et al., 1998).

Intrinsic cognitive load cannot be reduced by the design of the training, but it varies according to the learner's level of proficiency, meaning that a beginner may experience more intrinsic cognitive load than someone with more experience with the same task. In contrast to intrinsic cognitive load, extraneous cognitive load is influenced by the way in which the learning content is presented. This type of load can also be caused by inefficient learning processes, unnecessary actions or mental operations that learners have to perform while learning with the learning material. Germane cognitive load is defined as the cognitive resources devoted to the mental processes of retrieving and storing knowledge in long-term memory, creating schemas (Sweller et al., 1998). In the past, extraneous cognitive load had been associated mainly with factors relating to instruction and explanation. More recent research considers factors related to external distractions, media and

electronic devices in the learning environment (Andersen and Makransky, 2021). When researching extraneous cognitive load, one needs to be aware that education does not occur in a situational vacuum, and therefore the concept of extraneous cognitive load needs to be considered more broadly, taking into account the situational factors in which the learning materials are delivered (Taylor et al., 2022).

4 Aim of the research

Based on the theoretical findings so far, this study aimed to investigate the most common activities that participants engage in during online professional development training that are unrelated to the training itself. These are usually activities related to their work at the workplace. Additionally, we examined how frequently these activities occur, as performing them at the same time frequently can lead to multitasking. This, in turn, increases additional cognitive load and may ultimately result in cognitive overload, which in turn has a negative impact on learning. We were also interested in whether the multitasking reported by participants differed statistically significantly according to their age, the type of library they work in and the location of the training. It is common for librarians from different types of libraries, who perform different duties such as office work, working with users and working with colleagues, to attend online professional development sessions at the same time. There are also large age differences and many of them do not have an appropriate learning environment in which to participate effectively in the professional development sessions.

The following research questions were posed:

1. Which additional multitasking activities, not related to the training, do participants in online professional development sessions perform most often and how often?

1.1 Are there statistically significant differences in the frequency of multitasking according to the type of library in which the participants of the online professional development are employed?

1.2. Are there statistically significant differences in the frequency of multitasking according to the location (home or workplace) of the online professional development session?

1.3. Are there statistically significant differences in the frequency of multitasking according to the age of the participants of the online professional development session?

5 Methodology

5.1 Sample

The survey included 593 Slovenian librarians employed in one of the following libraries in 2024: school (40.3%), public (33.9%), higher education (11.3%), special (7.1%), university (4.0%) and national library (3.4%).

The average age of participants was 47.3 years. Participants were further classified into the following age groups: 40–49 years (38.8%), 50–59 years (33.6%), 30–39 years (16.5%), 60–69 years (8.9%) and 20–29 years (2.2%).

In terms of the location from which participants engage in online forms of professional development trainings, the majority of participants do so from the workplace (62.7%), followed by the group of participants who more often attend training from home (19.2%), while the smallest group comprised participants who attend training equally often from work and home (18.1%).

The vast majority of participants were female (90.0%) and had completed at least Level 7 of education according to the Slovenian educational framework, which is the equivalent to a second Bologna cycle university degree (78.0%). The average length of service in the library sector was 15.9 years.

5.2 Measuring instruments

The questionnaire was developed based on existing literature and reviewed by experts in the field of adult learning and psychology. It included questions related to workplace disruptions during online professional development that could lead to multitasking. As librarians have the possibility to work from home, their learning environment was extended to their home. The questionnaire consisted of 19 questions, most of which were closed-ended.

For the purpose of this study, four questions are relevant. The participant age was relevant to the study, as the frequency of multitasking varies according to the age of those who perform it (Lepp et al., 2019). Next, we were interested in the type of library in which the participants of the professional development sessions were employed. This information is important because their work differs according to the type of library, with some having more contact with colleagues and some with library visitors. The number of staff also varies according to the type of library, for example, where someone may be alone in the library and cannot close it during the training. As library staff may work from home, we were interested in the location from where they most often attended online professional development sessions, whether more often from work, from home, or both locations equally. We used a five-point Likert frequency scale. The key question contained 9 items describing distracting activities that can lead to multitasking. We measured which

activities librarians do most often alongside online professional development, and how often. The question included activities such as additional work tasks, interactions with people, use of social media, and household chores. The questionnaire was designed using the 1KA online survey tool.

5.3 Data acquisition procedure

The data were collected via a questionnaire sent to all contact persons of Slovenian libraries included in the COBISS system (Cooperative Online Bibliographic System and Services). In an e-mail message, recipients were invited to participate and asked to share the survey with librarians working in their libraries. The survey remained open for a month, between 22 April 2024 and 22 May 2024. The estimated time to complete the questionnaire was 5 minutes and 50 seconds, and the average time taken was 4 minutes and 11 seconds.

5.4 Data processing procedure

The collected data were exported to IBM SPSS for statistical analysis. Basic descriptive statistics and further analyses were performed. The Kruskal-Wallis test was used to test for differences between more than two groups. The use of this non-parametric test was justified by the characteristics of the data collected, as it did not meet the preconditions of normal distribution. Based on the results of the test, pairwise post hoc analyses were conducted to further determine which groups show statistically significant differences.

6 Results

Table 1: Comparison of survey results for various activities that cause multitasking

Activity:	**N**	**M**	**SD**	**never**	**rarely**	**occasionally**	**frequently**	**always**
				%	**%**	**%**	**%**	**%**
I carry out additional work tasks	553	2.27	1.00	24.2	37.8	27.8	7.2	2.9
I interact with co-workers	553	2.14	0.88	23.7	45.4	25.3	4.0	1.6
I read/write e-mails unrelated to the training	578	2.01	1.03	38.6	33.4	18.7	7.1	2.2
I take phone calls	578	1.93	1.01	41.7	34.4	15.4	6.4	2.1

I interact with library visitors	553	1.86	0.99	46.8	28.7	16.3	5.6	1.6
I interact with family members	442	1.53	0.70	57.7	31.9	9.7	0.7	0.0
I chat in online chat not intended for training	578	1.31	0.70	79.1	14.2	4.2	1.9	0.7
I use social networks	578	1.31	0.65	77.5	16.4	4.2	1.7	0.2
I do household chores	442	1.28	0.61	80.1	12.9	6.3	0.7	0.0

The most common activities that librarians do during online professional training, but which are not directly related to the learning process, are carrying out additional work tasks and interacting with co-workers. Although these are the most frequent activities, the majority of respondents' report that they do them only rarely or occasionally.

The third most frequent activity is reading and writing e-mails that are unrelated to the training. This is followed by taking phone calls and interacting with library visitors, with almost half of the respondents not doing these activities at all. Interaction with family members is even less frequent.

The least common activities that librarians engage in during their online training are online chatting, use of social networks, and doing household chores, with the vast majority of respondents stating they do not engage in these activities at all.

Table 2: Comparison of survey results by library type with regards to various activities that cause multitasking

Activity:	**Group:**	**N**	$\bar{R}$	X^2	**P**
I read/write e-mails unrelated to the training.	Public	195	272.73	34.70	< 0.001
	Special	39	337.65		
	School	236	263.37		
	Higher Education	66	347.68		
	University	24	364.40		
	National	18	396.22		
I take phone calls.	Public	195	264.51	23.70	< 0.001
	Special	39	362.54		
	School	236	280.07		
	Higher Education	66	331.72		
	University	24	290.58		
	National	18	369.39		

I chat in online chat not intended for training.	Public	195	278.68	10.46	0.063
	Special	39	310.18		
	School	236	288.91		
	Higher Education	66	280.79		
	University	24	347.17		
	National	18	324.72		
I use social networks.	Public	195	295.56	5.96	0.310
	Special	39	266.27		
	School	236	285.83		
	Higher Education	66	278.37		
	University	24	331.98		
	National	18	306.53		
I carry out additional work tasks.	Public	187	250.02	11.35	0.045
	Special	37	316.19		
	School	223	281.78		
	Higher Education	64	306.52		
	University	24	290.92		
	National	18	294.03		
I interact with co-workers.	Public	187	293.78	12.84	0.025
	Special	37	305.96		
	School	223	251.73		
	Higher Education	64	305.80		
	University	24	258.50		
	National	18	278.47		
I interact with library visitors.	Public	187	207.74	97.73	< 0.001
	Special	37	295.36		
	School	223	342.45		
	Higher Education	64	279.52		
	University	24	269.60		
	National	18	148.81		
I do household chores.	Public	140	215.68	14.76	0.011
	Special	20	177.50		
	School	205	236.65		
	Higher Education	47	202.07		
	University	15	204.90		
	National	15	204.90		
I interact with family members.	Public	140	213.01	16.60	0.005
	Special	20	167.60		
	School	205	235.11		
	Higher Education	47	188.34		
	University	15	279.33		
	National	15	232.67		

A comparison of results indicates that the individual activities differ in frequency of execution by library type, which is statistically significant for most

activities ($p < 0.05$), except for chatting in online chats that is not intended for training, and the use of social networks.

At the National Library, participants most often **write or read e-mails unrelated to training** during online professional development sessions. In public and school libraries, participants were less likely to read and write e-mails unrelated to the training compared to the other groups. More detailed pairwise comparisons showed that the differences between groups are statistically significant between school and higher education library, school and university library and school and national library staff. In all three comparisons, school library staff reported statistically lower frequency of reading and writing unrelated e-mails. Statistically significant differences also emerged between public and higher education library and public and national library staff, with public library staff reading and writing such e-mails less frequently.

National Library staff also reported the highest frequency of **taking phone calls** during online professional development sessions. University, school and public libraries are less likely to receive phone calls than other groups. More detailed pairwise comparisons showed statistically significant differences between staff in public and higher education libraries and public and special libraries. In both comparisons, school library staff are less likely to receive phone calls. Statistically significant differences also emerged between school and special library staff, with school librarians taking phone calls less frequently during online professional development sessions.

Special library staff were the most likely **to perform additional work tasks** during online professional development trainings, while public library staff were the least likely. More detailed pairwise comparisons did not reveal statistically significant differences between the groups in terms of additional work tasks.

Special and higher education library staff reported the highest levels of **interaction with co-workers** during online professional development sessions, while university and school library staff interacts less frequently. More detailed pairwise comparisons showed no statistically significant differences between the groups in terms of interaction with co-workers.

School library staff most frequently **interacted with library visitors** during online professional development trainings, while national library staff did so the least. More detailed pairwise comparisons showed statistically significant differences between national and higher education library, national and special library and national and school library staff. In all three comparisons, national library staff interacts less frequently with library visitors. Statistically significant differences also emerged between public and higher education library staff, public and special library staff and public and school library staff, with public library staff

interacting less frequently with library visitors. Differences also emerged between staff in higher education and school libraries, with staff in higher education libraries interacting less frequently with library visitors.

During online professional development trainings, school library staff most often **does household chores**, while special library staff do so the least. More detailed pairwise comparisons showed no statistically significant differences between the groups in terms of household chores.

University library staff reported the highest frequency of **interaction with family members** during online professional development sessions, while special library staff reported the lowest. More detailed pairwise comparisons showed no statistically significant differences between the groups in terms of interaction with family members.

Table 3: Comparison of survey results by location of performing various activities that cause multitasking

Activity:	Group:	N	$\bar{R}$	X^2	P
I read/write e-mails unrelated to the training.	As frequently at work as at home	104	290.37	3.90	0.142
	More frequently at work	360	294.74		
	More frequently at home	110	261.09		
I take phone calls.	As frequently at work as at home	104	273.87	6.76	0.034
	More frequently at work	360	300.08		
	More frequently at home	110	259.21		
I chat in online chat not intended for training.	As frequently at work as at home	104	278.05	1.11	0.575
	More frequently at work	360	291.19		
	More frequently at home	110	284.34		
I use social networks.	As frequently at work as at home	104	283.74	0.20	0.903
	More frequently at work	360	289.20		
	More frequently at home	110	285.48		
I cary out additional work tasks.	As frequently at work as at home	101	259.95	2.48	0.290
	More frequently at work	360	282.85		
	More frequently at home	89	263.42		

I interact with co-workers.	As frequently at work as at home More frequently at work More frequently at home	101 360 89	261.17 289.36 235.69	10.43	0.005
I interact with library visitors.	As frequently at work as at home More frequently at work More frequently at home	101 360 89	264.82 284.26 252.17	3.99	0.135
I do household chores.	As frequently at work as at home More frequently at work More frequently at home	101 231 110	226.55 210.39 240.19	8.81	0.012
I interact with family members.	As frequently at work as at home More frequently at work More frequently at home	101 231 110	233.03 205.61 244.27	10.19	0.0006

A comparison of results indicates that the frequency of certain multitasking activities differs significantly depending on the location from which participants attend online professional development sessions, with statistical significance for four activities ($p < 0.05$): taking phone calls, interacting with co-workers, doing household chores, and interacting with family members.

Online professional development attended at the workplace is most frequently associated with **taking phone calls**, while participants who primarily attend sessions from home are less likely to take phone calls. More detailed pairwise comparisons confirmed that the differences are statistically significant between those who attend training from home compared to those who attend it mostly at the workplace. In this comparison, participants attending more sessions from home take phone calls significantly less frequently.

Interaction with co-workers is more frequent among participants who attend online professional development sessions at the workplace. Participants attending from home report fewer interactions with co-workers. More detailed pairwise comparisons indicate that the differences are statistically significant between those who attend training from home compared to those who attend it at the workplace. In this comparison, participants attending more sessions from home have a significant lower frequency of interactions with co-workers.

Household chores are most frequently performed by participants attending online professional development sessions more often from home, while partic-

ipants attending sessions more frequently from the workplace are less likely to engage in household chores. More detailed pairwise comparisons indicate that the differences are statistically significant between those who attend training more frequently from the workplace and those who attend from home. In this comparison, participants attending more sessions from the workplace are significantly less likely to perform household chores.

Interaction with family members is most frequent among participants attending online professional development sessions primarily from home, while participants attending sessions more frequently from the workplace report fewer interactions with family members. More detailed pairwise comparisons indicate that the differences are statistically significant between those who attend training more frequently from the workplace and those who attend from home. In this comparison, participants attending more sessions from the workplace interact with family members significantly less often than those based at home.

Table 4: Comparison of survey results by age with regards to performing various activities that cause multitasking

Activity:	Group:	N	$\bar{R}$	X^2	P
I read/write e-mails unrelated to the training.	20–29	13	265.77	31.78	< 0.001
	30–39	94	353.87		
	40–49	226	298.65		
	50–59	192	269.79		
	60–69	53	213.53		
I take phone calls.	20–29	13	216.69	948	0.050
	30–39	94	274.65		
	40–49	226	299.03		
	50–59	192	302.05		
	60–69	53	247.60		
I chat in online chat not intended for training.	20–29	13	361.54	15.43	0.004
	30–39	94	309.74		
	40–49	226	297.64		
	50–59	192	273.00		
	60–69	53	260.98		
I use social networks.	20–29	13	342.65	36.49	< 0.001
	30–39	94	347.72		
	40–49	226	289.07		
	50–59	192	258.57		
	60–69	53	287.09		
I carry out additional work tasks.	20–29	12	271.75	18.58	< 0.001
	30–39	90	288.11		
	40–49	216	301.96		
	50–59	183	261.87		
	60–69	52	208.57		

I interact with co-workers.	20–29 30–39 40–49 50–59 60–69	12 90 216 183 52	339.21 291.08 294.84 263.13 212.97	17.04	0.002
I interact with library visitors.	20–29 30–39 40–49 50–59 60–69	12 90 216 183 52	204.04 253.72 283.77 291.12 256.34	8.19	0.085
I do household chores.	20–29 30–39 40–49 50–59 60–69	6 76 175 146 39	253.08 245.13 223.42 213.13 193.31	11.44	0.022
I interact with family members.	20–29 30–39 40–49 50–59 60–69	6 76 175 146 39	209.33 253.46 233.69 203.62 173.33	19.12	< 0.001

A comparison of results shows that the frequency of multitasking activities varies significantly across age groups for almost all activities ($p \leq 0.05$), except for interactions with library visitors.

During online professional development sessions, librarians aged 30–39 are the most likely to **read or write e-mails unrelated to training**, while those aged 60–69 are the least likely. More detailed pairwise comparisons indicate statistically significant differences between the 60–69 and 40–49 age groups, and between the 60–69 and 30–39 age groups. In both comparisons, the 60–69 age group reported significantly lower frequency of reading and writing e-mails unrelated to the training. Similar differences were also found between the 50–59 and 40–49 age groups and the 50–59 and 30–39 groups. In both comparisons, the 50–59 age group shows a statistically significant lower frequency of reading and writing e-mails unrelated to the training.

Taking phone calls during online professional development sessions is most common among participants aged 50–59, and least common among those aged 20–29. More detailed pairwise comparisons did not reveal statistically significant differences between the groups in terms of taking phone calls.

While participating in online professional development sessions, participants aged 20–29 are most likely to **chat in an online chat not intended for training**, and least common among those aged 60-69. More detailed pairwise comparisons

did not reveal statistically significant differences between the age groups regarding this activity.

Use of social networks during online professional development is most frequent for participants in the 30–39 and 20–29 age groups, and least frequent among those aged 50–59. More detailed pairwise comparisons indicate statistically significant differences between the 50–59 and 30–39 age groups. The 50–59 age group shows a statistically significant lower frequency. Furthermore, there are statistically significant differences between the 60–69 age group and the 30–39 age group. The 60–69 age group shows a statistically significant lower frequency. There are also statistically significant differences between the age groups 40–49 and 30–39. The 40–49 age group shows a statistically significant lower frequency.

Participants in the 40–49 age group are most likely to **perform additional work tasks** during online professional development, and least common among those aged 60–69. More detailed pairwise comparisons revealed statistically significant differences between the 60–69 and 30–39 age groups and between the 60–69 and 40–49 age groups. In both comparisons, the 60–69 age group shows a statistically significant lower frequency.

Interaction with co-workers during online professional development is most frequent among those in the 20–29 age group and least frequent among the 60–69 age group. More detailed pairwise comparisons revealed statistically significant differences between the 60–69 and 30–39 age groups and between the 60–69 and 40–49 age groups. In both comparisons, the 60–69 age group shows a statistically significant lower frequency.

Household chores during online professional development are most commonly performed by librarians aged 20–29 and least commonly by those aged 60–69. More detailed pairwise comparisons showed statistically significant differences between the 60–69 and 30–39 age groups. The 60–69 age group shows a statistically significant lower frequency.

Interaction with family members during online professional development is most common among participants in the 30–39 age group and least frequent among those aged 60–69. More detailed pairwise comparisons revealed statistically significant differences between the 60–69 and 40–49 age groups and the 60–69 and 30–39 age groups. In both comparisons, the 60–69 age group shows a statistically significant lower frequency. There are also statistically significant differences between the 50–59 and 30–39 age groups. The 50–59 age group shows a statistically significantly lower frequency.

7 Discussion

The purpose of this study was to investigate how often librarians perform additional tasks during online professional development that can lead to multitasking. Research suggests that multitasking has potentially negative effects on both the learning process and the final outcomes of professional development, as the presence of these distractions can significantly hinder the ability to concentrate, leading to lower retention rates and overall training effectiveness (Morgan, 2022). Specifically, we wanted to determine whether the frequency of certain activities differed significantly based on the library type, training location and their age.

The results show that all of the surveyed activities occur during online professional development, but that average participants do them rarely or only occasionally. For all activities except online chatting and the use of social networks, statistically significant differences were found based on the type of library. Additionally, more than half of the activities showed significant variation based on the location from which the training was attended. The survey results also indicate that participants in the activities performed at the same time as the online professional development differed statistically significantly by age. Below is a commentary of the most frequent multitasking behaviours identified during online professional development.

The performance of additional work tasks is the first among all the activities that cause multitasking during online professional development for librarians. Most participants do them rarely or occasionally and the highest frequencies were reported among staff in special, higher education and national libraries. Statistically significant differences between participants in the use of additional job tasks also emerge according to the age of the participants. This is most frequently reported by participants in the 40–49 and 30–39 age groups, which represent the most active part of the working population. This is consistent with Børing and Grøgaard (2023) who report that productivity peaks in the 35–44 age group. These findings suggest that the workplace may not be the most appropriate environment for participation in online professional development, as it gives participants who want to be highly productive too many opportunities to perform additional work tasks that distract them from their professional development.

The second most frequently performed activity during online professional development is interaction with co-workers, which is mostly performed rarely or occasionally, with statistically significant differences between participants depending on the type of library in which participants are employed. Interaction with colleagues during online professional development is most frequently reported by participants working in special, higher education and public libraries. A statistically significant difference between participants was observed with respect to the location of training, where interaction with colleagues was more frequent among

participants attending online professional development at the workplace. There are also differences between different age groups, with the 20–29 age group being the most likely to interact with colleagues. The findings highlight the importance of providing online learners with a suitable and private space to reduce the distractions caused by interactions with colleagues.

The third most frequent activity is reading and writing e-mails not related to training, with over half of participants reporting they do so rarely or occasionally. This behaviour was most commonly reported by staff in national, university and higher education libraries. There is no statistical significance regarding the training location but it was most common among participants aged 30–39. Fewer participants rarely or occasionally receive phone calls during online professional development; these participants are more likely to work in national, special and higher education libraries and to attend training from home. Statistically significant differences emerged based on age, with older participants more likely to take phone calls during training. The results suggest that the interference is not solely related to physical space and may be due to remote communication. Even when online training participants are physically separated from other employees, remote communication such as e-mails or phone calls can still interfere with concentration. Therefore, it is important that participants have limited access to e-mail and phone calls during online training sessions. For this purpose, so-called technology breaks (Kostić et al., 2022) are recommended, when participants can check their e-mail or return phone calls.

Less than half of the participants in online professional development courses report that they rarely or only occasionally interact with library visitors during training. This is more often reported by participants working in school, special and higher education libraries. No statistically significantly differences were found in the frequency of interactions with library users during their training, based on the training location or age. The result is not surprising, as school libraries most often employ one librarian or librarian whose primary work environment is behind the lending desk in the library. It such cases, the library may remain open to visitors during the online professional development session, which may lead to potentially more interaction with visitors. A good quarter of participants report that they are rarely or often in the same room as library users during online training. The result suggests that when a librarian is participating in online professional development, the library should not remain open to visitors, especially in libraries with only one staff member.

Even fewer participants report that they rarely or occasionally interact with family members during online professional development, and more often those employed in university, school and national libraries. Such interaction is more likely to occur among participants attending online professional development

sessions from home and those aged 30–39. The results suggest that even when training takes place at home rather than at the workplace, interruptions still occur – they simply shift from the professional to the domestic environment, where they most often involve family members. Therefore, it is also important to provide a suitable and quiet learning space at home, which will reduce distractions and improve concentration.

Fewer than one-fifth of participants reported rarely or occasionally chatting in unrelated online chats. Participants do not differ statistically significantly according to the type of library they work in and the location from which they attend the training, but they do differ according to their age. Younger generations are most likely to use this type of chat, especially participants aged 20–29, which is to be expected as this type of communication is more common among young people. Crave et al. (2023) find that younger learners prefer interactive tools that support real-time communication in the form of online chat. With the development of modern technologies, communication among younger learners has increasingly shifted to chat. This has led to the development of a modern digital culture that encourages multitasking and real-time communication. Among young people, the culture of communication is more fragmented, involving frequent switching between channels, which may conflict with the demands of focused learning.

Similarly, when it comes to the use of social networks during online professional development, fewer than one-fifth of participants reported using them rarely or occasionally, but there is no statistically significant difference based on library type and the training location. However, participants differed significantly by age group, with those aged 30–39 and 20–29 reporting more frequent use of social networks. This result corresponds with findings on online chat use. Although social networks are primarily popular among younger generations, they are increasingly used as information sources by both middle-aged and older participants. However, as non-targeted use of these tools can reduce concentration and negatively impact learning outcomes, it would be useful to advise participants not to use them and train them to develop digital self-regulation and critical judgement about when and how such tools can be appropriately integrated into educational contexts.

The least frequently performed online professional development activity was housework, which was rarely or occasionally performed by less than one-fifth of participants. Participants also differ statistically significantly in this activity according to library type. The top three libraries are school, public and national libraries. Participants also differ statistically significantly by age. The activity is more typical of younger generations, with age groups 20–29 and 30–39 respectively. Although this activity was the least reported, it is important to be aware that, just as in the workplace, there are activities at home that distract us from online professional development. The home environment presents a number of

distractions, such as laundry, cooking or childcare, which can lead to divided attention and reduced learning performance (Vintere et al., 2021). Even at home, we are exposed to additional activities that we want to do at the same time while participating in online professional development. These results suggest that multitasking occurs regardless of the training location, participant age and type of library. To reduce the impact of external distractions, it is important to support participants in creating a more focused learning environment at home. In addition to individual strategies, the thoughtful design of online professional development, such as shorter and more structured content, and opportunities for active participation that maintain attention and reduce cognitive load can help to reduce the negative impact of multitasking.

The quantitative approach of the survey, using a questionnaire, made it possible to reach a large number of librarians who are engaged in online professional development. In addition, this method allows for objective measurement and comparison of data, which increases the reliability and validity of results. Questionnaires are cost-effective and allow for rapid data collection from a broad sample, which is essential for surveys requiring a large-scale participation. As a result, we were able to include a wide range of librarians with experience in online professional development.

8. Conclusion

The study assessed potential multitasking among participants using a retrospective method, where participants may have recall problems. Also, when using a questionnaire, response bias can occur as participants may present themselves in a more favourable light. These limitations can affect the accuracy and validity of the data collected. The data were not collected from the same training sessions, which means that the training conditions were also different. The difficulty of the training, the amount of material given, the duration of the training, the different delivery and other factors were not guaranteed to be the same. This type of study is more challenging as the data reflects experiences across different training sessions attended by librarians. However, by taking into account various factors mentioned earlier, more accurate results are obtained.

In the future, it would be useful to conduct an experimental study to examine, in the specific case of two different asynchronous and synchronous versions of the same online professional development session, how often additional tasks unrelated to the session were performed during the online session. Additionally, it could be investigated whether there are statistically significant differences in cognitive load between synchronous and asynchronous delivery of online professional development. It is possible that in asynchronous environments, where participants

have more control over the pace and timing of activities, it is easier to adapt to the environment and reduce the multitasking level. In such a study, it would be useful to include measures of the impact on learning outcomes and user satisfaction, as this would provide a more holistic view of the effectiveness of different online approaches to online professional development.

Although online professional development is highly popular because of its location independence, providers are often not sufficiently aware of the importance of the context in which it takes place. Of all the activities included in our survey, additional work tasks, interaction with co-workers, and reading and writing e-mails unrelated to the training are most likely to be involved in multitasking while attending online training. Participants most exposed to multitasking and attending such training come from the national library, special libraries and higher education libraries. In terms of age, the predominant age groups are 20–29 and 30–39. These findings are relevant for both planners and participants of online professional development. It is important to know that online professional development courses for participants in the workplace, are not conducted in classrooms, with a lecturer present, where there are significantly fewer opportunities for multitasking. The results of the survey can be used as a basis for guidelines for participants in such training, who should be aware of recommendations on how to limit the impact of external distractions, such as limited use of phones, limited access to e-mail and appropriate space with limited social interaction. Such distractions could be partially addressed by introducing asynchronous delivery of online professional development. Iin addition to location independence, participants would also gain time independence, as they are not required to be present at the same time for the synchronous delivery of the training by the lecturer. Participants would have more flexibility in choosing the dates for their online professional development. They would be able to set their own breaks during the online professional development and continue when the conditions are right. Online training, as well as online professional development, is an important part of the educational process and has brought many benefits, such as location independence for synchronous online training and additional time independence for asynchronous online training. However, the quality of learning outcomes and participant satisfaction must remain a priority, so it is important to acknowledge the limitations of this type of training and to try to counteract them in the planning phase, and to provide participants with guidance on how to effectively engage with distance learning.

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