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COMPUTER LITERACY IMPROVEMENT IN A HEALTH-CARE FACILITY. THE CASE STUDY OF HOSPITAL JIHLAVA 2020 – 2021

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Abstract:
This text addresses the process of improving computer literacy in Hospital Jihlava which is a non-profit organization situated in the middle of the Vysočina Region in the central Czech Republic serving 150,000 inhabitants and consisting of 18 medical departments. In 2020 there were over 1,500 employees, including around 200 doctors and 600 nurses. Every year on average number of 430,000 patients are treated there, with over 25,000 patients being hospitalized, and around 7,500 undergoing a surgery. The main aim of this text is to find out how the improvement in information technology skills can be dependent on the given training and the offered help with these basic skills. Since not all health-care professionals are capable of working with information technology, due to the fast development in the area, they must be continually educated in it, because the ability to work with the computers and software is far from being innate. In 2007, in connection with the growing need for a continual development in hospital employee's IT skills and abilities in work with information technologies, a computer literacy survey was carried out. 652 respondents took part in it, out of who there were 555 women and 97 men. The highest level of computer knowledge amongst respondents was working with the Internet, while the lowest knowledge was found working with spreadsheets. Overall level of knowledge corresponded with the required skills of a given work position. The highest achieved level of formal education played a part, as did their age. This was why the position of ICT Lecturer was created in 2020 in order to improve the computer literacy of the staff. Computer literacy here is understood as a set of knowledge, skills and abilities that will enable individuals to use computer technology for their professional and personal life to the extent that they would not feel computer-handicapped or behind a "digital wall", while their personal and professional development with the help of computer would be voluntary. This step was preceded by a unification of the crumbled software environment, which caused a lot of compatibility issues. In 2018 it was unified; Microsoft Office 365 was chosen because it has only one version and there is no need for upgrades to newer ones. With Office 365 a lot of other applications came, all the hospital, employees can use any of them, each employee owns a version of Office 365. They can use it locally on any computer in Hospital Jihlava or at their mobile devices, they can work remotely. Then the training courses in Hospital Jihlava started. They were aimed at all employees of the facility, though mainly at those afraid of computers due to the lack of basic computer literacy. The training programs were offered between May 2020 and April 2021, though the participation was not obligatory, the number of trained people rose to 872. The training method was a monological lecture for the group of 1-12 people, combined with the practical demonstration of the program functions, which the participants were able to test with the help of the lecturer. The training topics were divided in two main categories: a - basic work with computer and the main rules of cybersecurity; and b - office and communication platforms and applications. Group a/ consisted of the trainings meant to cover the fears of

work with the computer systems, its topics were: Work with PC, Computer for Beginners, and basic rules of cybersecurity. The b/ group expected to cover the basic office and communication platforms and applications, it consisted of these trainings: MS Word, MS Excel, MS PowerPoint, MS OneNote, MS Outlook and E-Mail Security, MS OneDrive, MS Teams, MS Forms, MS Stream. The training courses were supplemented by video courses aimed to help retain the gained skills which could be immediately applied at everyday work. The trainings turned out to be an immense investment into potential capacity of the employees, which in turn can be used to the overall organisation development. Its best visible result was in the readiness for the implementation of a new Hospital Information System in March 2021, but there was a measurable increase in the number of the active usage of the main trained applications. The limits of the conducted training process are addressed in the conclusion. At the first place, with motivation being the greatest issue. Although the IT training does not improve the primary qualification of the medical staff, the employees are eager to train their skills and learn to operate the apps to develop skills considered essential in current society. Yet, some of them are hindered from learning to work with information technologies through lacking confidence. Therefore, the necessity to motivate people to undergo training and develop their own knowledge and skills is a future challenge for the IT department of Hospital Jihlava.

Key words: Computer Literacy. ICT. Hospital Jihlava. Health-Care-Facility Improvement.

Introduction

In the age of computers, when the knowledge of fast-developing ICT determines students' success in formal education (Šimonová et al., 2009, p. 9) – and which became clearly obvious during the COVID-19 restrictions in 2020-2021 – computer literacy seems to be a necessary precondition for medical staff more than before. Computers and technology are crucial in hospitals and the health-care system since as medical appliances together with diagnostic instruments are generally computerised and the patient records are no longer a matter of paperwork but of data processing and protection. This development is hardly new; computerisation in medical care has been discussed since the 1990s (e. g. Taket, 1992) and it has gained pace with the general movement of the society towards computers, smart gadgets, and electronic databases. However, the omnipresence of information technologies does not necessarily mean everybody is able to work with them without problems. A fear of computers and software divides society into Digital Natives (generations brought up with ICT) and Digital Immigrants (generations before the arrival of the digital technologies) see (Šimonová et al., 2010). Depending on the personal strategy of the given individuals, it can lead health-care workers either to an increase in their interest in information technologies or to frustration and a widening of the digital abyss (Van Dijk, 2020), which – altogether – could be called "computer anxiety (Dyck et al., 1998). Despite the omnipresence of computers at all workplaces, the utilisation of new technologies can still be avoided by using old conservative ways of working with data.

In this text we want to concentrate neither on the clinical appliances and machinery (CAT scan machines, X-ray picture processing, etc.) nor on the basic hospital information systems used for everyday medical data flow, but instead we would like to address the matter of general computer literacy; the knowledge and skills of workers with regards to the basic office software (word processor, spreadsheet, etc.). The aim of this text is therefore to offer a report on the computer literacy improvement in a particular health-care facility; a hospital in a regional capital Jihlava in the Czech Republic. The background of education and software options in the organisation are first mentioned and then the process of computer-literacy improvement, which happened between April 2020 and April 2021, is described with a focus on the development of the social capital (Bourdieu & Passeron, 1977) of employees in a mid-size organisation. The

improvement in computer literacy is derived from the application-usage growth and is then compared to similar reports.

Theoretical Framework

Computer literacy (i.e., IT literacy, electronic literacy) can be broadly described as "skills and knowledge one needs to use a computer and its peripheries (e. g. printer) as a working tool with which it is possible to create simple multi-media documents and to retrieve information within a network setting (sending and receiving e-mails, finding out information on the internet)" (Basl, 2008). However, it covers a wider area, since computer literacy also partly overlaps information literacy, which refers to all the information and communication technology tools, including, but not limited to computers (McLeod, 1994). The term "computer Literacy" is far from being unambiguous; with some authors speaking about e-literacy, digital competences, etc. (Průcha et al., 2013, p. 292). Computer literacy belongs to the job seeking skills (see e. g. Rývová & Vrabec, 2003, p. 51), and due to this fact, some authors use this term to cover the language skills too (Mužík, 2012, p. 34), since language skills are a great help with looking for a new job. It is an essential part of a person's profile which job agencies and employers pay great attention to. While teenagers' computer illiteracy is very rare today, a lack of appropriate computer skills is not uncommon with teachers (Kunová, 2010) and older adults alike.

The topic of computer-literacy improvement in adults has already been addressed by many authors. Eger (2012) described its current state and made the predictions of its development, while the development of computational thinking of pupils in the Czech school system was a topic of work by authors from Palacky University in Olomouc (Klement et al., 2020). Gassert and McDowell (1995) found out that the newly graduated nurses could not sufficiently understand health-care information technology. The computer literacy of the general population in the Czech Republic was a topic of a research made by the Czech Statistical Office (CSU, 2020), in which it was found that 69% of people used office software at work in the past 12 months. The same research also shows how computer literacy predictably depends on the age of the respondents. While 82% of the respondents between the age of 16-24 used a word processor or a spreadsheet, only 35% of people between the age of 55-64 did the same. While research of the computer literacy in a health-care facility in Turkey found an acceptable literacy level of local nurses (Gürdaş & Kaya, 2015), the same computer literacy of health-care facilities employees in the Czech Republic has been largely un-researched so far, although research made mainly amongst their doctors was conducted in a diploma thesis by Tomáš Neuberg (2016).

Literature (Van Dijk, 2020) describes four main kinds of barriers in gaining computer literacy: 1. mental barriers (computer illiteracy caused by a lack of interest, computer anxiety or unattractiveness of digital technology); 2. material barriers (computer illiteracy caused by no possession of computer and network connection); 3. skills barriers (lack of digital skills caused by poor user friendliness and inadequate education or social support; and 4. usage barriers (lack of significant usage opportunities). The first and the third kinds may be the most significant in the health-care facilities, where material and usage barriers do not play an important part. To overcome these barriers, education in information technology is necessary. In the health-care facilities it takes the form of training, which should provide the employees with the necessary qualifications and competences in working with hardware and software.

However, the didactics of the adults (see Beneš, 2014, pp.11-21) has certain specifics. Assuming human capital consists of **1.** Gained formal education; **2.** Practical skills; and **3.** Other professional training (Mužík, 2004), the second and the third components are what the IT trainings should aim to develop. Needless to say, the investment in human capital is what comes back to the employer in the form of a higher professional performance and capability, while what the employee benefits from is in the form of a better orientation in work processes and applicability to the labour market. These were, in short, the main reasons why we started improving the computer literacy of the employees in Hospital Jihlava.

Hospital Jihlava and Its ICT Department

Hospital Jihlava is a non-profit organization situated in the middle of the Vysočina Region in the heart of the Czech Republic. It is a progressive health care facility serving 150,000 inhabitants of the Jihlava district and the surrounding areas. It consists of 18 medical departments. In 2020 there were over 1,500 employees, including around 200 doctors and 600 nurses. Every year an average of 430,000 patients are given a medical treatment, with over 25,000 patients undergoing hospitalisation, and around 7,500 surgeries are being undertaken, out of which around 2,000 are urgent. The organisation also provides a scientific, educational, and informational services in healthcare. It was funded under Vysočina Region (Kraj Vysočina)[1].

ICT in Hospital Jihlava: Its History and the Current State

The very beginning of the ICT department in Hospital Jihlava goes back to 1986-1987[2]. Since then, the technology has greatly developed and significantly influences both the work of the hospital staff and the lives of the patients. With the rapid pace of technological innovation, there is a requirement to keep developing both the required service and the depth of professional qualifications. This does not apply to the ICT staff only, but also impacts on other hospital staff. The development of information and communication technology is a worldwide priority in many fields, and health care is not an exception. Technology's role in helping to save people's lives is why we have been trying to build, maintain and develop the ICT infrastructure to a high quality for more than 20 years. Currently there are 14 people working in the ICT department and an increase in their number is planned. The scope of our IT activities, together with an overview of the system and other details are available on the website of Hospital Jihlava[3]. As the general overview, there are over 1,000 computers in the hospital, 550 printers, 100 servers, and 90 systems.

Computer Literacy in Hospital Jihlava

In 2007, with the growing need for the constant development of Hospital Jihlava's employee skills and abilities to work with information technology, we decided to conduct a survey on computer literacy. There survey was based on the following assumptions: firstly, the absence of any education in the hospital, secondly, the demand for training in work with office applications, and finally, our need to start the educational process of our employees. This initial

[1] For more information about Hospital Jihlava see www.nemji.cz
[2] For more detailed information see: https://www.nemji.cz/historie-oddeleni-ict/d-7799/p1=6698
[3] See https://www.nemji.cz/oddeleni-a-cinnost/d-1947/p1=1848

survey made us fully aware of the fact that the greater scope in mastering professional software tools deepens the knowledge and abilities of the healthcare staff to provide good care to patients. We started understanding computer literacy as a set of knowledge, skills and abilities that will enable individuals to use computer technology for their professional and personal life to the extent that they would not feel computer-handicapped or behind a "digital wall", while their personal and professional development with the help of a computer would be a matter of their free will (Sak & Saková, 2007).

The whole survey and its conclusions were the basis of a diploma thesis written in 2009 (see Zažímal, 2009). 652 respondents took part in it, out of who 555 women were women and 97 were men. The respondents showed their highest level of IT knowledge in working with Internet, while their lowest knowledge level was found in working with spreadsheets. The knowledge found in the survey questionnaire corresponded with the required skills of a given work position (a doctor, a nurse, technical-economical staff, etc.). For instance, the technical-economical staff outperformed all other professions in work with spreadsheets, while in the field of the computer terminology and internet the doctors performed the best. Similarly, the highest achieved level of formal education played part in the thematical areas. A respondent's age was an important indicator too: "While around 60% of the respondents at the age of 20 performed well in the survey only around 25% of people in their sixties were successful in it" (Zažímal, 2009, p. 32).

In 2009, based on these survey results, we started discussing a possible cooperation with the College of Polytechnics in Jihlava (VSPJ)[4] regarding the possible education of our staff together with their college students, which would take place on the hospital premises. At that time, the College of Polytechnics had 9 of their own computer rooms at the disposal for their general courses. Each one could take a maximum of 6 people, with the space needed for the classes of their educational programmes *General Nurse* and *Midwifery*[5] at the top of its capacity. For that reason, we decided to create a computer classroom, which would be used both for the college courses and for our optional events (such as employee training and seminars). The advantage of such a connection was obvious: the professional teachers could teach in their workplace facility (the hospital) and the students would be closely related to the place of their training. As a part of the training and this cooperation with the College of Polytechnics, various training courses for hospital staff were held too. Besides teaching, the computer classroom was meant to be a place for studying the medical disciplines, or – depending on the requirements – as a self-learning place for the hospital staff.

In 2020 another major step in staff-training was made: a work-position for an ICT lecturer was created. Such a work-position is quite exceptional among medical facilities in the Czech Republic, and we were glad of our management's agreement on this step in clearly showings that the hospital management perceived the need to train and educate the competencies of medical staff in the field of information and communication technologies.

[4] For more information on the college see: https://en.vspj.cz/school/welcome
[5] General Nurse is a course within the bachelor's degree program Health Care (B 5341), Midwifery is a separate bachelor's study program (B 5349). For more information see https://en.vspj.cz/studies/study-programmes-in-czech

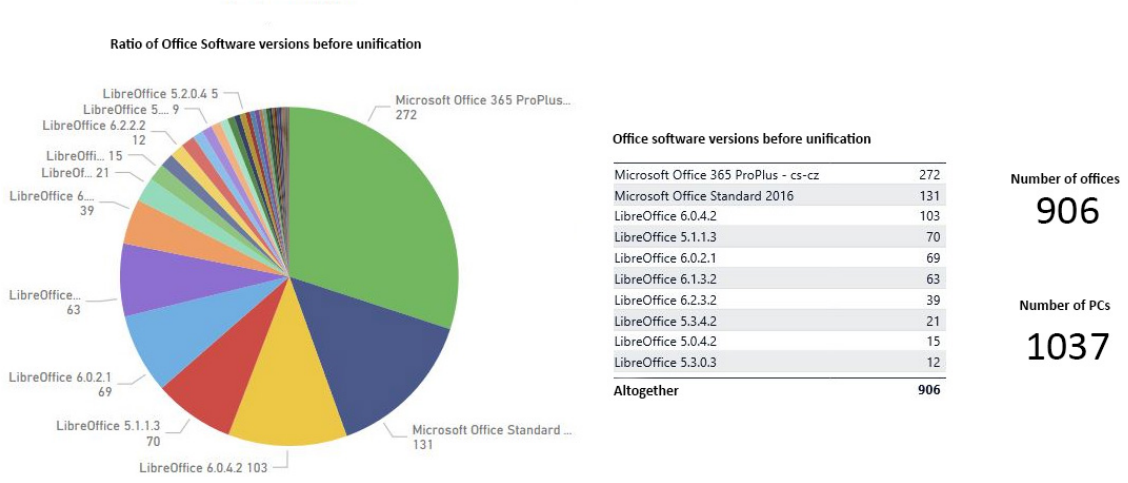
The following text is a report of the work of the ICT lecturer and the results of our mutual effort to improve on the computer literacy in our facility.

Technological and Software Background of the Hospital

In the field of office application our hospital chose Microsoft Office 365 to train. Our journey to this software started in 2018. The main goals were to unify the nonuniform office environment and to boost our security in cyberspace. The main problem was posed by the fact we had different versions of Microsoft Office combined with the Open-Source product Libre Office. Due to this we experienced a lot of compatibility issues, and our environment was not homogenous, Users also had problems with different software versions and therefore different methods to do one thing in two or three versions of office applications. In Figure 1, you can see the state of different Office versions we needed to deal with in our hospital.

Figure 1

Office Application Versions in Hospital Jihlava Before Unification



As can be seen, we had a fragmented environment in Microsoft Office. Our situation was as shown: Office 2007 – 41 licenses, Office 2010 – 89 licenses, Office 2013 – 22 licenses, Office 2016 – 29 licenses. Later we tried to unify the versions of office software into one, 2016 version. Microsoft Office 365 was chosen because it has only one version: Office Pro Plus. There is no need for upgrades to newer versions as with other office software, which is the case that can occur in an upgrade from Office 2016 to Office 2019. Only the update ring had to be chosen – *Current Channel, Monthly Enterprise Channel, Semi-Annual Enterprise Channel*. With the Current Channel the users get feature updates upon release, in Monthly Channel they get updates once a month – the channel that we chose – and Semi-Annual Channel is set for a twice-yearly update (Brown & Coulter, 2021).

With Office 365 a lot of other applications came. From the administrator point of view, we gained software as a service in products such as Microsoft Exchange Online (mailbox hosting with a huge capacity) and Sharepoint Online (hosted as an organization-wide Intranet), so we no longer needed to be concerned with the elemental running of those services and patching. From the point of users, a whole ecosystem of applications was gained. Besides the standard

ones (Word, Excel, PowerPoint, Outlook), there are a number of new tools which help a modern organisation work more effectively:

- Microsoft Teams – software for collaboration and management. It helped us develop and evolve instant communication besides email. Teams also helped immensely with the project management, it enables us to effectively share information and data with employees and external companies included in projects.
- OneDrive for Business – the software which enables users to share, backup and collaborate with other users. It also allows the autosave function on office files: versions to which you can get back are automatically created and up to 250 users can work on one file.
- Stream – an application for sharing videos, which has helped us a lot during the COVID-19 pandemic to educate employees and to migrate to a new Hospital Information System.
- Planner – an application for planning events and work for a workgroup. It is used to track and set tasks for the subordinates.
- Forms – a tool for making quiz and questionnaires for users, which was used a lot during the COVID-19 pandemic to get feedback within our organization and from patients.
- OneNote – a classic tool for making notes is native in Windows 10 but developed within the Office system. The users can synchronize their notes to all their devices.
- Power BI – the tool for business intelligence, with which advanced graphs and customized dashboards can be simply created (Wilson, 2018).

The application of Office365 system turned out to be a fortuitous choice, with the current situation. As soon as new features are released by Microsoft, we want to implement and use them. From time to time, the users even inform the IT department about new features they found themselves and need to use it to leverage it to its maximum. Our target is to leverage the benefits of the cloud hybrid infrastructure to use it at its best. In healthcare it is difficult, nevertheless, we are trying to follow the path of Cloud-First strategy.

All the hospital employees can use any of these tools, each of them owns a version of Office 365. They can use it locally on any computer on the hospital premises or they can combine the functions of Offices with OneDrive for Business (versioning and backups), which is seamless. Users have Microsoft Teams on all computers in the hospital. They can communicate with colleagues by chat or in the team channels of some projects or a specific medical group. When they receive a shared file over OneDrive, it gets opened in an online version of an office app first. Their options are to do quick edits or to open the file in Office Pro Plus. The users are provided with a whole ecosystem of applications that came just as a side benefit from buying the product. Those applications became very quickly an important part of our staff's routine. Whenever there is a need to do something specific, an app is just picked without the need to consult the IT department or without buying a single piece of software.

With Office 365 there also came visual options with mobile-device products that help with remote work. Our identity was secured with Multifactor Authentication, mail clients on all

employees' devices were unified (BYOD included)[6]. With this system, each employee can use MS Teams as a mobile app, which brings a whole new level to this app usage. Some features are mobile version oriented and work best on the mobile device. As an example which is used in Hospital Jihlava MS Shifts can be mentioned: it is a tool for shift planning and registering. We therefore have got the ultimate tools for most of the cases we need to cover.

Computer Literacy Improvement in Hospital Jihlava

Even though the mentioned software creates an essential part of the everyday work of hospital staff, computer literacy does not necessarily grow together with the frequency of the smart-gadget usage understandably, the adaptability and readiness to accept new technologies having a decreasing tendency. While nurses and the hospital staff in general must improve their Nurse-Informatic skills[7], and they usually deal with it sufficiently, the basic terms and conditions of the computer literacy often stay unexplained. This in turn leads to the fear of modern technologies or even worse: to their rejection. Because too pushy training courses can cause an unwanted increase in computer anxiety (Glaister, 2007), the basic idea was to make the trainings interesting, entertaining, and welcoming, so the fear or anxiety had nowhere to grow. On the other hand, the fact that a lot of nurses consider the computer courses as a part of their life-long education (Mužík, 2012, p. 193) was taken into account.

Therefore, the training courses in Hospital Jihlava were aimed at improving the basic computer literacy and making people work in the applications which are not a necessary part of their everyday routine. It means, the main measurable output we wanted to achieve was the growth in the usage of all office applications. Predictably, not all the applications are of the same importance and usage numbers, therefore we expected the growth at the very least in usage of MS Teams and in the general ability to operate the computer and its basic functions. The analysis of the improvement was therefore made by following the active usage of the given applications.

To achieve this target, the training courses were aimed at all employees of the facility. During the training a variety of employees participated, including even the more experienced computer users who came to consult whether they worked with the software as required, and find out what hidden or unknown functions the applications had, as well as complete beginners, who wanted to learn something new or to keep pace with the rapid software development. Since in andragogy, adults are not isolated from their everyday work, social and professional roles (Beneš, 2014, p. 57), the courses were not strictly meant to improve only the skills needed at work, but also in the participants' private life, because the personal growth of the staff is also a part of the human capital of each organization in modern society (see Zounek, 2006).

Methods and Content of Training

The training programs were offered to all employees of Hospital Jihlava from early–May 2020 to late–April 2021. The participation was not obligatory the choice was up to the employees

[6] BYOD (Bring Your Own Device) is an abbreviation referring to the systems in which a user can operate the systems in their own devices, rather than being required to use strictly only a given device (see Emery, 2012).
[7] For more about the term see (Cornick et al., 2004). In short, the term means management and communication data, information, and knowledge in everyday nursing practice.

therefore the courses met the requirements of leisure education (Šerák, 2009, pp. 52-55). Each week the notification of the offered training courses was made by email to all employees, who were supposed to book their participation in a booking system. The capacity of each course was 12 people, and they took place in the abovementioned computer classroom. The classroom consists of 24 seats, each equipped with a computer with all applications and an internet connection. Due to the pandemic restrictions throughout the year, social distancing was obligatory, which is why only a half of the seats were available for booking. The weekly offer depended on the momentary demand and needs of the organization. However, during the whole followed period the topics were recurrent and even the training subjects which were covered were reoffered after a month or two in line with the renewed demand. The hospital employees (doctors, nurses, helping staff) were also highly welcomed to offer their own training topics, so that they suited their needs and work requirements. Most of the training courses took place in the morning hours, but early evening hours were offered, too (largely 1-2 PM).

The number of trained people between April 2020 – April 2021 was 872. As expected (see Table 1), there was a difference between the number of bookings (which rose to 1,001 people in total) and in the real attendance (872, as mentioned earlier). Its reason can be attributed to the fact that the training took place in the working hours and the hospital operation is unpredictable, therefore not all planned meetings can really happen. The demographic data of attendees are as follows: 80.6% of attendees were women 19.4% men; the average age of the attendees was 47 (minimal age was 19, maximal 72, with the standard deviation 6.9). 12% of attendees were people with primary education or an apprenticeship certificate, the overwhelming majority (77%) were people with the Maturita Examination (competition of secondary education). The remaining 11% were people with some level of university degree. The attendance of the individual programs was as follows:

Table 1

The Attendance of the Trained Courses

Course Name	Demand (No. of bookings)	Attendance	Difference (attendance minus demand)
Computer for beginners	199	164	35
Work with PC	47	40	7
Cybersecurity	57	52	5
MS Word	58	57	1
MS Excel	234	191	43
MS PowerPoint	11	9	2
MS OneNote	19	14	5
MS Outlook and email security	27	25	2
MS OneDrive	73	66	7
MS Teams	246	226	20
MS Forms	18	16	2
MS Stream	12	12	0

The training method was a monological lecture (Šerák, 2009, p. 70) for a group of 1-12 people, combined with a practical demonstration of the program functions, which the participants were able to test and do with the help of the lecturer. The participants' approach was designed to be proactive (with initiative-led activities and the goal-orientation helping the learning process

(Šerák, 2009, p. 79)). The Twelve Principles of Adult Learning (Kisamore et al., 2008)[8] were considered the same as the main andragogical principles (Veteška & Vacínová, 2011, pp. 95-96). After each course, an evaluation questionnaire was sent to the participants, their answers were anonymous, they could assess the course's formal side, and a space for suggestions on how to improve the training was provided.

Training Programs

The topics of the offered training can be sorted in two main categories: a) basic work with computer and the main rules of cybersecurity; and b) office and communication platforms and applications. Group a consisted of the training meant to cover the most important problem: the fear of working with the computer systems and the inability to understand the basic data-input methods (keyboard and mouse). The ability to use the office application necessitates confident operation with keyboards and operating system functions, and this group of training courses was aimed at the older employees who lack the most basic IT education. These trainings were therefore divided in two stages, both at an elementary level, but with each concentrating on different features of the PC and its operation.

Work with PC: this course was aimed at explaining and exercising the function of the keyboard layout (AltGr, Atl, Ctrl, Shift, capital letters), system and application keys, the function of the mouse and its keys (context menus), together with the practical tasks and exercises leading to a higher confidence in operating both.

Computer for Beginners: this training course was more software-oriented, it explained the functions and options of operating system, i.e., work with desktop, files, links, creating and basic operation with folders, bookmarks, Start menu and its options. The most important shortcuts were also explained (Ctrl+C, Ctrl+Z, Win+L, etc.)[9].

The training in the basic rules of cybersecurity supplemented the basis of computer literacy. The course was user-oriented, therefore not only work issues were explained but also the possible attacks on personal and private activities were addressed. This course was prepared in cooperation with the hospital Cybersecurity Analyst.

[8] The principles vary in different papers, sometimes there are seven of them, other times more (Veteška & Vacínová, 2011, pp. 95-96). Kisamore et al. (2008) name these ones: 1. Acknowledge and alleviate fears 2. Make the learning environment mirror the work environment 3. Realize students will want to focus more on practical application of acquired knowledge and less on learning pure theory. 4. Recognize adult learners' desire to assimilate new information with old information and the possibility that they will sometimes make incorrect linkages. 5. Use evaluation methods that emphasize comprehension rather than rote memory 6. Treat students as equal partners in the learning process. 7. Get students' managers or supervisors and relevant organizations involved in the program. 8. Be responsive to business and industry changes that may affect the students and their careers. 9. Allow for flexibility in meeting course and program requirements 10. Make sure courses and educational resources are designed to accommodate adult students' extra-curricular responsibilities and schedules. 11. Promote support, collaboration, and networking through socialization. 12. Involve students in the development and modification of the program.

[9] Not only for *Computer for Beginners* but for all the training courses starting from scratch, the books "for dummies" were used as sources of what can come in handy (e. g. Muir, 2009). Despite their non-scientific approach, their ideas often turned out to be useful.

The b group was meant to cover the basic office and communication platforms and applications[10], it consisted of the following trainings:

MS Word[11]: divided in two levels (elementary and slightly advanced). The elementary level covered the basic work in the word processor, choice of fonts according to the purpose, visual style (text fields, heading and foot) together with print settings. The slightly advanced level addressed functions such as revisions, quote manager, and references.

MS Excel: divided in two stages (elementary, slightly advanced). The elementary level started with the basic rules of a spreadsheet application, the visual settings of rows and columns, the simple formulas and functions inputted manually, automatically or with the help of the function dialogue. The slightly advanced level added panes freezing, conditional formatting, easy graphs, absolute and relative links. The most frequently used formulas (SUMIF, COUNTIF, WORKDAYS, AND, etc.) filters and contingency tables were also covered.

MS PowerPoint: which explained and demonstrated the creation of the simple or advanced presentations, working with the individual slides and working with insertion of images, videos, together with the basic rules for presenting a slideshow to the audience.

MS OneNote: introduced and demonstrated working with the simple notes and notebooks, multiple access to them, creations of lists, audio, and video notes, the easiness of sharing the notes among the wide ranges of gadgets and finally, the interconnectivity of notes to MS Team meetings or team documents.

MS Outlook and E-Mail Security: this training was based on the fact, that every email sent to the employees' mailbox is considered read, therefore the course wanted to show what other functions besides reading emails MS Outlook offers. It was introduced as an email client which was the same as a Personal Information Manager (calendar and tasks). The access to e-mail and work with attachments together with the potential mail encryption and data protection were shown and practised.

MS OneDrive was training aimed at a simple document sharing and backing-up application, with the potential to more than fully substitute the third-party share services (such as ulozto.cz). The attendees were shown how to work with the online access and OneDrive smart application enabling working with files from anywhere.

MS Teams: as mentioned above, this platform turned out to be the most important one when COVID-19 organization-wide restrictions were placed upon the users. The training therefore had to cover work with communication via chat and phones, planning in the team calendar, participating in online meetings and conferences, and the basics of collaboration in team channels and documents.

[10] The used software is made by Microsoft, but the choice of Microsoft is not meant here as a one-company promotion, since their products are considered a standard in the field of office applications. As J. Žitniak (2017, p. 15) says "there is no company which would not use the MS Office software or at least would not know it."

[11] Due to the fact Office365 is a continually improving product, there is no available literature besides the promotional leaflets. For creation of the training courses, the books of Ján Žitniak (2017) and Josef and Rudolf Pecinovský (Pecinovský & Pecinovský, 2019) were used.

Besides these basic office applications used for various reasons and purposes across all hospital departments, positions, and branches, some of the mentioned additional applications were trained mainly with the target to be used for daily operation and department functions.

MS Forms: the course showed how to create a form or a questionnaire, its visual features together with the way how to process the collected data or limit data collection in a certain period.

MS Stream: this training showed the basic operation with the video-platform, uploading the videos, creating them without the help of any other editor. It instructed staff in creating simple video manuals for new functions and software used in the hospital departments.

Video Manuals and Video Courses

The training courses were supplemented by the video courses aimed at helping retain the gained knowledge. Between October 2020 and February 2021, the video course MS Teams was created and has been used since – with a second course (MS Excel) being currently created. These two subjects were chosen on the basis of the demand and attendance, because Teams and Excel trainings were the most frequented ones. A single video file for MS OneNote was made to introduce all its functions to the users.

The more complicated yet often used features of the office applications e. g. setting up the redirection of the emails when on holiday; opening an encrypted email; Multi-factor Authentication set-up were also prepared in the form of pdf and video manuals so that users can consult them in a case of need. All these materials are available on the intranet, where a specialized site for the manuals and training courses was created.

The video course of MS Teams consists of 9 videos, 4-8 minutes in length. In only 3 months of their existence the number of views ranged from 119 for the introductory video (each of them is available independently of the others) to 7 in the least frequently watched video (aimed at organizing a *live event*). The OneNote video file has been viewed 132 times since its creation in October 2020.

Training Assessment

There were 279 evaluation questionnaires filled in. In them, the professional level of the lecturer was evaluated by 4.93 points out of 5 (with standard deviation 0.3), the accessibility and comprehensibility of the subject matter were evaluated by 4.87 points out of 5 (with standard deviation 0.4), the tempo of the training courses was evaluated by 4.65 out of 5 (with standard deviation 0.7), the benefits of the courses for the hospital practice were evaluated by 4.65 out of 5 points (with standard deviation 0.7), the organization of the courses was evaluated by 4.94 out of 5 points (with standard deviation 0.2). Despite such high evaluation marks, some suggestions and ideas for improvement were given. The most frequently mentioned was the fact that after a course, its participants should have some materials summing up what they had been taught. This suggestion was solved by the abovementioned video courses.

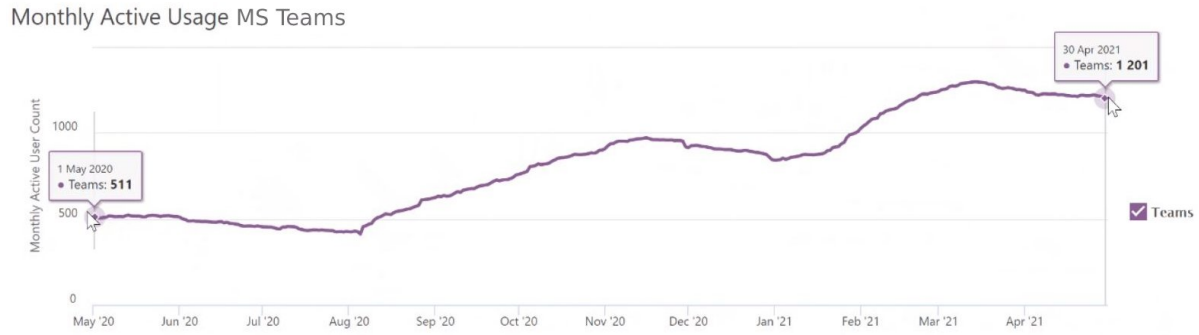
The training courses were not finished with any examination, which is why the results are measurable only in the numbers of the everyday usage of the main training applications. An examination was not applied because the target was not to master given functions and gaining a certain level of knowledge. While that can be our next step, our target in the described training

year was to make people actively use the computers and software they were interested in (according to the number of participants, those ones were MS Teams, MS Excel, and computers in general). The analysis of the training success was therefore made by following the number of users working with the applications.

The growth in the active usage of all mobile applications was clearly visible. From 308 users from May 1, 2020, it rose to 760 by April 30, 2021. The growth in usage of MS Teams can be seen in the Graph 1 below. While at the beginning of the training season in May 2020 there were 511 active users, at its end in April 2021 there were 1,201 of them.

Graph 1

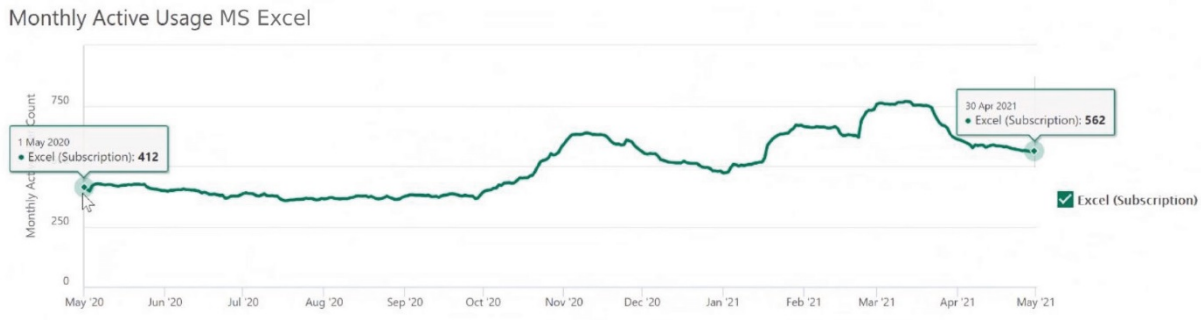
Graph of the Growth of MS-Teams Monthly Active Usage



Unlike Teams, the monthly usage of MS Stream was not growing permanently. It had 408 active users on May 1, 2020 and its usage fluctuated, with a peak in March 2021 (when it reached 1,006 usages). MS Excel had 412 active users on May 1, 2020, while in April 2021 there were 562 of them (see Graph 2). However, the peaks of the usage numbers matched the main waves of the training sessions in November, February, and March.

Graph 2

Graph of the Growth of MS-Excel Monthly Active Usage



In the followed period, nothing interfered with the followed application usage, meaning there was no new obligation to use MS Excel, or MS Teams, but the users were encouraged to use MS Stream with the above-mentioned supporting videos. In MS Teams a team for all employees was also created. All these improvements were made to support staff in active usage of the applications.

Results and Limits of Training

The gained knowledge and skills could be applied to the everyday work. The best visible result of the training courses in Hospital Jihlava was the readiness for the implementation of a new Hospital Information System, which happened in March 2021[12]. The nurses and other staff were ready to switch from the old DOS-based system to a new Windows-based system with no bigger problems than before, and they were also able to work with the system more easily because they knew the context menus, ribbons, and other features of office software, which the new information system contained. COVID-19 restrictions also made wider implementation of MS Teams possible, the meetings, conferences and discussions across all departments were made in Teams and there were no bigger problems with their usage.

However, there has still been a large number of people who never took part in any course. They can either master computers without problem or they are afraid to get trained (see Van Dijk, 2020). In this regard, the computer literacy development in one facility resembles a general literacy improvement within society with one important exception. The medical staff is mainly qualified in working with the patient and helping them, the penetration by technologies is often considered subsidiary (Leadbeater, 1999, p. 7). Motivation is therefore essential. It creates an important part of the whole education and the "motivation triangle" consisting of the possibility to learn, motivation to learn and knowledge how to learn (Šerý, 2009, p. 62). While the first and third parts of the triangle can be given and taught, motivation itself is up to the individuals. Even though some employees are motivated to gain knew knowledge and skills to work with new software, the others maintain a conservative stance claiming that all things can be done without these inventions. This kind of social conservativism is unsurprising, though it is a big challenge to overcome. It is necessary to realize that the computer literacy in a society/organisation is not a matter of the individuals and their social capital only (see Bourdieu & Passeron, 1977), but that the society/organisation profits from it immensely too.

Discussion

As Pine (2011) suggested, information technology is an integral part of the healthcare of those who provide its services. Based on the results of our training, the medical staff who took part in them realize that. Out of more than 1,500 employees of Hospital Jihlava, 872 voluntarily took part in some of the training courses. Since the most frequently used ones were those for complete beginners in working with a PC and office applications (courses for MS Excel, MS Teams, Computer for beginners), we cannot agree with the claim of Neuberg (2016, p. 47) that most of medical staff over the age of 46 can command these applications at an everyday-use level. They must be trained at it first and their command of these applications is a matter of practise and gradual adaptation. On the other hand, we can agree with the positive attitude of medical staff towards the information technology (Gürdaş & Kaya, 2015). They are interested in it, willingly take part in education courses about it and despite some level of uncertainty mentioned above, they do not fear it.

[12] New system FONS by STAPRO company was implemented in March 2021 and the operators of STAPRO company namely praised Hospital Jihlava staff for its readiness and computer literacy.

If we compare our computer-literacy improvement process to the similar facilities in the Czech Republic, our approach is unique in its internally based funding. In the Czech hospitals, IT training is usually externally based and made through ESF-financed programmes. For example, in Hospital Strakonice the IT training in basic application (Word, Excel) was a part of their ESF-financed project, between 2010-2012, where 184 participants were educated through them[13]. Hospital Jablonec nad Nisou also had the computer literacy improvement in its portfolio of the investment into staff education in 2015[14]. However, unlike these facilities, the approach of Hospital Jihlava was long-term, internally based and funded. The trained apps were not the compulsory ones which the staff necessarily needs every day, yet the interest in the training in them, and the monthly-active-usage numbers can illustrate the loss of information-technology-fear and the willingness to use the office apps beyond the frame of daily work obligations.

Conclusion

This text addressed the example of one local health-care facility and its approach to its staff education. Its aim, particularly, was to show how the described training in the improvement of computer literacy was reflected in the everyday usage of the applications and in the readiness for the new Hospital Information System. Attention was paid to the initial state of computer literacy in the facility and the software options hospital employees have had. Then the process of training computer skills and knowledge was addressed. Even though computer literacy improvement may not seem to be of such significance to write about, we addressed this matter to draw attention to the fact that not all health-care professionals are able to work with information technologies, due to the fast development in the area, and so they must be continually educated. Secondly, we wanted to point out that despite the illusion that everybody can work with smart gadgets and PC software, this is not an innate ability, it must be taught even outside the formal education system. As may have been visible from our description of the training process, the employees of Hospital Jihlava are interested in improving their abilities to do their job, they book their seats for lessons and come and learn how to work with new software. Although our IT trainings do not improve their primary qualification (unlike their other training in nursery or medical knowledge), the employees are eager to train their skills and learn to operate the apps. Our year-long training session reflected mainly on the readiness of our users for the change from the old DOS-based Hospital Information System to the new Windows-based one. However, the monthly-active-usage figures of the main two trained applications (MS Teams, MS Excel) show the considerable growth too, together with the basic computer literacy. Staff started using the apps for their own work purposes, which in turn helps them to apply their skills and gain knowledge.

However, the training process has some limits. Firstly, people are hindered from learning to work with information technologies by certain blocks, despite the fact they are surrounded by these technologies. It can be compared to what Van Dijk (2020) calls mental barrier in gaining computer literacy. It requires bravery to accept the fact there are skills considered essential in current society which one does not have. Those who want to start learning must first admit they do not know something, which is a step out of their comfort zone. The problematic nature of

[13] See http://www.nemocnice-st.cz/index.php/zvysovani-profesnich-dovednosti
[14] See https://www.nemjbc.cz/cs/akce-a-zajimavosti/nebojme-se-trhu-prace-projekt-op-vk/informace-ke-vzdelavacim-programum.html

this step can be visible on the training attendance – as was mentioned above, there are employees who book the seats for a lesson that they never come to. However, it is necessary to attribute this non-attendance partly to the fact the position of the IT lecturer was created in times of the COVID-19 pandemic and its consequent restrictions.

Even though computer literacy in one mid-site health facility in the Czech Republic can be perceived as its own private matter, the attempt to improve it can be compared to the improvement of general (not only computer) literacy in society. But in the wider society, in one facility there is a need to motivate people to learn and improve, which is a challenge for the IT department of Hospital Jihlava for the future. The employees trained so far can be taken as a group of motivated people, but there is a similar-sized group of those who lack any motivation and must be given it. Nevertheless, the success of our educational method can be proved by the fact that similar facilities (e. g. FN Brno) decided to adopt our approach and to conduct a similar computer literacy improvement of their staff.

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