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EDUCATION FOR DIGITAL SKILLS RELATED TO HEALTH PROTECTION

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Lidnei Ventura[1], Patrícia Nunes Martins[2] and Betina Lopes da Silva[3]

ABSTRACT

Current studies show that health and technologies are linked phenomena in contemporary times, mainly due to the large volume of research data that relates to illness and intense computer use. The present research investigated a group of graduate students from a Brazilian university based on questions about self-care with the health of these users. The research, of a qualitative and exploratory nature, carried out between 2020 and 2021, sought to identify levels of digital proficiency through an inquiry instrument that provoked the subjects to carry out self-assessment in Area of Competence 4.3 – Health Protection, as an offshoot of Area of Competence A4 – Safety, using a Likert scale of frequency. Results indicate that part of the students are still not aware of the health risks associated with the use of technology. In the entry-level proficiency, 21.56% of students demonstrate that they do not know how to protect themselves from cyberbullying, as well as they are not clear that technology can affect their health if it is misused in online environments. It was identified that 48% of students say they know how to find a good balance between the online and offline worlds, a skill required at the advanced level. The research points to the need for institutions that deal with virtual education to create safety protocols for health protection.

Keywords: Digital Skills. Self-assessment. Digital Security.

[1] UDESC/Br
[2] UDESC/Br
[3] AU/EN

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INTRODUCTION

Current studies show that health and technologies are linked phenomena in contemporary times, mainly due to the large volume of research data that relates to illness and intense computer use. This context presents an important challenge for public policies in education, especially for institutions that deal with virtual education. The present research investigated a group of graduate students from a Brazilian university based on questions about self-care with the health of these users. The research, of a qualitative and exploratory nature, carried out between 2020 and 2021, sought to identify levels of digital proficiency through an inquiry instrument that provoked the subjects to carry out self-assessment in Competence Area 4.3 – Health Protection, as an offshoot of Competence Area A4 – Security. The self-assessment was carried out by the students in the form of questions, considering the proficiency levels defined in DigComp 2016 (Lucas; Moreira, 2017): A - Basic; B - Intermediate; C - Advanced. The questions allowed the respondents to self-identify their level of proficiency on the Likert frequency scale. Although the predicted competencies refer to digital competencies in virtual networks, the research also considered the risks to the body due to the continuous use of the computer derived from furniture, workstations, and control of working time, as well as psychiatric risks, such as depression, addiction, and anxiety.

The initial hypothesis is that, in the transition from face-to-face to virtual teaching, most students were not yet fully aware of the health risks associated with the use of technology, as well as they were not clear that technology can affect their health if it is misused in online environments.

MATERIALS AND METHOD

The research presented was carried out in the second half of 2020, being qualitative, as for the objectives, the study can be classified as an exploratory-descriptive investigation, which allows the researcher to provide greater familiarity with the problem, as well as to formulate some hypotheses and establish relationships between the variables derived from the data collected and analyzed (GIL, 2002).

For data collection, a questionnaire was created in Google Docs. Entitled "Evaluation of digital skills of academics in the Covid-19 Pandemic", which was sent and completed virtually by graduate students. The distribution of the instrument was carried out

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by random sampling in the mailing network of the proposing researcher between September and October 2020.

The structure of the instrument required the elaboration of 93 questions, divided into three blocks, namely: Block 1 - Personal data (06 questions); Block 2 – Academic activities during the pandemic period (14 questions); Block 3 – Self-framing of digital skills (73 questions). In the second and third blocks, Likert scales with 5 levels of responses were used. The second block is divided into two smaller blocks that we call Academic Activities in the Pandemic Period I and II, and are composed as follows: Direct Questions [yes, no, I don't know] and Numerical Indicators of Importance [1 to 5]. In the third block, the option was to measure frequency indicators (very frequent, frequent, occasionally, rarely, never). The self-assessment of these competencies was carried out by the students in the form of questions, considering the proficiency levels defined in DigComp 2.0 (Vuorikari et al., 2016).

In this excerpt of the research, a highlight is presented regarding the Area of Competence A4 – [digital] Security, sub-competence 4.3 – Health Protection

RESULTS AND ANALYSIS

Global Digital Overview's Digital Report 2018 (2018) has collected some data that is both impressive and worrying. This year, there were more than 4 billion internet users [more than half of the world's population]; More than 3 billion used social networks, and more than 5 billion people used cell phones. In 2024 there was a vertiginous increase in these numbers, as well as in the world population, which grew from 7.5 billion to more than 8 billion people. Internet users today are more than 5 billion; social media users grew by 2 billion; mobile phone users now number nearly 6 billion people (GSMA Intelligence, 2024).

Certainly, this quantitative change in social practices has qualitative consequences for the human condition and implications for the health of users, because exposure to computer use, whatever the type of device (desktop, notebook, netbook, tablet, smartphone), requires sudden adaptations for which the human body is not yet prepared. This new human condition has aroused the interest of institutions and researchers in the relationship between the use of technologies and the health of users.

Current studies show that health and technologies are linked in contemporary times, mainly due to the volume of data presented related to illness due to the intense use of

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computers. The study by Nasim Habibzadeh (2018) presents several aspects of the intersection between some types of diseases and computer use. According to the author:

> Nowadays, all aspects of life, such as science, business, entertainment, and many others, directly or indirectly, are managed by computers. At first, regular computer and internet use can save you time, money, and some physical effort. However, sitting regularly due to computer use can compromise sedentary behaviors in modern lifestyles. (Habibzadeh, 2018, p.10)[E]lement.

As is well known, the contemporary lifestyle demands intensely sedentary work and leisure activities. The home office work style (telecommuting or remote work) has multiplied rapidly after the COVID-19 pandemic. Data from the IBGE (2023) inform that in 2022 9.5 million people worked remotely in Brazil, which represents 9.8% of the total number of employed persons. Leisure activities are also too sedentary due to the constant use of gaming or streaming platforms. In these activities, it is common for users to stop for many hours, replacing physical activities.

Although the present work deals with digital competencies in virtual activities of the research subjects, we highlight the importance of paying attention to the risks to the body due to the continuous use of the computer, whether furniture, workstations, and time control, almost always secondary by the users, as well as psychiatric risks, such as depression, addiction, and anxiety and others. In addition to the increasingly common virtual risks in online activities, such as fraud, cyberbullying, and others. Some of these situations are provided for in Digcomp 2.0 and recommend its observation, but other serious disturbing situations derived from the predominantly computerized lifestyle are not properly considered. To have a perspective of the severity of high exposure to computer use beyond misuse in virtual environments, which is not our objective of study here, we recommend the studies of Habibzadeh (2018), Mihajlov; Vejmelka (2017), Souza; Cunha (2019) and Lin; Barbir; Dennerlein (2017) among others.

Before presenting the information received from the research subjects, it is important to emphasize that these are graduate students, that is, it can be said that they are at a very advanced degree of training, as they have gone through all basic and higher education, including some attending the doctoral level. Therefore, it would be expected that they would already mastered basic skills of navigation and health protection in virtual environments. But that's not what we verified.

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In the case of this research, when it comes to the "online universe", due to remote classes, it is clear that practically 1/4 of students are still not aware of the health risks associated with the use of technology. Below are some data that authorize us to provide this information.

The indicators presented coincide with the sequence of questions posed with the DigComp 2016, as shown in Table 1 below.

Table 1 – A4-3: Health Protection Competence

Competence	Never	Rarely	Occasionally	Frequent	Very common
Health protection [I know how to avoid *cyberbullying*. I know that technology can affect my health if it is misused] in online environments] (A)	1	3	7	13	27
	1,96	5,88%	13,72%	25,50%	52,94%
Health protection [I know how to protect myself and others from cyberbullying and I realize the health risks associated with the use of technology (from ergonomic aspects to dependence on technology)] (B)	0	2	11	22	16
	-	3,92%	21,56%	43,14%	31,38%
Health protection [I am aware of the correct use of technologies to avoid health problems. I know how to find a good balance between the online world and the offline world] (C)	0	2	10	21	18
	-	3,92%	19,60%	41,18%	35,30%

Source: Prepared by the authors, 2020

Observing the basic level proficiency (A), we have 10 students (21.56%) [we considered the sum of the descriptors: never, rarely, and occasionally] who demonstrated that they did not know how to protect themselves from cyberbullying or that technology can affect their health if it is misused in online environments. This index is worrisome because even though this is a small sample, one has little notion of the dimension that the problem can reach. Tokunaga's (2010) research demonstrated how young people are mainly subject to harassment in virtual spaces and how cyberbullying can cause serious mental disorders, including leading many of them to depression and suicide. Although the survey was conducted with young Americans, this is an increasingly present reality around the world. According to the author:

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> More than 97% of young people in the United States are connected to the Internet in some way. An unintended result of the widespread reach of the Internet is the increasing rate of harmful offenses against children and adolescents. Cyberbullying victimization is one such offense that has recently received quite a bit of attention. (Tokunaga, 2010, p. 277)[4]

At the medium proficiency level (B), the index remains stable, with little increase (13 students). This means that when a higher degree of proficiency is required, positive rates practically do not improve. Although the DigComp 2.0 self-identified question can confuse the respondent, as it ends up mixing different concerns and skills, some related to the risks and precautions of cyberbullying with oneself and others, and others that have to do with risks of another nature, such as ergometrics and dependence on technology. Even so, it is worrying that students at such a high level of education demonstrate susceptibility and risk regarding the use of technology.

At the advanced proficiency level (C), that is, when greater proficiency in Health Protection competence is required, 23.52% of students say they are concerned with the balance of the use of technology to avoid health problems. Although it is relevant that 76.48% of students [adding the frequent and very frequent indicators of the advanced level] say they know how to find a good balance between online and offline activities, we raise a concern here with the problems that the imbalance in the use of technology, especially the internet, can cause. In the study by Martin Mihajlov and Lucija Vejmelka (2017), inventorying the last 20 years of internet use in the world, it was clear that in the last 10 years, internet addiction has developed as a real disease. The authors state that:

> In addition to the numerous benefits of using the Internet, the virtual environment brings several risks to all age groups. The Internet is very significant in the daily activities of children and young people and professional interventions with this age group should be specific considering their developmental characteristics. Exposure to online risks can have intense and long-lasting negative effects. Effective prevention and treatment programs must include a multisectoral and interdisciplinary approach. A detailed review of symptoms, diagnostic models, and treatment possibilities may be beneficial for health care professionals and other care professionals due to the current need for interventions in the field of internet addiction treatment. (Mihajlov; Vejmelka, 2017, p.260)[5]

[4] In the original: More than 97% of youths in the United States are connected to the Internet in some way. An unintended outcome of the Internet's pervasive reach is the growing rate of harmful offenses against children and teens. Cyberbullying victimization is one such offense that has recently received a fair amount of attention.
[5] In original: Besides numerous benefits of Internet use, the virtual environment brings various risks in every age group. The Internet is very significant in the everyday activities of children and youth and professional interventions with this age group should be specific considering their developmental characteristics. Exposure to online risks can have long-lasting and intense negative effects. Effective programs in prevention and treatment should include a multi-sectoral and interdisciplinary approach. Detail review of the symptomatology,

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This information results in the need for greater discussion and problematization of the relationship between digital technologies and health and the elaboration of safety protocols at all levels of education and for all institutions that deal with education.

Just as other technologies essential to human life had to be systematically incorporated into school systems so that subjects could appropriate their use, such as writing and mathematics, demanding reading, writing, and calculation skills, the same is true with the use of digital systems, where educational institutions are responsible for the development of digital skills.

CONCLUSIONS

Currently, digital activities completely take over social practices, whether in work, study, or entertainment activities. Thus, knowing how to deal with the virtual world and paying attention to the risks that this new demand presents to contemporary subjects gains prominence.

In this context, digital security becomes essential, as its non-observance can cause risks to the very lives of contemporary subjects, children, and adults since they are constantly immersed in online environments.

Such immersion requires the user to take digital protection measures so that they are not exposed to the illegal and criminal exploitation of their data and the equipment used, in addition to being able to use the computerized resources available in contemporary digital culture safely and sustainably.

In this work, the study on competencies related to the health of users was highlighted, which requires care in several dimensions, from risks with cyberbullying with oneself and others in online environments, as well as physical consequences derived from ergometric problems and dependence on technology.

This study points to the need for concern and, the creation of safety protocols for health protection by institutions that deal with remote or online education, based on the work of raising awareness of the relationships between computer use (online or offline) and the health of users.

diagnosis model an possibilities of treatment can be multiple beneficial to the health professionals and others helping professionals due to current needs for interventions in the field of the internet addiction treatment.

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