

Digital skills in healthcare

A further look into the digital divide amongst disability healthcare professionals

MASTER THESIS
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Preface

In front of you is the master's thesis "Digital skills in healthcare". This thesis has been written as a product for the master Health Sciences of the University of Twente Enschede. This thesis will discuss the challenges and perceived needs for support of healthcare professionals considering workplace technology. I worked on this thesis from February 2024 till July 2024.

Working on this thesis was a nice valuable experience. The knowledge obtained in my working experience as a nurse combined with what I learned in the pre-master and master was found to be very useful in this process. It was nice to put this theoretical knowledge in practice. I would especially like to thank my supervisors of the University of Twente, Janine van Til and Lieke Heesink for their guidance through this process. I experienced this process as a safe learning environment with a critical aspect in order to deliver a quality report. In addition, I would like to thank Baalderborggroep and Frion for providing this assignment and for their hospitality. More specific a thanks to the supervisors from the organisations Mahgul Hosseini and Yvonne Rietstra.

At last, I would like to thank every healthcare professional of Frion and Baalderborggroep that helped me with my research, especially the healthcare professionals that participated and gave the valuable information needed for this research.

Finn van den Aakster

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Abstract

Background

The digitalization of healthcare demands adequate digital skills of Healthcare professionals (HCP) to use workplace technology. Worldwide there are concerns about whether the HCP are currently skilled enough to meet these demands. The importance of this is underscored in prior research and agreements, such as Integraal Zorg Akkoord (IZA) and the agreement made by Vereniging Gehandicaptenzorg Nederland (VGN). Necessitating targeted training programs for HCP already in the workforce.

Goal

The primary aim of this study was to identify the challenges faced by HCP with workplace technology and to understand what their perceived needs for additional support are. This will attribute to bridging the gap between the digital competencies of new graduates and existing employees ensuring sustained quality in healthcare.

Method

A qualitative descriptive interview study was done with a purposive sampling method. At ten locations four HCP were asked to fill in a digital skills test. From every location the respondent with the highest and the lowest score were invited for an interview. In total sixteen interviews were conducted and the data was analyzed using content analysis.

Results

The study revealed that HCP face multiple challenges with workplace technology, including difficulties with basic software usage, multi-step processes, and hypermedia navigation. There is a clear need for support with active digital skills training and with an available helpdesk when needed. The challenges experienced were found at different levels and HCP with different levels of digital skills have different needs for support. The HCP with the lowest digital skills has a need for active schooling and the HCP with better digital skills need an on-demand type of support. The consequences found of experiencing challenges were loss of time, stress, higher job turnover and, lowering job satisfaction.

Discussion

The findings highlight the need for targeted digital skills training tailored to the needs of HCP as well as the different needs for different levels of digital skills. The current support needs to evolve to proactive education and reactive on-demand support in digital skills in addition to the ICT support. By implementing these support mechanisms, organisations can better prepare their workforce for the ongoing digitalization as well as enhancing quality and efficiency of care and improve overall job satisfaction.

Dutch executive summary

Inleiding

Wie ben ik? Ik ben Finn van den Aakster en ik ben van februari 2024 tot augustus 2024 bezig geweest met een onderzoek genaamd "Digitale vaardigheden in de gezondheidszorg". Dit onderzoek richtte zich op de uitdagingen en de waargenomen behoefte aan ondersteuning hiervoor bij het gebruik van technologie op de werkvloer door zorgprofessionals in de gehandicaptenzorg. Het onderzoek is uitgevoerd als onderdeel van de master Health Sciences aan de Universiteit Twente.

Waarom dit onderzoek?

De digitalisering in de gezondheidszorg vereist dat zorgprofessionals over adequate digitale vaardigheden beschikken om technologie op de werkvloer te gebruiken. Wereldwijd zijn er zorgen of zorgprofessionals momenteel voldoende vaardigheden hebben om aan deze eisen te voldoen. Eerdere onderzoeken en overeenkomsten, zoals het Integraal Zorg Akkoord (IZA) en die van de Vereniging Gehandicaptenzorg Nederland (VGN), onderstrepen het belang van gerichte opleidingsprogramma's voor zorgprofessionals die al in de sector werkzaam zijn. De vraag is dus of de zorgprofessionals wel allemaal klaar zijn voor de toenemende digitalisatie die zeer belangrijk gaat zijn de komende jaren.

Het hoofddoel van deze studie was om de uitdagingen te identificeren waarmee zorgprofessionals te maken hebben bij het gebruik van technologie op de werkvloer en om te begrijpen wat hun behoeften aan aanvullende ondersteuning is. Dit draagt bij aan het klaarstomen van de zorgprofessionals voor de verandering. En om ervoor te zorgen dat iedereen op een prettige manier om kan gaan met technologie want we kunnen er met zijn allen niet meer onderuit.

Hoe ik het onderzoek heb uitgevoerd

Voor dit onderzoek is een kwalitatieve beschrijvende studie uitgevoerd met een doelgerichte steekproefmethode. 36 zorgprofessionals uit tien locaties namen deel aan een zelftest over digitale vaardigheden, waarna 16 zorgprofessionals, verdeeld over 8 locaties werden uitgenodigd voor een semigestructureerd interview. De 16 geselecteerde zorgprofessionals waren degene die het hoogst en het laagst hadden gescoord per locatie op de zelftest. Hiervan waren 4 locaties van Frion en 4 van de Baalderborggroep. Deze locaties hadden verschillende cliënten categorieën zoals: LVB, MVB, EVB, ouderen en kinderen.

Wat ik heb gevonden

De studie onthulde dat zorgprofessionals te maken hebben met meerdere uitdagingen bij het gebruik van technologie op de werkvloer, waaronder moeilijkheden met basissoftware, meerstapsprocessen en het navigeren door hypermedia. Er zijn duidelijke verschillen gevonden tussen de vaardigheden van de medewerkers. Zo is er een groep die veel hulp nodig heeft ook wel bekend als digitale starters. Deze groep heeft meestal geen problemen met de dagelijkse dingen zoals rapporteren maar loopt al snel tegen uitdagingen aan als ze iets geavanceerdere dingen moeten doen. Deze dingen komen vaak voor in document beheer, Word of Outlook. Deze groep heeft veel behoefte aan ondersteuning en wil ook graag een fysieke training hebben in computergebruik. De andere groep daarentegen heeft geen moeite met de basisdingen maar loopt tegen problemen op bij meer gecompliceerde taken. Dit zijn ook wel meerstapsprocessen genoemd. Dit houdt in dat je soms meerdere programma's en functies moet gebruiken om iets uit te voeren. Deze groep geeft aan zelf geen behoefte te hebben aan actieve fysieke scholing maar wil een reactieve manier van ondersteuning "*Ben der als ik je nodig hebt*". Met andere woorden een helpdesk of een digitale buddy waar je mee kan sparren als je ergens tegenaan loopt. Een Digi-coach zou hierin een dubbele rol kunnen spelen aangezien deze beide groepen kan helpen. Mensen met veel hulp-behoefte kunnen met behulp van de Digi-coach de mogelijkheden bekijken en een op maat gemaakt programma starten. De mensen die specifiekere problemen hebben kunnen in gesprek gaan met de Digi-coach wat voor hun de beste oplossing zou zijn.

Ook werd duidelijk dat het goed is dat er aandacht aan wordt besteed door de organisatie en managers om digitale vaardigheden een relevant gespreksonderwerp te maken. Digitaal vaardig zijn hoort nu eenmaal bij **de competenties van een zorgverlener in 2024** en het moet genormaliseerd zijn om hierover te praten met elkaar.

Discussie en conclusie

De bevindingen benadrukken de noodzaak voor gerichte training in digitale vaardigheden, die zijn afgestemd op de verschillende behoeften van zorgprofessionals, voor verschillende niveaus van digitale vaardigheden. De huidige ondersteuning moet evolueren naar **proactieve educatie** en **reactieve ondersteuning** in digitale vaardigheden, naast de bestaande ICT-ondersteuning. Door deze ondersteuningsmechanismen te implementeren, kunnen organisaties hun personeel beter voorbereiden op de voortdurende digitalisering, de kwaliteit en efficiëntie van de zorg verbeteren en de algehele arbeidstevredenheid verhogen. Digitaal niet vaardig zijn levert stress en frustratie op, dit gaat zo ver dat mensen sneller van baan wisselen en eerder stoppen met werken. Ook kost het veel tijd omdat mensen veel hulp vragen aan collega's waardoor er van 2 medewerkers tijd wordt besteed aan een taak die anders door 1 zelfstandige medewerker zou kunnen worden gedaan.

Aanbevelingen voor de organisatie

Op basis van de bevindingen en conclusies van dit onderzoek, zijn de volgende aanbevelingen geformuleerd voor de betrokken organisaties:

1. **Gerichte digitale vaardigheidstraining voor de digitale starters:** Ontwikkel en implementeer trainingen die zijn afgestemd op de specifieke behoeften en vaardigheden van zorgprofessionals met lage digitale vaardigheden. De nadruk zou moeten liggen op documentbeheer (het opslaan en terugvinden van bestanden) en e-mail gebruik. Betere digitale vaardigheden op deze twee gebieden betekent minder verspilde tijd en een grotere efficiëntie in de dagelijkse werkzaamheden.
2. **Beschikbaarheid van een helpdesk/Digi-coach:** Zorg voor een toegankelijke helpdesk of Digi-coach die zorgprofessionals direct kan ondersteunen en advies op maat kan geven over eventuele nascholing.
3. **Proactieve en reactieve ondersteuning:** Combineer proactieve educatie met reactieve ondersteuning om zorgprofessionals continu te ondersteunen in hun ontwikkeling van digitale vaardigheden.

Door deze aanbevelingen op te volgen, kunnen zorgorganisaties een betere aansluiting vinden bij de digitale transformatie en de daarmee samenhangende eisen aan de digitale vaardigheden van hun medewerkers.

Aanbevelingen voor toekomstig onderzoek voor de organisaties:

1. Een opvolgend verdiepend onderzoek wordt geadviseerd naar de challenges ervaren specifiek door de zorgverleners met lage digitale vaardigheden om verder inzicht te krijgen. Hieruit kunnen oorzaken, inzichten en onderwerpen worden ontdekt die zullen bijdragen om een invulling te geven aan de scholingen die moeten worden aangeboden in de toekomst.
2. Omdat er verschillende behoeftes zijn bij de werknemers met verschillende niveaus aan digitale vaardigheden kan onderzoek worden gedaan naar hoe je de werknemers het beste kunt identificeren en dus de juiste hulp kan gaan aanbieden aan de juiste persoon.
3. Verder onderzoek zou moeten gaan over het definiëren van het niveau digitale vaardigheden dat nodig is om een zorgverlener bij de Baalderborggroep en Frion te kunnen zijn. Door dit niveau te definiëren kunnen doelen worden bepaald en vergelijkingen worden gedaan met huidige en toekomstige vaardigheids niveaus.
4. In de toekomst zal onderzoek moeten worden gedaan naar het effect van de gegeven trainingen/ondersteuningsinstrumenten. Ook moet onderzocht worden wat de lange termijn effecten zijn van het verbeteren van de digitale vaardigheden voor zorgverleners.

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List of abbreviations

Abbreviation	Meaning
B&F	Baalderborggroep and Frion
HBO	Higher professional education
HCP	Healthcare professionals
ICT	Information and Communication Technology
IG	Individual healthcare
IZA	Integraal Zorg Akkoord
MBO	Secondary vocational education
MZ/VZ	Social care supervisor
ONS	Software program, samen ons eigen.
SD	Standard Deviation
VGN	Vereniging Gehandicaptenzorg Nederland

Table 1: List of abbreviations

1. INTRODUCTION

Nowadays it is impossible to work without technology in the healthcare sector. Even before the pandemic the rise of technology had already started, driven by a number of problems such as an increasing employment deficit and a rising demand for healthcare services in general[1-3]. The recent COVID pandemic has boosted the need for online services because no-contact care with HCP to reduce the risk of infections[4, 5]. The digitalization affects the day-to-day work of the healthcare professionals and affects the set of digital skills needed to correctly adapt to the technologies[6, 7]. Worldwide there are concerns about whether the HCP are ready and have the capacity to keep up with this rapid change[8, 9].

1.1 Defining digital skills

Digital skills are a very broad concept and can be defined in multiple ways. Buckingham, 2006 used: *“digital (or computer) literacy often appears to amount to a minimal set of skills that will enable the user to operate effectively with software tools, or in performing basic information retrieval tasks”*[10]. This definition is quite old and the usage of technology at the time was very limited. Therefore the definition was extended by Eisenberg, 2008, who came up with: *“The skill sets needed to effectively use digital technologies in order to access, understand and participate in the digital world”*[11]. The understanding of the digital world was now a part of the digital skills. With a larger leap into the more developed digital world, the definition according to Van Deursen, A.J.A.M. & Helsper, E.J. (2020) is as follows: *“ At the highest level, digital skills are the extent to which someone is able to (qualitatively high-quality) benefit from internet (technology) and to reduce its risks limits, now and in the future.”*[12]. Here we find that the skills not only relate to usage, but also to understanding and using it safely. Non-academic literature from the Dutch government in Digitale Overheid, 2023 uses: *“Digital skills refer to the ability and understanding of internet, computer and software use.”*[13]. This more recent definition empathises the practical aspects and the broader contextual elements of understanding.

In recent research van Deursen, 2023 made a distinction between functional and critical aspects of digital skills. Functional skills are executive actions, while critical skills entail the understanding and consequences of technology use. For instance, a functional skill is using the search bar in a document filing while a critical skill is understanding how these search results will then be presented with this search word. Another example would be that a functional skill is googling for information about a medicine while the critical skill would be the ability to evaluate reliability. Within this framework of van Deursen digital skills are split up into four categories all containing functional and critical aspects. The four categories are: operational skills such as for example connecting with the internet or installing applications, information skills is about looking up information and selecting information, communication skills include using online communication platforms and adjusting privacy settings and

content creation skills is about making content with an app or website and creating engaging content[14]. In the healthcare sector these skills apart from content creation are being used by the HCP in their day-to-day work.

From these definitions it is clear that part of the definition relates to skills for usage and part of it is related to outcome and consequences. For healthcare workers it is essential to independently be able to use technology and understand the aspects of safety and consequences of their actions with this technology[15].

1.2 Digital divide

The yearly European research of digital skills showed that the Netherlands, together with Finland has the largest proportion of inhabitants that have at least minimum digital skills. Almost 80 percent of the inhabitants have basic digital skills[16]. While the Netherlands is scoring well in Europe, still one in five Dutch citizens over 55 does not have basic digital skills and can therefore not operate technology well[17]. This occurrence of low digital skill can be partly explained by the co-relation between low literacy and low digital skills. One in nine Dutch citizens have trouble writing and reading and 30% of the people with low literacy have insufficient digital skills and cannot use technology independently[17, 18]. Other relations causing the divide in digital skills are education level and age[12, 16, 19, 20]. Higher education levels are associated with a higher percentage of people with basic digital skills. Van Deursen 2011 found that although digital skills are generally lower among elderly people[20] age is not always significant across all different skill categories[19].

1.3 Digital skills in healthcare

According to the latest study, the prevalence of digital starters, people who are at the beginning phase of adopting technology, range from one in five to one in four in different healthcare sectors in the Netherlands[21-23].

Digital skills for healthcare employees are key in working efficiently with their workplace technology. Digital starters spend extra time navigating technology, taking detours for functionalities and extra checking while they could be spending time with the clients. Often their colleagues are asked to help them solving problems or performing tasks on the computer resulting in time loss of more than one employee. The time spent behind the computer to perform basic tasks as writing reports, saving a file, e-mailing will take longer for a digital starter[24]. Time spent behind a computer cannot be spend on a client. Although spending time behind a computer is necessary for HCP extra time spent due to lack of digital skills should be avoided.

1.4 Preparing for future healthcare

In 2022 the Dutch government came to agreements with healthcare organisations on how to prepare for the future of healthcare. The results are written down in the Integraal Zorg Akkoord (IZA). The agreement was made to maintain good, accessible and affordable care for the upcoming years. In the agreement ambitions and goals on how to get ready for the digitalization and how to handle the rise in work pressure are explained. Digital innovations can improve the outcomes of care by using technologies and upscaling these rapidly. It is stated that in the future HCP should be digitally skilled and be able to provide forms of digital care. To achieve this goal, HCP should get support on improving their digital skills. As of 2025 courses in digital skills will be part of the healthcare education curriculum and thus new HCP will be schooled in these skills[3]. But that still leaves out the HCP that are already graduated and currently working in the field.

In addition to the IZA, the Vereniging Gehandicaptenzorg Nederland (VGN) has an agreement with the healthcare insurances. In this agreement shared goals for a future proof and affordable disability care are stipulated. They state that in 2025 more labour-saving technology should be deployed and that every long-term care patient is entitled to proven technology that enhances their independence[25]. And thus, it is important that in disability care HCP are ready to adapt to these changes and upcoming rise of technologies.

By signing agreements, healthcare organisations have committed themselves to educating their employees in the digital skills that are lacking. The Baalderborggroep and Frion (B&F) are two organisations that work primarily in disability care. They offer different kinds of care options such as guided living, jobs, daily activities and outpatient counselling [26, 27]. Policy makers and managers within B&F have observed that their employees have difficulties with a variety of digital skills such as saving a file in the right place, using shortcuts on the keyboard, making tables in Word, using protective emailing software like ZIVVER or selecting the right printer. In today's work environment they manage without these skills because they ask colleagues for help. But it is the ambition of the management of B&F to improve the digital skills of their employees to the level needed to do their daily work independently.

1.5 How to solve the problem

To be able to meet the objectives in the agreement of IZA and VGN, B&F aim to offer additional digital skills training next to the support they already provide. Support that is currently given are e-learnings about software and sometimes an introduction/class when introducing a new technology. Also, digital coaches, Digi-coaches, are already available for supporting HCP with digital difficulties at Frion but they are not yet implemented at Baalderborggroep. These digital coaches can be contacted by phone in case HCP run into problems. However, at present, the organisations are not training and pro-actively schooling workers in digital skills, because there is a lack of knowledge about the needs and wishes of the employees regarding an additional training support.

The aim of B&F for this future program is to bridge the gap between the digital skill levels of the future graduates of the new curricula and the current employees. Eventually the program should contribute to ensuring the sustainability of quality healthcare by facilitating continuous development in digital skills[28].

In summary, we can conclude that there is a suspected gap in digital skills among employees at B&F. In the opinion of the organisation, training would be key in improving the digital skills of healthcare workers both for their own benefit and to meet the objectives in the agreement. However, there is a knowledge gap regarding the needs of the healthcare professionals regarding training at B&F. The objective of this study is to provide insight into the needs of workers regarding future training for improving their digital skills. To determine those needs, this study investigated the challenges that the employees encounter with the use of digital tools due to lack of digital skills and their unmet needs to overcome these challenges. This leads to the following research question:

"What are the challenges with workplace technology experienced by employees of Frion and Baalderborg due to a lack of digital skills, and what are their own perceptions of the need for support to overcome these challenges?"

2. METHODS

2.1 Design

To find out what challenges HCP of B&F experience with workplace technology and what their perceptions are of their needs to overcome these challenges a qualitative descriptive research has been executed. For quality purposes the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines[29] have been reported in appendix 1.

2.2 Population

This qualitative descriptive research has been conducted among employees of B&F that are actively working in the disability care. The researcher had no prior contact with any of the employees of Frion and Baalderborggroep. The inclusion criteria for participating in this study were:

- Being an employee of Frion or Baalderborggroep.
- Working as a healthcare employee in disability care guiding clients.
- Participated in the selection method and filled in a digital skill test.

2.3 Sampling method

Purposive sampling was conducted regarding the levels of digital skills. To obtain an indication of digital skills, a digital skill test was done. For this a part of the Digivaardig In De Zorg Zelfscan test was used. This test has been made by Digivaardig In De Zorg(Appendix 2)[30]. The category *programs and applications* was used consisting of 20 statements on the use of specific healthcare technology. In this test participants grade themselves between 0-10 on prompts common in healthcare practice for example: "I am good at using the search function in my mailbox." The end score was the average grade given on the test. The digital skill test was done on paper to avoid under coverage bias by employees being unable to participate in filling in online forms due to lack of digital skills. By going to the locations and asking all present HCP to participate, self-selection bias was reduced.

To have a broad and representative study population, locations with different client categories were approached, such as locations that give care to clients with mild, moderate, and severe disabilities, elderly care, and children/teenager care. Every location was physically visited by the researcher. Locations were selected randomly from each category. The locations were, as much as possible, in different regions and cities, prioritizing the different categories over different cities. In total ten locations have been approached, five from Baalderborggroep and five from Frion.

An information document (Appendix 3) had to be added and was given to the participants. Before doing the questionnaire participants had to sign a written informed consent that the information they were about to give was being used in this research. A verbal informed consent was needed for the participation and recording of the interview. It was made clear that participation is voluntary and that they had a withdraw option at all times. Participants were asked if they want to see and check the transcript for approval which all respondents declined.

2.4 Interviews

Data was collected through semi structured interviews carried out by the same researcher. During the semi-structured interviews, the same topics were discussed in each interview but the researcher was flexible to ask additional investigating questions based on the interviewee's answers. Thus information about the use and skills of technology could be obtained from the users directly as well as information on what they need to improve their skills.

The topics of the interviews were based on literature studies and findings of other healthcare organisations researching digital skills or promoting ways to improve these. The topics with literature references? are presented in appendix 4. To make sure every interview covered the same subjects an interview scheme was made (Appendix 5). Questions were as much as possible open on purpose and aiming to be inviting for elaboration. Questions were stated clearly, avoiding multi-interpretable language and suggestive wording. However, during the interviews not all questions could be phrased as open questions, of which an example is "Do you have the need for support right now?". The interview scheme was pilot tested with two HCP and a student of University of Twente to test for the relevance of the topics and understandability of the questions by the healthcare workers. The way in which questions were formulated were adjusted after the test interviews. In addition, after several interviews had been taken, to better suit the answers of interviewees, some questions were once more adjusted such as the questions about the current available support. These questions were first received as if the respondent was being interrogated about the currently available sources of support, whereas the intended reply was about the respondent's experience. This gave some strange interactions, and the question was being rephrased to if they knew where seek support and if they make use of it. This way the interrogative nature of the interview was minimalised, which improved the cooperation and openness of interviewees during the interview.

The interviews were held face to face on the work locations of B&F only the researcher and the respondent were present during the interview. During the interviews the participants' non-verbal expressions were not noted down as field notes. The participants were asked to elaborate on their replies given based on for instance their facial expressions. The duration of the interviews ranged from 14 to 26 minutes with an average of 20 minutes with a SD of 4 minutes 42 seconds.

No prior assumptions were made about the number of interviews that needed to be performed, but interviewing stopped when saturation was reached. For feasibility reasons, it was decided that if after 6 weeks of interviewing or on May 31 saturation was not reached inclusion of further participants would be stopped.

2.5 Data analysis

To analyse the interviews content analysis was used. With content analysis the results of text and speech have systematically been analysed[31]. The interviews have been recorded, and verbatim transcriptions were made by the researcher with the help of Amberscript. Atlas.ti was used to support the analysis of the transcripts.

After reading the transcripts multiple times open inductive coding was used to identify relevant information and sub-codes were created. Each created code consisted of a unique statement or piece of information. After that, axial coding was done to create categories and bundle the open codes. Selective coding was used to create the themes for the results: basic use, multi-step processes, hypermedia navigation, additional disruptive factors. Subsequently deductive coding was used to divide the individual challenges according to the Van Deursens framework (see chapter 1.1) grouped by the themes.

Because this analysis was based on human experiences a constructivist perspective was taken. Multiple interpretations and outcomes were possible and therefore the diverse perspectives of the participants were prioritised over seeking a singular truth. It was essential that the analysis remained open for the various insights provided by the interviewees.

This analysis had a postpositive stance, acknowledging that findings might provide valuable insights without fully explaining the complexity of the phenomenon. Instead of seeking absolute explanations or solutions, this research focussed on providing nuanced understandings reflecting the multifaceted problem.

2.6 Ethical considerations

Because this research was human related an approval of the BMS faculty Ethics Committee (BMS-EC) of the University of Twente was required. Approval was given at 04/04/2024, request number: 240373.

2.7 Data management

The digital skill test could not be done anonymously because the participants were being approached based on their scores. The tests have been destroyed after selection. Participants have been informed about the fact that access to their data was restricted to the researcher only. In the report their names have been anonymized. The interviews, transcripts and recordings have also been anonymized. The data will be stored on a secure P drive of University of Twente for ten years. This data can only be seen by the researcher and supervisors of the University of Twente.

3. RESULTS

The digital skill test was administered at 10 locations where 36 responses were collected. One of these responses was excluded due to the lack of permission to record the interview, and another was excluded because the skill test was filled out incorrectly. Thus 34 responses have been included in the selection out of which twenty interviews were scheduled. Four of them were cancelled due to external practical difficulties. From the final included respondents the highest scoring 8 had an average score of 8.24 with a SD of 1.17, ranging from 6.55 to 9.9 the lowest scoring 8 had an average of 7.10 with a SD of 0.68 ranging from 6 to 8.2. Within the pre-determined time frame on May 31 sixteen interviews had been held. The characteristics of respondents that were invited for an interview are shown in table 1. Note that the respondent number is randomly assigned and does not correspond with the respondent's number in subsequent results sections due to privacy reasons. The finalized coding scheme with explanations is shown in appendix 6.

Respondent	Age in years	Gender	Highest educational level	Work experience in healthcare (years)	Digital skill test score
1	19	Female	Verzorgende IG'er	5	7.15
2	31	Male	MBO-4	3	8.75
3	60	Female	Begeleider	40	7.15
4	55	Female	HBO	10	6.6
5	28	Female	HBO	3	7.4
6	34	Female	MBO-4	12.5	8.2
7	31	Female	MZ/VZ niveau 4	0.5	7.2
8	33	Female	MZ/VZ niveau 3	7	8.7
9	51	Female	2-verpleegkundige	32	6
10	53	Female	Z-opleiding	32	6.55
11	27	Female	Verpleegkundige	9	9.9
12	62	Female	Verzorgende IG'er	30	7.6
13	50	Female	MBO-4	33	8.2
14	24	Female	MBO-4	9	9.4
15	59	Female	MBO-4	3	7.15
16	55	Female	MBO-4	31	6.65
Average	42			16.25	7.67
Standard Deviation	14.78			13.89	1.10

Table 2: Characteristics of respondents

3.1 Challenges with workplace technology

Various challenges due to a lack of digital skills were found in this study. This chapter outlines them following van Deursen’s classification (see chapter 1.1) of digital skills [14] into operational, information, and communication skills. Participants’ examples of challenges met were placed into these three categories. (Figure 1). No examples of challenges were given in van Deursen’s fourth category: content creation skills. Therefore, content creation is not included in figure 1.

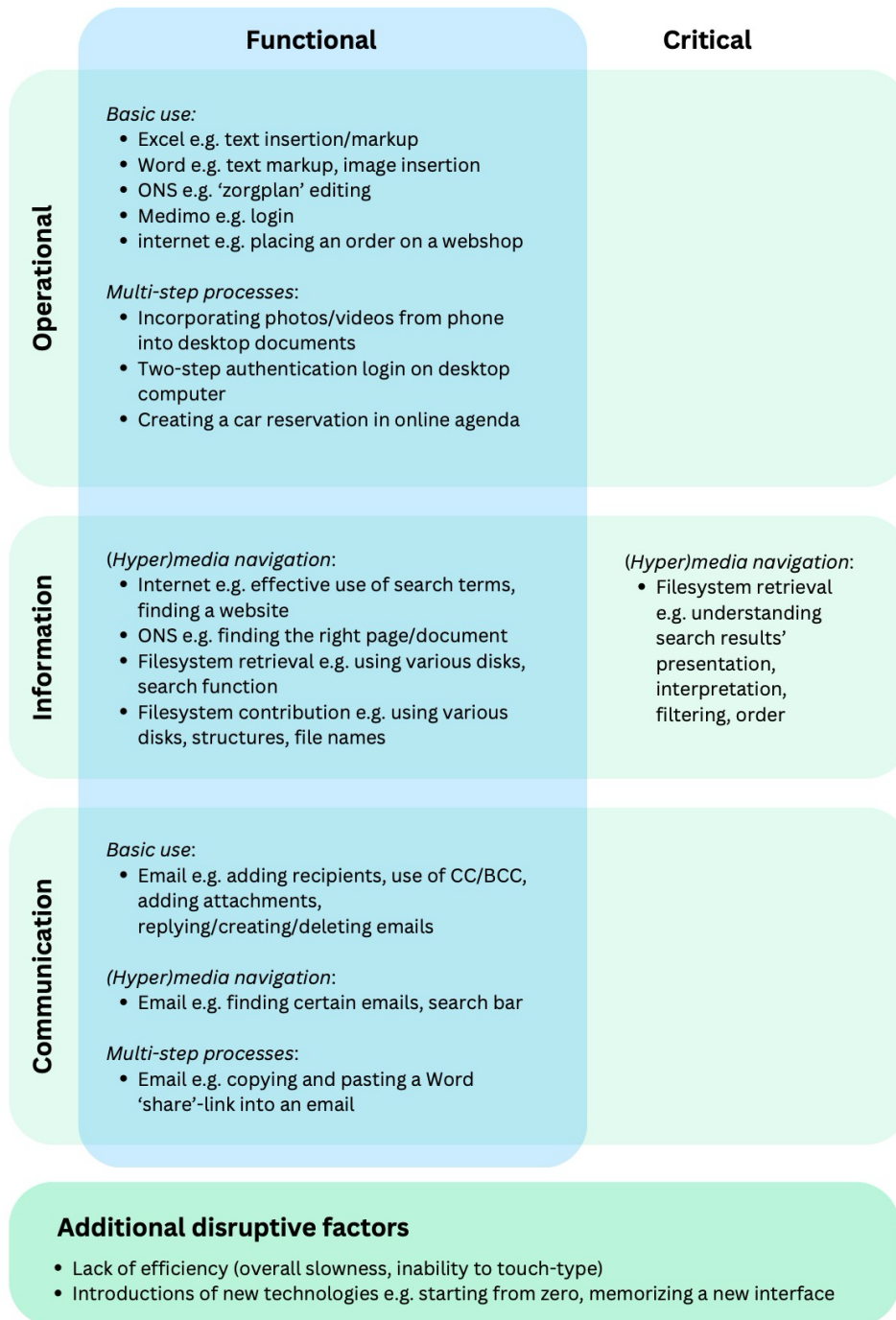


Figure 1: Challenges found sorted to definition of digital skills. Functional skills are executive actions, while critical skills entail the understanding and consequence of technology use. The three categories van Deursen identified are: operational skills such as for example connecting with the internet or installing applications, information skills is about looking up information and selecting information, communication skills include using online communication platforms and adjusting privacy settings.

3.2 Operational skills

In this chapter the challenges experienced by HCP will be outlined starting with the biggest suppliers of challenges in each category.

3.2.1 Basic use of software

As can be seen in figure 1 within the operational skills category the challenges experienced by HCP relating to basic use of standard software, come down to four software programs and use of online webshops.

Basic use:

1. Word e.g. text markup, image insertion
2. Excel e.g. text insertion/markup
3. ONS e.g. 'zorgplan' editing
4. Medimo e.g. login
5. Internet e.g. placing an order on a webshop

Word is often used by HCP for different tasks such as making lists, creating tables, making house rules overviews, printing information sheets to be displayed in public areas, making posters for events, making posters for birthdays, printing coloring drawings or making reports. This scale of different purposes requires different Word functionalities to be used. Participants indicated that adding or removing rows in tables or editing text and more advanced use of Word, like inserting pictures and making posters with the right positions and pictograms, frustrated them because they were not able to use the correct functions of Word to fulfill their objective.

Excel is commonly used for bookmaking and for planning financial expenses of clients. Similar to the challenges indicated with Word, HCP experienced challenges due to not being able to identify the right software buttons for specific commands.

"I avoid working with Excel. I let other people do it for me because I simply can't." (R.1)

ONS software is the electronic patient filing software of B&F. It is being used to document client reports and care plans of clients. ONS is also used to store client related documents. ONS is the client related software that is most frequently used by HCP and the participants were all skilled in using the basics of ONS to their needs and wishes with almost all functions. However editing care plans is often unsuccessful and the study participants regularly need help from a colleague or the ICT helpdesk.

Medimo is software used for medication registration. Medimo was recently introduced and was leading to more support need for the HCP because participants indicated having problems with logging into the software and getting to the right page. Participants indicated that newly implemented technologies caused more challenges for more HCP because they need some time to adapt.

“Something new is just difficult and that leads to a lot of questions yes”. (R.8)

Using internet to access the site of a supermarket for groceries was also identified as a challenge for some HCP. A participant mentioned that a co-worker was unable to google the correct site.

“Recently I had a co-worker who was not at all familiar with internet. She did not even know how to get to the supermarket website.” (R.14)

3.2.2 Multi-step processes

Most notable, any task that requires multiple actions are more likely to cause challenges for the HCP. Even more so if this task has to be performed multiple times each day. A multi-step process is a task that requires multiple steps in different applications/programs to fulfill the task. For example, two step verification log in requires the computer to log in after which the authenticator application requires you to confirm a unique PIN on your mobile phone to log in.

Multi-step processes:

1. Two-step authentication login on desktop computer
2. Creating a car reservation in online agenda
3. Incorporating photos/videos from phone into desktop documents

The multi-step process most frequently referred to as a challenge was the logging in through a two-step verification. This two-step verification log in procedure is a frustrating challenge for many of the participants. Either because the respondents are unable to log in independently or because the participants find it too time consuming. The participants who cannot log in independently feel limited by not being able to complete this task several times a day, while the participants who find it too time consuming feel annoyed by wasting time that could have been spent on doing other care related activities.

“Logging into the system is such a nuisance. It takes a lot of time to access anything. You turn on the computer, you need to log in and then you have to wait for a text message to your phone, which, nine out of ten times says ‘denied’ and then you have to try again and again, yes it actually takes an awful lot of time.” (R.11)

Frustration is being aggravated by the frequency of the log in procedure. On the other hand multi-step processes that are only sporadically done also cause challenges. For instance, booking the shared car was experienced as a challenge because it requires access to shared agendas via location specific team email accounts. The participants indicate that memorizing these numerous subsequent steps is hard. Finally, multi-step processes are challenging because of the sheer number of steps to be taken. For instance, uploading a photo from a smartphone into a patient file requires emailing the photo to oneself, downloading it on the computer and finally uploading it into the client related software; most importantly in the correct patient’s file.

3.3 Information skills

3.3.1 (Hyper)media navigation

Hypermedia navigation was found challenging by many HCP amongst the participants and of their co-workers. Hypermedia navigations consist of various activities such as surfing on the internet, looking for a webshop that sells a specific article or searching for information. Hypermedia is defined by using different forms of information to navigate menus, applications, file systems, websites e.g. using folder links and pictograms to navigate or sort document management files.

(Hyper)media navigation:

1. Filesystem retrieval e.g. various disks, search function
2. Filesystem contribution e.g. various disks, structures, file names
3. ONS e.g. finding the right page/document
4. Internet e.g. effective use of search terms, finding a website

The number one problem identified was document management within the filesystem of the organisation. The HCP must make and save, access and read, upload and download different files in different folders. All HCP have their own folders but also need to access the protected and shared folders of the organisation. These folders are challenging to navigate and use. Participants are constantly looking for files created by colleagues or files created by themselves. The participants claim that files are being moved and that considerable time is needed to look for files they knew how to find before.

Participants do not understand how the file management system works. Most have no clue how to navigate to specific files. This ignorance around locating files was also referred to as a safety concern because files with client data are saved in non-protected places.

“Suppose I’ve made a list that I would like to save so I can update and use it again next month ... Well then, I don’t know where it goes, I cannot see where it goes, I don’t know how to properly save it. So, where does my list end up? Everywhere, nowhere! I sometimes literally find it in the weirdest places.”
(R.4)

This challenge is also classified under critical skills (see figure 1) because while looking for files you can either click all the correct folders and search manually or you can use the search function and find the documents in that way. For this search function you need an understanding of how the search term affects your search results and also how specific filter options such as: *last edited* can help finding files.

3.4 Communication skills

3.4.1 Basic use

Email is used by all HCP in their day-to-day work as the main form of electronic communication. All HCP can send an e-mail to a single recipient. However, challenges arose when sending group e-mails, adding attachments and retrieving past emails.

Basic use

1. Email e.g. adding recipients, use of CC/BCC, adding attachments, replying/creating/deleting emails

A large number of HCP had challenges with sending emails with attachments. For instance, making sure the attachment was in the right place or finding the document that needed to be added as an attachment in the first place. In addition, some HCP do not know how to add a group instead of all group members individually. Finally, some HCP did not know what CC and BCC are used for. Sending emails with people in CC instead of BCC could potentially lead to data leakage.

3.4.2 (hyper)media navigation

Some emailing tasks require (hyper)media navigation.

1. Email e.g. finding certain emails, search bar

Navigating to the right mailbox where emails are and accessing them was also identified as challenging. Every location works with generic email addresses (not associated with a specific person or role) and the HCP's personal addresses. The generic addresses are shared by multiple users.

“Well about email problems, colleagues ask me about, like, how can I go back to it? Or why can't I find this email on this list? I explain it to them again and again because they keep coming back with the same question.” (R.8)

3.4.3 Multi-step processes

1. Email e.g. copying and pasting a Word 'share'-link into an email

Sometimes with email communication specific files are exchanged. This requires a multi-step process beforehand. HCP indicated that sharing a Word document by copy pasting the sharing link in an email, required many steps which were hard to memorize and perform.

3.5 Experiencing these challenges

3.5.1 Consequences of experiencing challenges

Experiencing these challenges in some cases eventually leads to HCP avoiding working with certain software. Excel stood out as the first to be skirted. This was also due to a lack of usage earlier and in present time. In other words, most HCP do not use it often enough to remember how specific functionalities work. Word, which was often used, was also avoided for specific tasks because people found them too challenging, often in combination with delegating tasks to a co-worker with better digital skills. Leading to the non-efficient situation in which time of two colleagues is spent on a task that each individual employee should have been able to perform independently. The frequency of problems differs amongst respondents but varied from multiple times per week to once every 2 months. The more digital skill challenges a participant experienced, the more it impacted their reported job satisfaction. One respondent eventually switched jobs because she could not cope with the technological part and did not receive the support she needed for that.

“I really notice it. If it weren't for the technology part I would truly enjoy my job much more. That's the extent to which it affects me!”(R.4)

3.5.2 Who experience these challenges

When asked about who experienced the problems the respondents tended to believe that the elderly employees (digital immigrants) have more problems than the younger ones (digital natives) but agreed that this was not always the case. Elderly co-workers with great interest or experience in technology sometimes perform better than young professionals. New employees or employees with a low interest in technology were also identified as experiencing more challenges.

3.5.3 Dealing with the challenges

HCP dealt with the problems that faced them mostly in three ways:

1. Ask a co-worker
2. Call ICT helpdesk
3. Leave or avoid the task

Sometimes HCP leave tasks and let the shift after them solve the problem. All respondents agreed that as a team they almost always found a solution.

3.6 Need for support

When asked about the need for support the respondents agreed that physical training was needed when new technologies were introduced, or software updates were installed. Responses suggest that changes in the interface without explanations cause irritation, stress and loss of time. The respondents experiencing most challenges have a need for schooling and are willing to participate in computer courses and software training. The more digitally skilled respondents state to not need active schooling but need a more reactive support method. The largest concordance was in proponents of a helpdesk because most were not in need of an active course but needed a place or a person to go to when facing a problem or challenge. Manuals were discussed as potentially useful but the ONS software already has a handbook of instructions that is too big and not very handy.

At B&F the ICT service desk was used by the respondents when encountering problems allowing the ICT staff to take remote control of their computer and fix their problems. Respondents preferred to make use of colleagues or Digi-coaches (Frion) they were acquainted with. They also found that the ICT support was more useful for account problems or logging in problems than finding documents in the filesystem or editing in Word.

For the technology currently used, help should always be available for new employees and current employees to continuously improve their digital skills. HCP noted that colleagues, out of necessity,

have adapted and learned how to navigate technology themselves. But many irritations, stress and mistakes by ignorance could have been prevented if there would have been more support. In addition, one respondent emphasized that addressing digital challenges is really important.

“If I had had more support it would have reduced my stress levels at that location ... I gave out my cry for help on day one but had to wait for more than a year ... so I left” (R.9)

3.7 Additional disruptive factors

Overall efficiency in use of digital tools was a point for improvement according to many participants. This efficiency should be found in improving speed of action in performing tasks. When watching along with co-workers or asking questions HCP sometimes see screens and methods for the first time in applications they use regularly. The knowledge of shortcuts and the most efficient way of navigating was hard to identify because of ignorance. Especially elder employees were also not able to type with ten fingers whilst continuously looking at the computer screen and this was also found to be inefficient.

When facing new technologies or still exploring the usage of software, more challenges were faced by HCP. The ease with which a new tool was adapted differed per person but was found to present more challenges.

The use of technology in general required more focus among elder employees than younger ones causing technological tasks to be more time consuming.

“Well, I also notice, for example, when I have to do something on the computer, that I just need to sit alone for a moment. And I think that's the same for older colleagues because they can't tune out and do things on the computer while also being on the phone, or whatever. I need to sit alone for a moment and then I can manage just fine.” (R.12)

3.8 Data saturation

After a number of interviews saturation can be met. This being the case when additional interviews do not lead to the creation of new codes in a folder. In this research no saturation was met.

4. DISCUSSION

The goal of this research was to identify what challenges employees of B&F experience with workplace technology and what their perceived needs for support are to overcome these challenges.

4.1 Main findings

This study identified fifteen challenges HCP face with workplace technology (see chapter 3.1 figure 1). These challenges occur at different digital skill levels and vary individually. The consequences of these challenges are that HCP cannot work with technology independently and efficiently. This is negatively affecting their job satisfaction, requires extra time and increases turnover rates among HCP (see chapter 3.5).

Basic software challenges indicate that some HCP struggle with basic technology use in general. The use of pressing buttons and understanding the consequences of clicking and navigating is lacking in this cohort. The HCP experiencing these challenges are often digital immigrants. These digital immigrants, opposed to digital natives, were not raised surrounded by technology and can therefore not adapt as easily to technology since they only learned this as adults [32]. The challenges faced by this group are basic digital skills, understanding and working with technology in a way that it is designed to.

HCP that do have the basic digital skills to perform more basic tasks independently still sometimes face challenges. These challenges relate to the more advanced digital tasks. Often occurring when doing tasks that require multiple steps and multiple programs. When experiencing these challenges, the HCP ask each other for help or reach out to ICT support. For these challenges they are in need of on-demand support.

Another category of challenges prominently found was (hyper)media navigation; searching and finding of documents which are stored on personal or organisation network drives. To be able to find the correct document you can use two methods. Either you manually click every folder until you find the path to the wanted document or you know the name of the document or folder and you use the search function to find the designated document. Many HCP have problems with finding documents created and saved by either themselves or the organisations and this also means that they create the same document multiple times. With this challenge much time is lost due to time spent on looking for files that the HCP know exist and then ending up remaking the file all over again.

Email is used by HCP as the main form of communication. All HCP face challenges with emailing (see chapter 3.1 figure 1). When using emailing software challenges are found within basic use, navigation and multi-step processes. The challenges are found within functional operating of technology and not

with the use of writing texts. Adding attachments and making email lists in the correct and safe way was also found to be challenging. These challenges not only increase the time spent on searching for the right email but also increase the risk of data leakage. In general the email software is not being used to its full potential.

Almost all challenges found within this study pertain to the functional aspect of digital skills, which means executive actions. One reason for this may be that most of the participants did not experience significant challenges themselves, but observed the identified challenges faced by their colleagues. In contrast, critical skills that entail the understanding of technology might not be observed in colleagues that easily. Unconscious incompetence- being unaware of critical deficiencies-, among our study population could contribute to this finding. This assumption is made because a large number of HCP complained about specific technology not working properly while others did not have any problems with this particular technology at all.

A lack of understanding what buttons do, causes problems with updates, when functionalities do not change but the interface does, suggesting that HCP learn sequences of clicks instead of knowing what buttons actually do. It should be observed that it is not clear if the source of the problems is functional or critical. In this study the collected data was insufficient to clearly distinguish these factors.

Ideally, all HCP would develop a better understanding of what goes on behind the buttons. Understanding what search words do, how filtering information works and recognizing the security risks of technology would enhance their ability to adapt to new systems and updates without significant disruption of their workflow, ultimately improving their job satisfaction. Previous research showed that employees with better digital skills work more efficiently and experience less stress leading to longer tenure[33, 34].

4.2 Digital divide

Substantial differences were brought to light with respect to the individual digital skills levels and corresponding effects on everyday work. The same differences were also found in previous research that identified the lower digitally skilled HCP as digital starters. They were defined as HCP that either scored an insufficient on the self-test or that labeled themselves as: not so digitally skilled[21]. Digital starters face challenges every day creating friction for themselves and their co-workers. HCP with higher digital skills that are able to perform multi step processes and hyper media tasks also experience challenges but far less often than the digital starters. Yet they are affected by the problems of the digital starters every day. They are being approached for assistance repeatedly. When their shift starts they are confronted with unfinished business of colleagues who could not cope with some of their daily tasks. This research did not look into the effects of transferring work to colleagues and how this might affect

job satisfaction. But HCP indicated that having to assist co-workers with very basic tasks over and over again did cause frustration. So on closer inspection of the results it appears that the digital divide that is expected to grow bigger between graduating HCP and HCP already working (see chapter 1) is already emerging in health care today. The results confirm that this is a problem that needs to be addressed by schooling.

Although not all employees would happily accept and support active schooling, active schooling in digital skills is becoming a popular part of worldwide healthcare educational programs. Recommendations of enhancing digital skills even starts in undergraduate nursing students[35]. Curricula containing digital skills and how to use them are being developed and provided by schools[36, 37]. To not let the gap in digital skills between graduating HCP and HCP already working grow bigger active schooling is advised. In extension of this lies the recommendation to define digital skills as a competency for the organisations so levels of skills can be tested, and employees also have a goal of skill to achieve. Reaching this in the right way can be challenging for the organisation because putting obligations on their employees can cause resistance. It can also cause HCP to stop working because they think they cannot meet these requirements. To maintain skilled HCP continuous development in digital skills should be emphasized and supported by the organisations [38].

Currently a form of support that is being more and more implemented among organisations is a Digi-coach. A Digi-coach is an employee that focusses on guiding and coaching HCP with their digital skills[39]. With the findings of this study, the Digi-coach could help coaching the employees with various levels of digital skills to the right type of support. The Digi-coach could also function as a helpdesk for all employees that face challenges with digital skills. This personal guidance facilitates tailored and informal support to help all HCP.

4.3 Recommendations for support from the organisations

Based on the study findings, there are three clear recommendations for the B&F organisation:

1. **Targeted digital skills training for digital starters:** Develop and implement training that is tailored to the specific needs and skills of healthcare professionals with low digital skills. The emphasis should be on document management (storing and retrieving files) and e-mail use. Better digital skills in these two areas means less wasted time and greater efficiency in daily operations.
2. **Availability of Digi-coach/helpdesk:** Provide an accessible Digi-coach or helpdesk that can directly support healthcare professionals and provide tailor-made advice on possible further training.
3. **Proactive and reactive support:** Combine proactive education with reactive support to continuously support healthcare professionals in their development of digital skills.

4.4 Strengths and weaknesses

This study has multiple strengths and weaknesses. By going to eight different locations, a more spread-out sample group was created and the differences between locations could not be a confounding factor. Selection bias was also minimized by going to a location and asking all working HCP at that moment to participate. Downside to this was that of every location four employees were asked to be included in the digital skill test meaning that some of the lowest scoring individuals had the same level of self-reported skills as the highest of other locations.

Due to purposive sampling, no conclusions can be drawn from the prevalence of HCP that face challenges using workplace technology. By selecting the highest and the lowest scores of the digital skill test a varied sample group with perceived levels of digital skills were chosen but this does not represent the prevalence of HCP experiencing challenges correctly. Although self-reported questionnaires are not qualified enough to measure absolute digital skills in comparison to other more objective measurements methods such as a performance measurement. For this research that was not the goal of this test. The goal was to have a sample size with variation in perception of digital skill level. Limitations of a self-reported score is that it is influenced by the respondents' perceptions and the context and reference group used to compare their own skills to. Despite these limitations, the digital skill test is still a valuable tool to select a study population with a varying perception of level of digital skills, ensuring that respondents are relevant to the research question and representing the different types of employees in term of digital skill levels.

4.5 Limitations

The goal of reaching saturation with the number of respondents was not met and due to an beforehand defined end date only 16 respondents were interviewed. With 187.000 HCP working in disability care the results of this research cannot be generalized due to the small sample group taken. In addition to that, the results were potentially biased in being more female oriented because out of 16 respondents only 1 was male and the rest was female. When looking at disability care in the Netherlands the majority is female and 19.2 % is male[40]. The sample group is therefore more dominated by females than the generalized population of HCP. The average age was also higher among respondents than among the general population. For saturation to be met more interviews should have been conducted. It is unsure how many more interviews should have been done to reach saturation.

With the use of semi structured interviews, a flexible approach was used to gather additional information and allow for in depth questions and elaboration along the way of interviews. This can cause the data to be more difficult to compare.

4.6 Recommendations for future Research for B&F

1. There are multiple known causes for low digital skills (see chapter 1.2) e.g. low literacy, age, education level, interest, practice etc. For future support to be tailored to the needs of HCP it is important to know what causes the low digital skills of the HCP at B&F. A follow up study should contribute to answering the question of what the content of the training support should be based on the root causes found.
2. Because there are multiple needs for HCP with different levels of digital skills research should also be done on how to identify different types of users and how well they are performing in terms of digital skills. While doing this, HCP can be divided into different cohorts and the most fitting support can then be offered to the right person.
3. Another follow up study could be about identifying the basic level of digital skills needed for HCP working at B&F. Thus a competency profile of digital skills that HCP should possess can be created helping with supporting, testing and finding the right matches between support and employee. Ultimately, competency profiles can be used in job application procedures.
4. In the long term, future research should focus on developing and evaluating interventions aimed at improving digital skill competencies among HCP. Studies should be done to explore the effectiveness of diverse given training/support tools. In addition to that, investigations into the long-term impact of improved digital skills of HCP on themselves, job satisfaction, healthcare quality and patient outcomes should be done.

5. CONCLUSION

After this research an answer can be given to the research question: *"What are the challenges with workplace technology experienced by employees of Frion and Baalderborg due to a lack of digital skills, and what are their perceived needs for support to overcome these challenges?"*

HCP of B&F experience challenges with workplace technology due to a lack of digital skills. The HCP with the lowest digital skills that experience most challenges are open for support and need active schooling to improve their digital skill level. HCP with higher digital skills levels prefer on-demand support. Because of this divide in needs not a singular solution can bridge the gap in digital skills, but two types of support should be implemented by B&F:

1. Active digital skills training
2. On-demand digital skill support

A solution that can contribute to both forms of support is having Digi-coaches on the work floor. Digi coaches can engage in conversations with HCP to determine individual needs for support besides offering real-time support on a daily basis. Implementing these forms of support for digital skills is expected to reduce stress, increase job satisfaction, improve quality of work, save time, lower risk of digital errors and decrease turnover rates of employees.

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APPENDICES

Appendix 1: COREQ guidelines

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	14
2. Credentials	What were the researcher’s credentials? E.g. PhD, MD	0
3. Occupation	What was their occupation at the time of the study?	0
4. Gender	Was the researcher male or female?	Male
5. Experience and training	What experience or training did the researcher have?	2
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	13
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	14
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	14
Domain 2: study design		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	15
<i>Participant selection</i>		

10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	13
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	14
12. Sample size	How many participants were in the study?	17
13. Non-participation	How many people refused to participate or dropped out? Reasons?	17
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	15
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	15
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	17
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	14
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	14
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	15
20. Field notes	Were field notes made during and/or after the inter view or focus group?	15
21. Duration	What was the duration of the inter views or focus group?	15
22. Data saturation	Was data saturation discussed?	23
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	14
Domain 3: analysis and findings		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	15

25. Description of the coding tree	Did authors provide a description of the coding tree?	17
26. Derivation of themes	Were themes identified in advance or derived from the data?	15
27. Software	What software, if applicable, was used to manage the data?	15
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	17-23
30. Data and findings consistent	Was there consistency between the data presented and the findings?	17-23
31. Clarity of major themes	Were major themes clearly presented in the findings?	17-29
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	17-29

Appendix 2: Digital skill test

Programma's en applicaties

De volgende vragen gaan over de verschillende programma's en applicaties waar in jouw sector mee gewerkt wordt. Hoe beter je deze programma's en applicaties beheerst, hoe makkelijker jouw werk wordt en hoe meer tijd je voor de cliënt overhoudt.

- Ik ben handig in het opstellen en versturen van een mail, het beantwoorden en het doorsturen van een ontvangen mail.
- Ik ben handig in het invoegen van bijlagen bij een e-mail en het opslaan van ontvangen bijlagen.
- Ik ben handig in het werken met de agendafunctie (checken wie geaccepteerd heb-ben dan wel verhinderd zijn, het agendaverzoek aanpassen qua tijd, genodigden en/of locatie).
- Ik ben handig in het gebruiken van de zoekfunctie in mijn mailbox.
- Ik ben handig in het bewerken en opmaken van teksten in Word (afbeelding of tabel invoegen, kopjes toevoegen en lettertype wijzigen)
- Ik ben handig in het maken van een eenvoudige presentatie in PowerPoint
- Ik ben handig in het maken van een eenvoudig Exceldocument (opmaken, rij-en/kolommen/cellen toevoegen en verwijderen).
- Ik ben handig in mijn rooster inzien en zaken aanpassen, verlof- en vakantieuren inzien en aanvragen (Bijv. in Aysist).
- Ik ben handig in het scholingsprogramma (bijv. mijn Leeromgeving), zoals het in-schrijven voor een opleiding of indien mogelijk een e-learning volgen.
- Ik ben handig in het opzoeken en inzien van salarisstroken, (reis)kosten declareren en persoonlijke gegevens aanpassen, registratie van mijn jaargesprek (bijv. Afas of eHRM).
- Ik ben handig in het werken in het ECD. Denk aan: rapporteren, gegevens van cliën-ten opzoeken/toevoegen, een ondersteuningsplan lezen en bewerken (bijv. Nedap, Cura).
- Ik ben handig in het maken van een MIM of MIC-melding (Melding Incident Medewerker/Cliënt).
- Ik ben handig in het registreren van medicatie in het daarvoor bestemde programma (zoals bijv. Medimo, Farmed).
- Ik ben handig in het melden van storingen, reserveren, aanvragen technische dienst.
- Ik ben handig in het (indien mogelijk) inloggen zowel thuis als op het werk op het portaal/intranet.
- Ik ben handig in het invullen van mijn contactgegevens en vindbaar zijn op het portaal/het intranet of andere applicatie.
- Ik ben handig in het gebruiken van het portaal/het intranet of (Kennis Management Systeem) bij de uitvoering van mijn werk (zoals het opzoeken van nieuwsberichten, documenten, mensen, adressen of protocollen).
- Ik ben handig in het accepteren van een beeldverbinding via Teams, Zoom of ande-re beeldapplicaties.
- Ik ben handig in het maken van een beeldverbinding via Teams, Zoom of andere beeldapplicaties.
- Ik ben handig in het aan- en uitzetten van mijn beeld en geluid en chatten in Teams/ Zoom/ of andere beeldapplicaties.

Appendix 3: Information form participants

Toestemming deelname onderzoek naar digitale vaardigheden

Datum opstellen 25-03-2024

Studie informatie

Het doel van dit onderzoek is om inzicht te krijgen in de problemen waar zorgverleners tegenaan lopen met betrekking tot hun digitale vaardigheden. Met deze informatie kan er een geschikte oplossing komen vanuit Frion en de Baalderborggroep en kunnen de vaardigheden op een gewenste manier worden verbeterd.

Deelname aan dit onderzoek bestaat uit 2 delen:

1. Het invullen van de digitale vaardigheden test.
2. Mogelijk een interview

Om te onderzoeken hoe de zorgverleners indien nodig graag hun vaardigheden zouden willen verbeteren worden er interviews afgenomen. Om zorgverleners te spreken met verschillende vaardigheden worden mensen geselecteerd aan de hand van een digitale vaardigheden test. Van de deelnemers die de digitale vaardigheden test invullen wordt de helft uitgenodigd voor een interview.

De gegevens van de vaardigheden test worden alleen gebruikt voor het selecteren van personen die worden geïnterviewd en na de selectie zullen deze testen worden vernietigd. De interviews zullen worden gebruikt voor het onderzoek en worden dus audio-opgenomen en uitgeschreven. U krijgt de mogelijkheid om deze uitgeschreven interviews eerst te accorderen voor gebruik.

De informatie die in het interview wordt verstrekt gaat gebruikt worden in het onderzoek. Het interview wordt anoniem verwerkt. De gegevens zullen worden bewaard op een beveiligde schijf, waar alleen de onderzoeker en begeleider van de Universiteit Twente toegang tot hebben en het zal daar 10 jaar worden bewaard.

De informatie uit de interviews wordt geanalyseerd en gebruikt om te onderzoeken op welke manier de baalderborggroep en Frion hun medewerkers ondersteuning kunnen bieden bij digitale vaardigheden.

Deelname aan dit onderzoek is geheel vrijwillig en u kunt zich op elk moment terugtrekken zonder opgave van reden.

Contactgegevens onderzoeker voor meer informatie:

Finn van den Aakster,

Student Gezondheidswetenschappen, Universiteit Twente,

f.vandenaakster@student.utwente.nl,

06-13910496.

Als u vragen heeft over uw rechten als deelnemer aan het onderzoek, of informatie wilt inwinnen, vragen wilt stellen of zorgen over dit onderzoek wilt bespreken met iemand anders dan de onderzoeker(s), neem dan contact op met de secretaris van de Ethische Commissie/domein

Toestemmingsformulier voor *digitale vaardigheden in de zorg*

U KRIJGT EEN KOPIE VAN DIT TOESTEMMINGSFORMULIER

Gelieve de juiste vakjes aan te kruisen

Ja Nee

Meedoen aan het onderzoek

Ik heb de studie-informatie van [25/03/2024] gelezen en begrepen, of het is mij voorgelezen. Ik heb vragen kunnen stellen over het onderzoek en mijn vragen zijn naar tevredenheid beantwoord.

Ik stem er vrijwillig mee in om deel te nemen aan dit onderzoek en begrijp dat ik kan weigeren vragen te beantwoorden en dat ik me op elk moment kan terugtrekken uit het onderzoek, zonder dat ik een reden hoef op te geven.

Ik begrijp dat deelname aan het onderzoek inhoudt dat ik de digitale vaardigheidstest moet invullen en eventueel kan worden uitgenodigd voor een audio-opgenomen interview.

Ik begrijp dat de informatie die ik aanlever gebruikt zal worden voor de scriptie van de onderzoeker. En dat de baalderbroggroep en Frion de informatie uit de scriptie zullen gebruiken voor het toekomstige gebruik van oplossingen en implementaties voor digitale vaardigheden.

Ik begrijp dat persoonlijke informatie die over mij is verzameld en die mij kan identificeren, zoals mijn naam, leeftijd, opleidingsniveau, niet buiten de onderzoeker zal worden gedeeld.

Ik ga ermee akkoord dat mijn informatie kan worden geciteerd in onderzoeksresultaten.

Ik ga ermee akkoord dat er een audio-opname wordt gemaakt wanneer ik word geïnterviewd.

Handtekeningen

Naam van de deelnemer

Handtekening

Datum

Appendix 4: Interview topic list

Topics	Potentiële uitkomsten	Bron
Inzicht krijgen in het technologie gebruik tijdens het werk.	Identificeren van gemeenschappelijke veel gebruikte tools.	[41]
Inzicht in comfort levels van het gebruik	Benadrukt gebieden voor vaardigheidsverbetering en ervaringen van gebruik.	[41]
Het evalueren van de perceptie van werknemers over hun vaardigheid in het bedoelde gebruik van technologieën.	Gebied van aandacht voor een kritisch aspect, begrijpen en volgen van de bedoelde werkwijze van technologie.	[14]
Inzicht in wat voor soort vaardigheden van toepassing zijn.	Aandachtspunten krijgen in welk soort vaardigheden aandacht nodig kunnen hebben voor verbetering.	[14]
Inzicht in welke problemen worden ervaren en wat ze er nu aan doen.	Aandachtspunten krijgen met specifieke problemen en knelpunten waar medewerkers tegenaan lopen en wat ze nu als oplossing toepassen.	[42]

Inzicht in de sociale omgang met problemen.	Inzicht in mogelijkheid voor kennis delen en trainingen.	[42]
Inzicht in bekendheid van ondersteunings mogelijkheden.	Inzicht in huidige stand van zaken binnen dit aandachtsgebied.	Opdrachtgevers
Evalueren van aandacht van organisaties m.b.t. digitale vaardigheden.	Inzicht in huidige stand van zaken binnen dit aandachtsgebied.	Opdrachtgevers
Inzicht in voorgaande trainingen/ ondersteuning vanuit de organisatie.	Effect van voorgaande interventies. Feedback op manier van training	[8]
Inzicht in meningen over het verbeteren van de vaardigheden.	Identificeren van individuele verbeter onderdelen.	[8]
Verzamelen van input voor toekomstige ondersteuning	Onderwerpen en ideeën voor de invulling van toekomstige interventies voor het verbeteren van de vaardigheden zodat dit aansluit op de wensen en behoeftes.	[8]

Appendix 5: Interview scheme

Welkom bij het interview ik ben Finn en ik ben een student gezondheidswetenschappen aan de UT in Enschede. Voor deze studie heb ik verpleegkunde gedaan en heb ik als verpleegkundige gewerkt in het ziekenhuis. Daar merkte ik dat er nog wel ruimte was voor verbetering maar dat dit vaak niet in overleg gebeurt met de mensen die het daadwerkelijk uitvoeren zoals jij. Daar wou ik verandering in brengen dus mede daardoor ben ik begonnen met deze studie. Nu ben ik bijna klaar hiermee en ben voor mijn afstuderen bezig met een opdracht voor Frion en de Baalderborggroep. Deze opdracht gaat over de digitale vaardigheden van de zorgverleners. De organisaties merkte dat er meer aandacht moest zijn voor de digitale vaardigheden van de medewerkers vooral nu de zorg de komende jaren steeds digitaler gaat worden en daarnaast ook dingen zoals loonstroken, roosters en leerpleinen digitaal worden. Dat dit meer aandacht nodig heeft weten de organisatie maar ze weten nog niet precies hoe ze dit moeten invullen. Daarom willen wij onderzoeken wat de problemen hiermee zijn en ook wat de behoefte van jullie is met betrekking tot die vaardigheden. Met de informatie uit dit onderzoek hopen dus een zinvolle inhoud te bieden waar de medewerkers iets aan hebben omdat het speciaal door en voor jullie op maat wordt gemaakt. Omdat ik dit interview ga gebruiken voor mijn afstuderen wil ik dit graag opnemen, hierna ga ik het uitschrijven, dan krijg je de mogelijkheid, als je dat wil, dit eerst te lezen indien je dit wil. De opnamen wordt door mij zo anoniem mogelijk verwerkt dus zonder, namen, locaties of andere dingen die tot identificatie kunnen leiden.

Je hebt ook een papier ontvangen, het informed consent, en ondertekend waar alles opstaat wat er gebeurt met de informatie die je mij geeft. Heb je hier alles van begrepen of heb je hier nog vragen over?

Dan wil ik graag voordat de opname start nog een aantal gegevens van je hebben. Deze worden ook los opgeslagen zonder naam of iets. Deze zijn alleen belangrijk zodat ik de diversiteit kan verantwoorden van de mensen die ik heb gesproken.

Dan wil ik nu zo de opname gaan starten. Na het starten van de opname zal ik nogmaals vragen of je het informed consent hebt begrepen en of er vragen over zijn. En dan vraag ik ook nogmaals of je het goed vindt dat ik dit gesprek opneem en verwerk.

Start opname

Nogmaals de vraag:

Geef je toestemming dat ik dit gesprek vanaf nu opneem?

Dan wil ik je vast bedanken en dan zal ik nu verder gaan met de interview vragen!

Introductie vragen

- 1) Welke technologieën/digitale middelen heb je nodig voor je werk?
- 2) Kan je wat voorbeelden noemen van dingen die je moet doen op je werk met die technologieën?
 - a. Operationele vaardigheden zoals: knoppen gebruiken, apps installeren, apparaten verbinden, documenten delen.

- b. Informatie vaardigheden: Zoekbalken gebruiken, websites bezoeken, informatie van het internet halen.
 - c. Gebruik van communicatie middelen zoals kennis delen in rapportages, online berichten uitwisselen, contacten toevoegen.
 - d. Content creatie vaardigheden, formulieren invullen, content maken zoals filmpjes foto's, posters, powerpoint.
- 3) Hoe gaat het gebruik van deze technologieën jou af?
- a. Heb je enig idee hoe dit komt?
 - b. Kan je verder uitleggen waarom dit zo is?
 - c. Gebruik je deze ook allemaal? **Waarom dan niet?**
- 4) Heb je het idee dat je de technologieën gebruikt op de manier waarop het bedoeld is te gebruiken?
- a. Heb je het idee dat je de technologie op de meest efficiënte manier gebruikt?
 - b. Meest snelste manier om het te doen?

Ervaren problemen met technologie

- 5) Welke dingen lukken je wel?
- a. Hoe komt dat?
- 6) Welke dingen lukken je niet, of dingen waar je wel hulp bij nodig hebt?
- a. Hoe komt dat?
- 7) Kom je hierdoor ook wel eens in de problemen?
- a. Kun je wat verder toelichten wat voor soort problemen je dan tegen aanloopt?
 - b. Hoe vaak komt dat voor?
 - c. Wat doe je als je zo'n probleem tegenkomt?
 - d. En helpt dat?
 - e. Waarom ga je naar die specifieke collega?
- 8) Met welke problemen/vragen komen collega's wel eens naar jou toe?
- a. Kun je daar wat meer over vertellen? Misschien een voorbeeld?
 - b. Hoe los je dit op?
 - c. Komen deze dingen dan vaker voor bij dezelfde mensen?
 - d. En helpt dat?
 - e. Waarom komen mensen naar jou toe?

Organisatorische ondersteuning

- 9) Kun je iets vertellen/heb je er wel eens naar gekeken over waar je bij de Baalderborggroep en Frion naar toe kan gaan wanneer je problemen of vragen hebt met digitale vaardigheden?
- 10) Welke training of ondersteuning heb je ontvangen van je organisatie om te kunnen werken met de technologieën?
- Hoe heb je dan geleerd ermee om te gaan?
 - Hoe besteden de Baalderborggroep en Frion aandacht aan de digitale vaardigheden van hun medewerkers?
 - Ervaar jij dat er nu aandacht wordt besteed door de Baalderborggroep /Frion aan de digitale vaardigheden?
 - Wat vond je hiervan?
 - Heeft dit je geholpen?
11. Denk je dat het goed is dat de organisatie aandacht hieraan gaat besteden?
- Waarom?
 - Wat valt er dan te halen?
12. Heb jij nu behoefte aan ondersteuning?
- Jou collega's denk je?

Behoeften en wensen

13. Welke vaardigheden moeten dan worden verbeterd?
- Waarom denk je dat deze verbeterd moeten worden?
 - Hoe kunnen jouw digitale vaardigheden verbeterd worden? (of van je team)

Appendix 6: Full final coding scheme

<i>Folder</i>	<i>Code</i>	<i>Sub-code</i>	<i>Explanation</i>
● 1. Digitale middelen			Inventarisatie van de unieke digitale tools die worden gebruikt op het werkterrein.
	● digitale middelen		Verdeld naar hardware (H-) en software (S-).
		● H-Computer/Laptop	
		● H-Digibord	
		● H-Piepers en ontvanger	
		● H-Printer	
		● H-Tablets	
		● H-telefoon	
		● H-TV	
		● H-Zorg Knuffels	
		● S-Afas	
		● S-Email	
		● S-Excel	
		● S-Internet	
		● S-Leeromgeving	
		● S-Medimo	
		● S-Microsoft Teams	
		● S-OCTO	
		● S-ONS	
		● S-Powerpoint	
	● S-Senia		
	● S-Triasweb		
	● S-Wifi		
	● S-Word/Excel		
<i>Folder</i>	<i>Code</i>	<i>Sub-code</i>	<i>Explanation</i>
● 2. Gebruik digitale middelen			Opsomming van de unieke gebruik van deze digitale tools, verdeeld naar specifieke software en hardware die is opgesomd in 1. Digitale middelen
	● AFAS		
		● Declareren	
		● Loonstroken bekijken	
		● Reiskosten aanvragen	

● Gebruik document beheer	<ul style="list-style-type: none"> ● Gedeelde bestanden raadplegen/zoeken ● Opslaan van documenten ● Uploaden van documenten
● Gebruik Excel	<ul style="list-style-type: none"> ● Teamdag planningen bekijken ● Werken met het Kasboek
● Gebruik Outlook	<ul style="list-style-type: none"> ● E-mails versturen en maken van verzendlijsten
● Gebruik Word	<ul style="list-style-type: none"> ● Kleurplaten printen ● Maken van a4'tjes (posters voor verjaardagen) ● Maken van lijstjes (schoonmaaklijsten, paklijsten) ● Maken/aanpassen van een zorgplan ● Notulen bekijken ● Verslagen maken
● Handelingen op telefoon	<ul style="list-style-type: none"> ● Foto's en filmpjes maken ● Inlezen voor een dienst ● E-Mails bekijken/versturen ● Medicatie aftekenen ● Opsturen van medische vraagstukken naar de huisarts ● Rapporteren ● Telefoneren ● Wondzorg app
● ONS/via ONS	<ul style="list-style-type: none"> ● Cliënten informatie/planning/agenda/gegevens kijken ● Leeromgeving ● Medewerkersportaal, communiceren ● Medicatie aftekenen

Folder
 • 3.
Verklaring digitale vaardigheden

		<ul style="list-style-type: none"> ● Meldingen maken 	
		<ul style="list-style-type: none"> ● Metingen invullen 	
		<ul style="list-style-type: none"> ● Protocollen bekijken 	
		<ul style="list-style-type: none"> ● Rapporteren/rapportage lezen 	
		<ul style="list-style-type: none"> ● Rooster bekijken 	
		<ul style="list-style-type: none"> ● Zoeken van informatie 	
		<ul style="list-style-type: none"> ● Zorgplannen schrijven 	
		<ul style="list-style-type: none"> ● Overige handelingen op computer 	
		<ul style="list-style-type: none"> ● Googlen/internetten 	
		<ul style="list-style-type: none"> ● Intranet 	
		<ul style="list-style-type: none"> ● Printen 	
		<ul style="list-style-type: none"> ● Roosteren 	
		<ul style="list-style-type: none"> ● Share point 	
		<ul style="list-style-type: none"> ● Zorgboodschappen bestellen 	
	Code	Sub-code	Explanation
			This category indicates the respondents performance level of digital skills
	<ul style="list-style-type: none"> ● 1. Omgang technologie 		3.1: Self-reported digitals skill level
		<ul style="list-style-type: none"> ● Goed 	
		<ul style="list-style-type: none"> ● In het begin lastig later goed 	
		<ul style="list-style-type: none"> ● Kan ik wel mee omgaan 	
		<ul style="list-style-type: none"> ● Lastig 	
		<ul style="list-style-type: none"> ● Middelmatig, ik kom mee 	
		<ul style="list-style-type: none"> ● Prima 	
		<ul style="list-style-type: none"> ● Red me daar prima mee 	
		<ul style="list-style-type: none"> ● Wel handig 	
	<ul style="list-style-type: none"> ● 2. Verklaring digitale vaardigheden 		3.2: Explanation why their skills are at the certain level enlisted at 3.1.
		<ul style="list-style-type: none"> ● Door te doen leer je met trial en error. 	
		<ul style="list-style-type: none"> ● Goed want ik vind het niet moeilijk 	
		<ul style="list-style-type: none"> ● Goed, want het moet en ik vind het leuk 	

		<ul style="list-style-type: none"> ● Goed, want ik ben jong dus snel oppikken/gewend ● Heb er uitleg over gekregen en nu lukt het wel 	
		<ul style="list-style-type: none"> ● Het gaat goed want ik vind het interessant en leuk om nieuwe dingen te proberen. 	
		<ul style="list-style-type: none"> ● Ik leer het niet want iemand anders lost het voor me op. 	
		<ul style="list-style-type: none"> ● Lager niveau is wat minder vaardig ● Lastiger want ik ben wat ouder nooit oefening mee gehad 	
	● 3. Gebruik alle mogelijke technologieën		3.3: if they use all kinds of different technologies/not avoiding use of a specific technology on purpose.
		<ul style="list-style-type: none"> ● Ja ● Nee 	
		<ul style="list-style-type: none"> ● Nu niet maar wel eens gedaan met een mobiele versie van ONS 	
	● 4. Gebruik op de juiste manier		3.4: if they use the technology in the correct way and most efficient way.
		<ul style="list-style-type: none"> ● Gebruik het efficiënt ● Ja ● Kan efficiënter 	
Folder	Code	Sub-code	Explanation
● 4. <i>Problemen</i>			This category is all about the experienced problems and how the respondents are dealing with them in today's situations.
	● 1. Benoemde problemen	<ul style="list-style-type: none"> ● Auto reserveren 	4.1: Contains all the different types of challenges and problems either they have experienced on their own or have had coworkers ask questions about.

	<ul style="list-style-type: none"> ● Bestellen van boodschappen 	
	<ul style="list-style-type: none"> ● Bestellen van medicatie 	
	<ul style="list-style-type: none"> ● Bijlagen in E-mail zetten 	
	<ul style="list-style-type: none"> ● Document beheer 	
	<ul style="list-style-type: none"> ● Foto's en video's 	
	<ul style="list-style-type: none"> ● Geen problemen zelf 	
	<ul style="list-style-type: none"> ● Googelen 	
	<ul style="list-style-type: none"> ● Kan niet blind typen 	
	<ul style="list-style-type: none"> ● Maken en vinden van zorgplannen 	
	<ul style="list-style-type: none"> ● Maken van E-maillijsten/mensen toevoegen/bijlages 	
	<ul style="list-style-type: none"> ● MDO formulier invullen 	
	<ul style="list-style-type: none"> ● Medicatie aftekenen 	
	<ul style="list-style-type: none"> ● Medimo 	
	<ul style="list-style-type: none"> ● Melding maken 	
	<ul style="list-style-type: none"> ● Moeite met Excel 	
	<ul style="list-style-type: none"> ● Moeite met Teams 	
	<ul style="list-style-type: none"> ● Moeite met Word 	
	<ul style="list-style-type: none"> ● Nieuwe technologie 	
	<ul style="list-style-type: none"> ● Poster maken in word 	
	<ul style="list-style-type: none"> ● Problemen met inloggen 	
	<ul style="list-style-type: none"> ● Technologie werkt niet naar behoren 	
	<ul style="list-style-type: none"> ● Tijdsdruk dus kan niet leren/vragen stellen over digitale dingen/vaardigheden 	
	<ul style="list-style-type: none"> ● Verandering zonder te melden 	
	<ul style="list-style-type: none"> ● Verkeerd geklikt 	
	<ul style="list-style-type: none"> ● Wil je iets rapporteren voor mij 	
	<ul style="list-style-type: none"> ● Word Pictogrammen 	
	<ul style="list-style-type: none"> ● Zoeken in ONS 	
	<ul style="list-style-type: none"> ● Zoeken naar juiste document 	
	<ul style="list-style-type: none"> ● Zorgplannen aanpassen 	
<ul style="list-style-type: none"> ● 2. Oplossing van probleem 	<ul style="list-style-type: none"> ● Hulp vragen aan collega 	4.2: Solutions to solving these problems.
	<ul style="list-style-type: none"> ● ICT service desk 	

	<ul style="list-style-type: none"> ● Iemand anders het laten doen ● Kan het zelf oplossen 	
	<ul style="list-style-type: none"> ● Laten en iets anders gaan doen ● melding maken in OCTO ● Opschrijven hoe het moet ● Opschrijven van de oplossing ● Overdragen naar de volgende dienst ● Uitleg geven aan collega ● Vervangen met iets anders 	
● 3. Wie hebben problemen	<ul style="list-style-type: none"> ● Mensen die er geen interesse in hebben ● Nieuwe collega's ● Oudere medewerker 	4.3: Who are experiencing these problems.
● 4. Consequenties problemen	<ul style="list-style-type: none"> ● Meer werkplezier zonder deze moeilijkheden ● Tijd 	4.4: What are the experienced consequences of these problems.
● 5. Frequentie problemen	<ul style="list-style-type: none"> ● 1 a 2 keer per week ● 1 keer in de maand, een keer in de twee maanden ● Drie keer per maand ● Een keer in de maand ● Heel af en toe ● Niet vaak ● Paar keer per week ● Twee keer in de maand 	4.5: What is the frequency of the problems.
● 6. Naar wie gaan ze toe?	<ul style="list-style-type: none"> ● Jongeren ● Naar mij omdat ik help en opensta en ze 	4.6: To whom are you going when you have a problem.

Folder

- 5. *Behoeftes*

Code	Sub-code	Explanation
	laat zien hoe het systeem werkt	
	<ul style="list-style-type: none"> ● Omdat ik dan toevallig aan het werk ben ● Omdat ik het wel weet ● PO'er 	
<ul style="list-style-type: none"> ● 1. Bekendheid van ondersteuning organisatie 	<ul style="list-style-type: none"> ● Digi-coach 	<p>This category has the codes that give information on the knowledge of support provided by the organisations and the needs and wishes of the respondents in terms of digital skills support from the organisations.</p> <p>5.1: Familiar options for support provided by the organisations.</p>
	<ul style="list-style-type: none"> ● E-learning ● Geen idee van bestaan ● Handleiding boek ONS ● ICT service desk ● Niet nodig ● Onbekend ● Onbekend want niet nodig 	
<ul style="list-style-type: none"> ● 2. Eerder Ontvangen ondersteuning 	<ul style="list-style-type: none"> ● E-learnings 	<p>5.2: What support did they previously received from the organisations.</p>
	<ul style="list-style-type: none"> ● Fysiek maar was te vroeg dus hielp niet goed ● Fysiek, dachten uitleg maar kregen alleen het instellen, was slecht ● Fysieke cursus ● Geen ● Heb het van collega's geleerd 	

	<ul style="list-style-type: none"> ● Is er wel maar niet gebruikt 	
	<ul style="list-style-type: none"> ● Online cursus 	
	<ul style="list-style-type: none"> ● Powerpoint 	
	<ul style="list-style-type: none"> ● Uitleg voor nieuwe technologie 	
<ul style="list-style-type: none"> ● 3. Ervaring gekregen ondersteuning 	<ul style="list-style-type: none"> ● E-learning goed 	5.3: What experiences do the respondents have with the received support in likings and effects.
	<ul style="list-style-type: none"> ● E-learning werkt niet is teveel informatie 	
	<ul style="list-style-type: none"> ● Fysiek goed 	
	<ul style="list-style-type: none"> ● Fysiek prima 	
	<ul style="list-style-type: none"> ● Handleiding was prima 	
	<ul style="list-style-type: none"> ● Powerpoint: prima 	
	<ul style="list-style-type: none"> ● Uitleg aan 2 die vertellen de rest, Fijn 	
	<ul style="list-style-type: none"> ● Uitleg nieuwe technologie, Teams, goed 	
<ul style="list-style-type: none"> ● 4. Gewenste aandacht aan digitale vaardigheden 	<ul style="list-style-type: none"> ● Ben der als ik je nodig hebt ofzo 	5.4: What support for digital skills is wished for.
	<ul style="list-style-type: none"> ● Heb ik heel erg gemist, ja zou ik heel graag willen 	
	<ul style="list-style-type: none"> ● Ja goed want toekomst wordt digitaler 	
	<ul style="list-style-type: none"> ● Mits ik de voordelen zie lijkt het me goed 	
	<ul style="list-style-type: none"> ● Scholing voor iedereen 	
	<ul style="list-style-type: none"> ● Verplichte scholing voor iedereen 	
	<ul style="list-style-type: none"> ● Voor wie dat nodig hebben 	
	<ul style="list-style-type: none"> ● Wanneer er een nieuwe technologie komt 	
	<ul style="list-style-type: none"> ● Zelf geen behoefte aan ondersteuning 	
<ul style="list-style-type: none"> ● 5. Gewenste vorm van ondersteuning 	<ul style="list-style-type: none"> ● Buddy die je kan helpen (iedereen die wil) 	5.5: What form of support for digital skills is wished for.
	<ul style="list-style-type: none"> ● E-learnings 	

		<ul style="list-style-type: none"> ● Fysieke training 	
		<ul style="list-style-type: none"> ● Handleiding (papier/digitaal) om dingen op te zoeken 	
		<ul style="list-style-type: none"> ● Helpdesk/service desk voor vragen 	
		<ul style="list-style-type: none"> ● Instructie bij teams vergadering: Tips and Tricks 	
		<ul style="list-style-type: none"> ● Leren van elkaar 	
		<ul style="list-style-type: none"> ● Online cursus 	
		<ul style="list-style-type: none"> ● Papieren ondersteuning 	
		<ul style="list-style-type: none"> ● Uitleg met oefen omgeving om mee te oefenen 	
		<ul style="list-style-type: none"> ● Voor nieuwe collega's 	
	<ul style="list-style-type: none"> ● 6. Vaardigheden die verbeterd moeten worden 	<ul style="list-style-type: none"> ● Basisvaardigheden 	5.6: What Digital Skills should be improved.
		<ul style="list-style-type: none"> ● Digitale ontwikkeling 	
		<ul style="list-style-type: none"> ● Documenten versturen 	
		<ul style="list-style-type: none"> ● Excel 	
		<ul style="list-style-type: none"> ● Uitleg in de programma's die worden gebruikt 	
	<ul style="list-style-type: none"> ● 7. Wat valt er te halen voor winst 	<ul style="list-style-type: none"> ● Bij te kunnen blijven met digitalisering 	5.7: What could be gained by improving the digital skills.
		<ul style="list-style-type: none"> ● Ga er minder tegen opzien 	
		<ul style="list-style-type: none"> ● Meer tijd voor cliënt 	
		<ul style="list-style-type: none"> ● Minder stress voor nieuwe collega's 	
		<ul style="list-style-type: none"> ● Prettiger want minder vragen hoeven stellen 	
		<ul style="list-style-type: none"> ● Tijd en stress 	
		<ul style="list-style-type: none"> ● Tijdswinst 	
Folder	Code	Sub-code	Explanation
<ul style="list-style-type: none"> ● 6. Overige quote 			6: Other quotes that had notable meaning on their own
	<ul style="list-style-type: none"> ○ Bij ouderen komt het wel sneller voor maar niet bij iedereen, sommige weten zelf veel 		

<ul style="list-style-type: none"> ○ Denk dat het goed is dat er aandacht is, veel struggles, veel irritaties stress en ontwetendheid had voorkomen
<ul style="list-style-type: none"> ○ Door e-learnings handeling niet mogen doen heb ik moeite mee
<ul style="list-style-type: none"> ○ Durf niet meteen op Digi-coach af te stappen
<ul style="list-style-type: none"> ○ Gestopt met functie mede door geen hulp bij technologie
<ul style="list-style-type: none"> ○ Geven ze aan dat wij lopen te zeuren.. lastig over te brengen
<ul style="list-style-type: none"> ○ Het is niet urgent maar zou het niet erg vinden af en toe een upto date-je te krijgen
<ul style="list-style-type: none"> ○ Ik zal meer werkplezier hebben als ik niet zo tegen de technologie zal opkijken
<ul style="list-style-type: none"> ○ je kunt niet meer zeggen van dat interesseert me niet. dat doe ik niet, je moet wel
<ul style="list-style-type: none"> ○ Nieuwe technologie zo snel en de vorige is nog niet af
<ul style="list-style-type: none"> ○ Ouderen moeten even gaan zitter en kunnen niet uit tunen
<ul style="list-style-type: none"> ○ Privacy regels. bestanden op 2 plekken opgeslagen dus niet privacy bestendig
<ul style="list-style-type: none"> ○ Te weinig tijd in werktijd, wil er geen overuren voor maken
<ul style="list-style-type: none"> ○ Voordeel van ppt is dat iedereen op zijn eigen tempo kan en je kan terugkijken

Table 3: Full final coding scheme