

Current options and limits of digital technologies and artificial intelligence in social work

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Abstract. At the end of the second decade of the 21st century, it was accepted that robots and technology would replace mainly blue-collar and routine jobs, while professionals in human well-being and creativity would be needed in greater numbers. New tools like AI large language models, which are at the beginning of an exponential trajectory of their development, have changed the way digitization is viewed; people employed in activities such as writing as well as administrative and clerical work have started to lose their jobs. Will technologies become aids and supplements to services, or can they replace social workers? The paper aims to analyse the current limits of artificial intelligence in social work and summarize digital platforms useful for social work practice. The methods used are the analysis of literature and statistics and an experiment with artificial intelligence. Language model Chat GPT passed the state final examination for the bachelor's degree in social work in Slovakia. It received a grade of B on the ECTS grading scale.

Key words: chatbot, social work, digital technologies, Chat GPT.

1 Introduction

In 2017, Oxford researchers Frey and Osborne published their well-known study [1], which predicts how computers will replace susceptible jobs. For social work, the prognosis looked optimistic: medical social workers and mental health and substance abuse social workers had only a 0.3% probability of being replaced by machines, and child, family, and school social workers had a 3% probability. At the end of that decade, it was accepted that machines would replace mainly blue-collar and routine jobs, while professionals in human well-being and creativity would be needed in greater numbers. The penetration of technologies, used by social workers that began with the invention of the telephone, accelerated during the COVID-19 pandemic. Service users are served by chatbots and social robots. Robotic technologies can be employed in social work in a variety of ways, from robots that resemble people or animals to robots for affective care (e.g., comforting, entertaining, and encouraging emotions) [2]. These tools aid in social work but reduce the need for a qualified social worker's presence. New tools like ChatGPT or Midjourney,

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which are at the beginning of an exponential trajectory of their development, have changed the way digitization is viewed; programmers of simple codes, people working with foreign languages, or copywriters are likely to lose their jobs. Will technologies be aids and supplements to services, or can they replace the social worker? The aim of the paper is to analyse the current limits of artificial intelligence in social work, as well as to summarize platforms useful for social work practice. The methods used are the analysis of literature and statistics and an experiment with artificial intelligence – a large language model Chat GPT in social work.

2 The digital divide and digital bridges

Social work clients are often members of disadvantaged groups - socially excluded people. The shift of interpersonal communication, education, work, and relaxation to the online space has created a new area of both exclusion and inclusion. Two opposing phenomena are interesting for social work in the digital space: the digital divide and digital bridges. The digital divide is a metaphor used to explain a diverse range of phenomena related to differences in Internet use [3]. We speak of the digital divide in the case of groups or individuals who have no or limited access to the online world. Because of this, they do not access opportunities online and often have no idea what colleagues or classmates are talking about if they are talking about current viral videos and memes. The digital divide in Slovak conditions can be spoken about in the case of people living in the poverty zone, further belonging to marginalised Roma communities or the elderly. The digital divide was strongly demonstrated in Slovakia during the period of distance learning in primary schools in 2020; more than 50 000 pupils were not involved in distance learning, mostly because their households did not have an internet connection [4]. According to Van Dijk [3], the digital divide is characterised by three inequalities: inequalities in access to internet-enabled technologies, in the ability to use these technologies effectively, and in the motivation to use these technologies. Developing countries are worse off than developed countries, but large disparities and variability exist even within lower-income countries [5].

Digital bridges refer to phenomena in which technology helps an individual compensate for the exclusion resulting from the disruption of their mobility [6]. In this context, Internet-enabled technologies can be used by people with disabilities (e.g., mobility, vision), people with social anxiety disorder, and, during pandemic constraints, people who have lost the possibility of their usual social contacts due to lockdowns, e.g., staying home from work or not being able to meet friends in bars. Technology contributes to overcoming feelings of loneliness and social isolation and can serve all age groups well. The authors de la Fuente Robles and del C. Martín Cano [7], exploring social work with seniors, see ICTs as a source of integration, communication, and information, to stimulate intergenerational relationships, to acquire new learning without age limitations, to increase self-esteem and foster creativity, and to activate participation in society.

Based on the characteristics of the digital divide and digital bridges, we can conclude that the internet, computers, and smart-phones are changing the nature of both social exclusion and social inclusion. To advance the use of ICT in social work, it is desirable that both social workers and clients are digitally literate and have access to both devices and online applications. In the current digital age, social workers should not underestimate the potential of digital interventions. Digital inclusion processes towards teaching and learning digital skills in order to increase peer support and strengthen connections, should be part of a group and community-based social work practice [8]. Social workers need to be present in the environment where clients are and use the same digital technologies as their clients.

3 Social work practice in a digital environment

Reamer [9] uses the term digital landscape to characterize the different communication channels in the online environment. Ten years have passed since his article was published; we updated his list. We added two new communication channels: mobile or computer applications and chatbots. We divided the communication channels into two groups: (A) client and counsellor communication channels enabled by technology and (B) digital technology providing social work services. In the following table, we added Slovak examples of social work services to each channel. If they do not exist in Slovakia (as of July 2023), we provide examples of services in English.

Table 1. Digital communication channels used in social work in Slovakia* and worldwide[#].

(A) Client and counsellor communication channels enabled by technology	
Communication channel	Name of service
Online counselling (chat)	Linka detskej dôvery (Children’s Helpline) *
Telephone Counselling	Linka dôvery Nezábudka (Helpline Nezábudka) *
Video Counselling	Vzťahové poradenstvo (Relationship counselling) *
Text messages	Crisis Text Line [#]
Electronic Social Networks	IPčko – stránka o aktivitách a pomáhani odborníkov (IPčko - a page about activities and helping professionals) *
Email counselling	Máme deti - výchovné poradenstvo (We have children - educational counselling) *
(B) Digital technology providing social work services	
Communication channel	Name of service
Self-service web interventions	Zdravotná poisťovňa Union pre zdravú dušu (Union Health Insurance Company for a healthy soul) *
Cybertherapy	Virtuo *
Mobile or computer applications	StressHelp – aplikácia pre sociálnych pracovníkov v Androide (StressHelp – Android app for social workers) *
Chatbot - interacting with the “machine”	Access Social Care (chatbot) [#]

Source: own elaboration based on [9].

In the case of online, telephone, SMS, email, and video counselling, the communication partner is a helping professional, such as a social worker, therapist, or crisis intervention worker. SMS and email communication are asynchronous; others in this group are synchronous. Technology is used to establish a communication channel and replace the face-to-face client-counsellor meeting.

The following communication channels require advanced digital technologies. Cybertherapy, or Virtual reality (VR), enables human-computer interaction that gives users a sense of presence and immersion in a virtual environment. This allows, for example, clinically anxious people to experience realistic life scenarios, which reduces their reactivity to triggers that cause anxiety and helps them develop useful coping mechanisms that they can use in real-world situations [10].

In the case of apps or self-service web-based interventions, it is a virtual dialogue between the client and the authors of the content. The user is led to self-help and self-reflection. A chatbot is a tool that simulates a conversation with a human and provides automatic answers to the most common questions. This technology allows the user to have a conversation without having to be answered by a real worker, so it can be available around the clock [11]. Chatbots help people accomplish tasks through oral or written

communication. These tools are usually added to websites, apps, social media, or instant messaging services (e.g., Viber). Chatbots can help with part of the conversation answering the most common questions. Only if they cannot respond to the client can they “connect” them to a live agent. In social work, chatbots help people with dementia, provide information on how to maintain good sexual health, or help prevent depression.

According to the implementation technique, we can divide chatbots into three groups:

1. Interactive text response. They operate on commands. They offer pre-programmed buttons and use sequential logic based on a pre-set selection of options. Sometimes they are called menu-driven chatbots.
2. Word spotting. They answer by identifying words, which sets off a prewritten response.
3. Cognitive – intelligent chatbots. They are the most advanced chatbots: they draw on artificial intelligence techniques such as machine learning. They learn from previous interactions and/or from new information supplied to them. [11]

The first two groups can be called rule-based chatbots. They select the system’s response in accordance with a set of fixed, established rules based on lexical analysis of the input text without producing any new text responses. The knowledge used in the chatbot is humanly hand-coded [12]. The third group is called generative chatbots.

“Information and communication technologies have the potential to significantly change and improve social work practice in the coming decade. Integrating technology into social work and creating innovations in practice through ICT will enable transformative social change. The integration of technology can create a practice that embraces flexible, on-demand, personalised and individually tailored services.” [13]

The following table provides an overview of digital platforms for the social worker in practice. This is our update and modification of the list by R. Jackson [14]. We have added four new separate areas marked with †: video conferencing software, artificial generative intelligence, social robots, and wearable devices. We have updated the examples of both platforms and use cases.

Table 2. Digital platforms for social workers.

PLATFORM TYPE	EXAMPLES	USES
Social media, chat apps	Facebook WhatsApp Viber	Closed groups provide a level of security for professionals and clients. Peer support forums Useful for practice as well as personal well-being.
Professional networking	LinkedIn Twitter SlideShare ResearchGate	View of professional and academic profiles Option to create professional networks. Exploring practice and connecting with colleagues in the country and abroad. Ability to keep up to date on research and policy.
Multimedia (notes, videos, streaming, podcasts)	Evernote OneNote YouTube Instagram	Writing and storing notes ‘on the go’ and organising them. Easily sharing best practices with colleagues. Alternative ways of communicating with colleagues.
Writing blogs and articles	WordPress Medium Blogger	It provides an effective way of reflecting on practice. It can be published anonymously but shared and read by a wide range of readers.
Staff planning	Slack Microsoft 365	Day-to-day as well as broader strategic workforce planning. It can be used by practitioners as well as management.

Professional, interdisciplinary cooperation	Dropbox Google Docs Google Disk iCloud	Information sharing and collaboration between teams. Multiple authors can contribute to and read documents. Backup files to the cloud. Sync content across desktop, mobile, and the cloud.
Education	Moodle Coursera	E-learning and webinars. Support and learning from teaching staff as well as peers.
Video conferencing software	Zoom Microsoft Teams	Collaboration among colleagues in live streaming, and briefings. Live communication with clients.
Generative artificial intelligence †	ChatGPT Midjourney Sounddraw	Creative work using AI tools. Language model for generating texts. Tools that create images or music based on text input. Text-to-speech tools (e.g., for visually impaired clients).
Wearable devices †	Oura Ring Circular Apple Watch Xiaomi Band	Working with anxiety. Working with daily habits. Information about body parameters and one's health. Monitoring the location of vulnerable people.
Social robots †	Paro MiRo Hector	Robots providing social, cognitive (and physical) assistance. They enable cognitive stimulation through games. They resemble children or animals.

Source: own elaboration based on [14].

Generative AI models combine deep learning and natural language processing to understand the subtleties of human communication and answer with natural, human-like language, in contrast to standard AI technologies that rely on rules-based programming to understand and react to user input[15]. We have included generative artificial intelligence as a separate field in the table. However, artificial intelligence and machine learning are present in all the above areas. For example, email clients suggest the text of emails, PowerPoint in Microsoft Office automatically suggests the design of a slide according to its content, and YouTube recommends videos according to our browsing history.

4 Artificial Intelligence in the Bachelor's state final examination - an experiment

The experiment aims to see how generative artificial intelligence performs on the undergraduate state final exam in the social work study program.

The state final examinations in the field of social work at the bachelor's degree level in Slovakia include an oral examination in front of a committee of at least four members, with at least one teacher in the position of associate professor or professor. The oral examination at the Catholic University in Ružomberok, Slovakia, Department of Social Work consists of two parts: the defense of the bachelor's thesis and the student's answer to three topics from the areas of social work theory, social work methods, and social work practice. The student randomly draws one number that corresponds to the three theses. Members of the Commission may ask supplementary questions during the discussion. Based on the student's answer, a closed meeting of the committee follows, where the committee members agree on a grade for the answer (A, B, C, D, E - the student passes the exam; Fx -

the student fails). The secretary writes in the minutes a verbal justification of the mark and the course of the answer. Students can apply for the state final examination if they have accumulated at least 180 credits and have completed the compulsory courses and professional practice.

Our experiment took place in June 2023, a week after the real state final exams. The research object was ChatGPT, a generative artificial intelligence from OpenAI, a non-profit organization. Artificial Intelligence took only the second part of the state final exam, answering three topics and discussing them with committee members. The chatbot's response, unlike the student's, was in written form. The random generator drew the number 6 for the chatbot, which was linked to the following theses.

- Social stratification (poverty from a sociological perspective; different definitions of poverty) and sociological theories of socialization (George Herbert Mead, Jean Piaget, Erwin Goffman, etc.).
- Group roles and group development when working with a group of clients. The position and roles of the group leader.
- Quality of social services provided.

Based on the generated answer, we asked the chatbot follow-up questions for each of the theses. The same committee members as the real state thesis scored the chatbot's overall answers.

The committee members agreed that the chatbot's answer corresponds to a grade of B (very good). It received a lower grade because it answered in general terms, could not link knowledge between social work disciplines, and did not have knowledge of Slovak social work practice. Since a grade of B is the second-best possible grade, we conclude that the chatbot passed the final exam successfully and earned a grade that surpassed most students who graduated with a bachelor's degree in social work in 2023.

The aim of the state final examination is to verify the acquired knowledge, skills, and competencies of the students in the profile study courses of the bachelor's degree in the study program of social work. We acknowledge that ChatGPT's artificial intelligence has achieved a remarkable result.

At the same time, we perceive that the exam is intended to help the social work student prepare for social work practice. However, since answering and discussing social work topics is an activity that a chatbot can complete in a few minutes, the question arises as to whether it is necessary to continue with the traditional form of state final exams. There is an analogy to using GPS navigation instead of memorizing road numbers and street names. Certainly, there is a need to increase the knowledge and competence of graduates. However, they can get the information they need at a particular moment in practice by asking a few questions to artificial intelligence. Moreover, its answers are more accurate than the knowledge stored in graduates' long-term memories. The challenge, therefore, is to consider what form of final exam to choose for students so that they can show the competencies that language modules do not master. At the same time, this raises the question of whether such a form exists.

5 Discussion

As in our experiment, the Chat GPT was also successful in the American experiment. It scored 76% in undergraduate, and 80% in graduate Association of Social Work Boards licensing exams [15]. These authors believe that while generative AI models can aid social workers, they cannot take their place.

AI systems are designed to perform human cognitive functions such as learning, problem solving, and pattern recognition [16]. In addition to passing final exams, chatbots can do other tasks in the field of education. For example, they can write essays, write

learning objectives, design a syllabus for a course, create rubrics for course assignments, or write a script for a podcast. In practice settings, it can be used for writing progress notes, creating psycho-educational materials, constructing treatment goals and plans and developing journal prompts [17].

Chatbots cannot provide meaningful social support that improves help-seeking and staying in treatment, which is important in helping professions [18]. Chatbots may struggle to understand the context of a situation, leading to inappropriate or ineffective responses. Chatbots may not be able to understand the nuances of human language [19]. Chatbots lack the ability to navigate complex ethical dilemmas. Social workers, on the other hand, can assess the unique circumstances of each individual and tailor their support accordingly [20]. Social workers and mental health professionals are crucial in advising clients on how best to protect their well-being, and chatbots can be used as a supplement to their support [19].

Counseling in social work is based on a counseling interview that involves a human relationship between the social worker and the service user. The innovativeness of the technologies is in the partial replacement of the human by a machine, in phases that can be structured and, at the same time, in which the existence of the relationship is not significant for the fulfillment of the counseling objective [21].

6 Conclusion

“There is a significant potential for practical benefits from the potential integration of technologies, such as gaming, gamification, mobile technologies, social media, robotics, the “quantified self,” and wearable technology.” [13] As the authors mentioned in the discussion, we believe that chatbots and digital technologies are currently unable to overcome several limitations to replace fully social workers. The use of chatbots has a number of benefits, but also risks. Social work requires a thorough and personalized assessment of an individual’s circumstances and needs. Chatbots are limited to predetermined responses. It is a fact that we are at the beginning of exponential development in this area. Chatbots are being trained to increasingly mimic authentic human communication. Their responses are modified; for example, if a user writes about their emotional state, the chatbot will recommend seeking out a mental health professional. We will certainly see the adaptation of big language models into the helping professions soon. This will solve the shortage of workers and the high demand from many clients. We fear that what can be automated in the human world will be automated.

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