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INFORMATION LITERACY OF ELDERLY: A PROTOTYPE HEADED TO THEIR INFORMATION NEEDS

COMPETÊNCIA EM INFORMAÇÃO DE IDOSOS: UM PROTÓTIPO VOLTADO ÀS SUAS NECESSIDADES DE INFORMAÇÃO

[1]Elizete Vieira Vitorino
Universidade Federal de Santa Catarina
Florianópolis, SC - Brazil

[2]Guilherme Goulart Righetto
Universidade Federal de Santa Catarina
Florianópolis, SC - Brazil

[3]Celine Rúbia Probst Purnhagen Packer
Universidade Federal de Santa Catarina
Florianópolis, SC - Brasil

Correspondência
E-mail: elizete.vitorino@ufsc.br

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ABSTRACT
The main objective of the research is to structure a technological resource to meet the information needs of a vulnerable group, here characterized as the elderly population, contemplating the specific objectives that are: to identify, from the literature, technological resources and prototypes for use on mobile devices; to describe, also in the literature, the stages of the development of information literacy in the elderly, and, specifically, through the use of available technologies; and, finally, to create a prototype for mobile devices (smartphones) in order to meet the possible information needs of the said group. The absence of the set of digital attitudes and skills can have a profound effect on people's quality of life and lifelong learning. Hence the urgency of information literacy and its driving force in lifelong learning in order to provide socially and socially inclusive groups with real and effective social/digital inclusion. In an optimistic way, it is conjectured that the technologies, together with the information literacy, are able to promote the increase of the self-esteem of groups, communities and people, including the reduction in the situation of social vulnerability and the promotion of inputs in light of the needs of everyday information. The importance of including this social group in such context will possibly enable new and prosperous social relations, as well as the quality of life. Promoting the inclusion of older people in relation to technologies can be a timely way for active, citizen and democratic participation in contemporaneity, in addition to the effectiveness of the social role of Information Science.

KEYWORDS:
Information literacy. Information needs. Elderly. Disadvantaged groups.

RESUMO
O objetivo geral da pesquisa consiste em estruturar um recurso tecnológico para o atendimento das necessidades de informação de um grupo vulnerável, aqui caracterizado como a população idosa, contemplando os objetivos específicos que são: identificar, a partir da literatura, recursos tecnológicos e protótipos para uso em dispositivos móveis; descrever, também pela literatura, as etapas do desenvolvimento da competência em informação no idoso e, em específico, por meio do uso das tecnologias disponíveis; e, por fim, criar um protótipo para dispositivos móveis (smartphones) a fim de atender às possíveis necessidades de informação do referido grupo. A ausência do conjunto de atitudes e habilidades digitais pode ter um efeito profundo na qualidade de vida das pessoas e no aprendizado ao longo da vida. Daí a premência da competência em informação e sua força motriz do *lifelong learning* para dispor aos grupos socialmente vulneráveis uma real e efetiva inclusão social/digital. Numa via otimista, conjectura-se que as tecnologias, em conjunto com a competência em informação são capazes de promover o aumento da autoestima de grupos, comunidades e pessoas, incluindo a redução na situação de vulnerabilidade social e a promoção de insumos à luz das necessidades de informação cotidianas. A importância da inclusão desse grupo social em tal contexto possivelmente viabilizará novas e prósperas relações sociais, assim como a qualidade de vida. Promover a inclusão dos idosos perante as tecnologias pode ser uma forma oportuna para a participação ativa, cidadã e democrática na contemporaneidade, além da efetivação do papel social da Ciência da Informação.

PALAVRAS-CHAVE
Competência em informação. Necessidades de informação. População idosa. Grupos socialmente vulneráveis.

1 Introduction

According to current projections, we will soon be an aging nation. The Brazilian Institute of Geography and Statistics (IBGE, 2018) released the new projections of the Brazilian population, with an estimated population of 208.5 million in 2018, 233,2 million people in 2047 (population peak) and 228,3 million inhabitants by 2060. In other words, the Brazilian population is on the way to the transition from growth to demographic decline. Another change asserted by the new projections is the age structure, with the shift from a broad-based (rejuvenated) population pyramid to a narrow-base, enlarged-top (aged) pyramid. (IBGE, 2018).

Population aging is the transformation of the age structure that occurs as a result of the increase in the proportion of elderly[1] people in the population as a whole and the consequent decrease in the proportion of young people. For over 500 years, Brazil has had a rejuvenated age structure, a situation that is being reversed over the course of the 21st century. (IBGE, 2018).

In this context and about the use of Information and Communication Technologies (ICT), although the proportion of the elderly (60 years and over) has increased significantly from 24,7% (2016) to 31.1 (2017), this social group is considered incipient and disadvantaged compared to the other age groups surveyed in Brazil and in their quantity. (IBGE, 2017). And while ICTs provide a range of possibilities – including online socialization – available technologies can become obstacles to overcome, especially for the aging population, which has gradually experienced technological evolution. (KACHAR, 2010).

The lack of digital attitudes and skills set can have a profound effect on people's quality of life and undoubtedly on lifelong learning. Hence, the urgency of information literacy and its driving force of lifelong learning to provide socially vulnerable groups with real and effective social/digital inclusion.

In an optimistic way, it is conjectured that ICT, together with information literacy, may favor increased self-esteem of the elderly, social interactions, reduced social vulnerability and stigma, as well as providing inputs in the light of information needs. The importance of including this social group in such a context will possibly enable new and prosperous social relationships, as well as the quality of life. (BIZELLI et al., 2009). Promoting the inclusion of older people in the face of technology can be a timely way for active, citizen and democratic participation in contemporary times.

From this question, the general objective of the research is to structure a technological

[1] The National Policy for the Elderly (PNI), Law n. 8.842, of January 4, 1994, and the Statute of the Elderly, Law n. 10.741, of October 1, 2003, defines the elderly as persons aged 60 and over; The World Health Organization (WHO, 2002) defines the elderly according to their chronological age, therefore, the elderly is the person aged 60 or older (in developing countries) and aged 65 or older (in developed countries).

resource to meet the information needs of a vulnerable group, characterized here as the elderly population, contemplating the specific objectives of identifying, from the literature, resources technology and prototypes for use on mobile devices; describe, also in the literature, the stages of the development of information literacy in the elderly and, specifically, through the use of ICT; and, finally, create a prototype for mobile devices (smartphones) in order to meet the possible information needs of that group.

2 Methodological Aspects

As for the approach, this research fits as qualitative, since it glimpses the understanding of non-quantifiable aspects of reality of the vulnerable social group characterized here as the elderly population. According to Minayo (2001), qualitative research works with the universe of meanings, motives, aspirations, beliefs, values and attitudes that correspond to the space of relationships, processes and phenomena that cannot be reduced to the operationalization of variables. The research also has an applied nature, since it aims at a practical application, directed to meet the needs evidenced by the researched vulnerable group.

For practical purposes, a prototyped smartphone application has been structured by the Orange Data Mining Fruitful and Fun software, an open source data visualization toolkit that performs machine learning and data mining. Through API Key of the social network Twitter, were extracted 2,000 tweets (posts on the page) related to the keywords: seniors, technology and digital inclusion, in order to filter what is currently being discussed about the theme, seeking to identify clues about the elderly and their relationships with technological learning.

The extracted tweets resulted in a "word cloud" that represents the most commented content out of the 2000 publications found, as well as the weight (number of tweets published with the word). For a better view of the above, figure 1 presents the results of this set and figure 2 presents the word ranking.

Figure 1. Word cloud about the relationship between elderly people/technologies extracted by tweets

Source: [Data obtained through Orange Data Mining Fruitful and Fun software] (2019)

Figure 2. Weight of obtained words

Weight	Word
231	Digital
182	Technology
73	Video
66	Do
59	Elderly

Source: [Data obtained through Orange Data Mining Fruitful and Fun software] (2019)

According to the exposure of figures 1 and 2 presented, it was possible to verify that Twitter users relate elderly with technology and digital learning, a factor that reflects the current reality, in which the elderly use technological resources and have an interest in ICT. Thus, the initial procedures of the bibliographic research, based on the survey of theoretical references already analyzed, were also used. (FONSECA, 2002). Therefore, and aiming to meet the requirements of the proposed research, the following are possible ways of social/digital inclusion of the elderly together with the premises of information literacy.

3 Conceptual Aspects

3.1 ICT and the elderly: conjecturing relationships

Our society consists far beyond the generation that was born in the technological world. ICTs play an important role in social communication, as through this communication can flow without apparent "physical" barriers. Thus, the recurring use of mobile devices enables people to access information and knowledge, without restriction of time and space, allowing new forms of communication, and, in consensus with Lévy (1999), new ways of thinking and living are constantly re-signified in/by the digital world.

It is noteworthy that the real time or remote access to information contributes to supply the information needs of social groups – including the elderly, and in this scenario, the phenomenon of mobile technologies: tablets, smartphones, etc. stands out, which make it possible to use apps, better known as apps. Apps are sets of tools designed to perform specific tasks and jobs, which seek to facilitate access under certain circumstances. (BARRA, 2017). Prototypes, on the other hand, are functional models built from preliminary specifications that simulate the appearance and functionality of software to be developed, i.e., an application modeling for a mobile device, even if initially for future development and implementation. (SANTOS, 2006).

Thus, and about the group studied here, it is important to emphasize that the elderly are usually less likely to live and easier to handle technologies compared to young people (ROSEN; WEIL, 1995), in a scenario in which the daily transformation and realization of analog to digital technologies represents a rupture; and by specifically addressing those who have lived with other technologies, the use of digital age tools can represent absolutely new learning, without the possibility of prior support or reference. (BIANCHETTI, 2008).

According to White et al. (1999) ICT helps older people improve your connection to the outside world. Bez, Pasqualotti and Passerino (2006), point out the paradoxical relationship facing technological advances in the 21st century, in which it must still be justified that digital inclusion promotes social inclusion. Another key condition of older people's motivation to access ICT is related to the possibility of communication and interaction, especially with their families and friends.

However, there are few applications developed entirely for the elderly groups. Examples are the Wise Phone (designed to make the phone elements larger in size for ease of use for the elderly, as well as an additional button to facilitate an emergency call); as well as Games for the elderly in the entertainment field, geared towards online games; and MyTherapy, a tool that helps the elderly remember to take their medications and relatives. The medications are configured in the app so that they can be programmed to remind the elderly one of their treatment plans.

In addition to applications aimed at the group studied, smartphones themselves have tools that seek to assist the elderly in the use of technology, such as personal assistants, voice activated to perform functions quickly and easily accessible to the individual. Another factor available is the font size, where the function allows the elderly to increase the font size for easier reading. A tool also presented is the reading of texts, and the "dictation" function of the smartphone allows the mobile assistant to read texts (whether messaging, websites and others) for the individual who has a compromised vision.

Also according to the Elderly Statute (BRAZIL, 2003), the rights reserved to this social group include: equitable treatment, through the recognition of rights by the social, economic and cultural contribution, in their society, throughout their life; the right to equality through processes that combat all forms of discrimination; the right to autonomy, encouraging social and family participation as much as possible; the right to dignity, respecting their image, assuring their consideration in the multiple aspects that guarantee satisfaction of living old age.

3.1.2 Social vulnerability and information literacy

As pointed out by Maia (2011), the elderly people are part of vulnerable groups. It is understood that social vulnerability is related to the fragility of the subject to social exclusion. Cunha and Garrafa (2016) infer that vulnerability is a noun derived from the Latin vulnus meaning "wound", and that the vulnerable adjective is used to describe the person who is susceptible to physical or emotional attack or personal, moral and property damage. Socially vulnerable groups are generally more prone to the processes of manipulation, stigma and social asymmetry resulting from their imposed condition.

It is believed that the antidote for this circumstance is made possible by the concise use of information, which contributes to social empowerment, inclusion and reducing the

process of formation of social inequalities (DE LUCCA, 2012). Thus, the inclusion of the elderly will possibly generate technical skills and familiarization with ICT, resulting in benevolent social assets for life in society and for continuous learning – the development of information literacy. This metaliteracy (ALA, 2016) is configured as a scientific (and social) movement that emerged in 1974, in the scenario of the rise of ICT.

The movement of information literacy, therefore, is considered multidimensional. For Vitorino and Piantola (2011), this movement happens from the joint use of four dimensions: ethics, aesthetics, technique and politics. Such dimensions represent faces that come together for their full development: "It is a kind of 'patchwork' of a complex and colorful patchwork, where parts come together for a purpose, a goal." (VITORINO; PIANTOLA, 2011, p. 102).

The technical dimension, focused on the present research constitutes the necessary skill to perform a certain action, so that it is understood as the practical part of the information literacy's development. Eisenberg (2008) assures that information literacy consists of a "series of skills and knowledge that enable us to find, evaluate and use the information we need, as well as filter the information we do not need".

Briefly speaking, the technical dimension is about acquiring the skills and tools to find, evaluate and properly use the information you need: making information skills; The ethical dimension is the founding dimension that also permeates the trajectory of life in society of the person, is present in the good customs that preserve the good living within the social context; and the aesthetic dimension is the sensitive dimension, revealing itself as the dimension of life, related to feelings and personal perceptions, that cannot be explicitly formulated by the products of reason. (DE LUCCA, 2015).

The development of all dimensions, however, is fundamental: "all should be present in harmony in both literacy and information, because together and in balance they tend to favor the development […] of information literacy [...]." (VITORINO; PIANTOLA, 2011, p. 102).

Thus, an elderly population information-literate will be able to possess skills, know-how, such as sensitivity and valuation of information, being aware of the use of information, discerning the implications that may occur; Thus, the four dimensions constitute the foundations of information and literacy in it, so that the elderly are able to use information effectively, ethically; and in the participation of the social context, appropriate and conscious, and in the case of this work, directed to the technological scope.

For Belluzzo (2005) there are three different conceptions about information literacy: digital conception (emphasis on ICT use), conception of information itself (emphasis on cognitive process) and social conception (emphasis on lifelong learning and exercise of citizenship) (BELLUZZO, 2005). Moreover, the information literacy process implies the development of a skill set: propaedeutic ability, ability to intervene in reality, emotional

ability, ability to know how to do. Such skills provide the individual intellectual autonomy to make them able to make decisions, initiatives among other issues (BELLUZZO, 2004); thus, the elderly groups will most likely be able to develop their skills in technologies designed for intuitive use, simplified to facilitate their learning and making them able to intervene effectively in society.

3.2 Information needs of the elderly

To develop information literacy, including vulnerable groups, it is necessary to understand the characteristic information needs. According to Le Coadic (2004), the need for information is characterized by a state of knowledge in which the individual finds himself when confronted with the demand for missing information and is necessary to pursue a job or to act in a given situation. The immediate cause for a need for information can be as much driven by the simple desire to know (as a function of knowledge) as by the need to meet a goal (as a function of action). (LE COADIC, 2004).

Williamson (1999) believes that the older, the more recurrent human information needs are, and yet physiological and cognitive losses make this perception difficult. Given this, it is understood that the needs are always present, but often imperceptible, demanding adaptation because it is a new life context. In this light, Emmons (2004) argues that resource mobilization is necessary to adapt to these routines, whether related to health, interpersonal relationships and leisure. However, the elderly groups have certain particularities in common, which make the development of literacy in singular information, arising from the aging process (CHARCHAT-FISHMAN et al., 2005), a factor that can prolong the process, so that at this age the need for information becomes even greater and less perceived by individuals.

Thus, it is believed that by structuring an application specific to this vulnerable group, it will be possible to promote the insertion of the elderly groups in society, creating bonds with friends, relatives and new relationships; According to Portella (2004), the elderly groups who are effectively participating in society and feeling again “dressed” in a social role, feel good and, consequently, help in reducing the common problems faced in this phase of life. Just encouraging older people to leave home, referring them to a group to talk and entertain, and moving them around is a strategy that can make this stage of life beneficial. (PORTELLA, 2004).

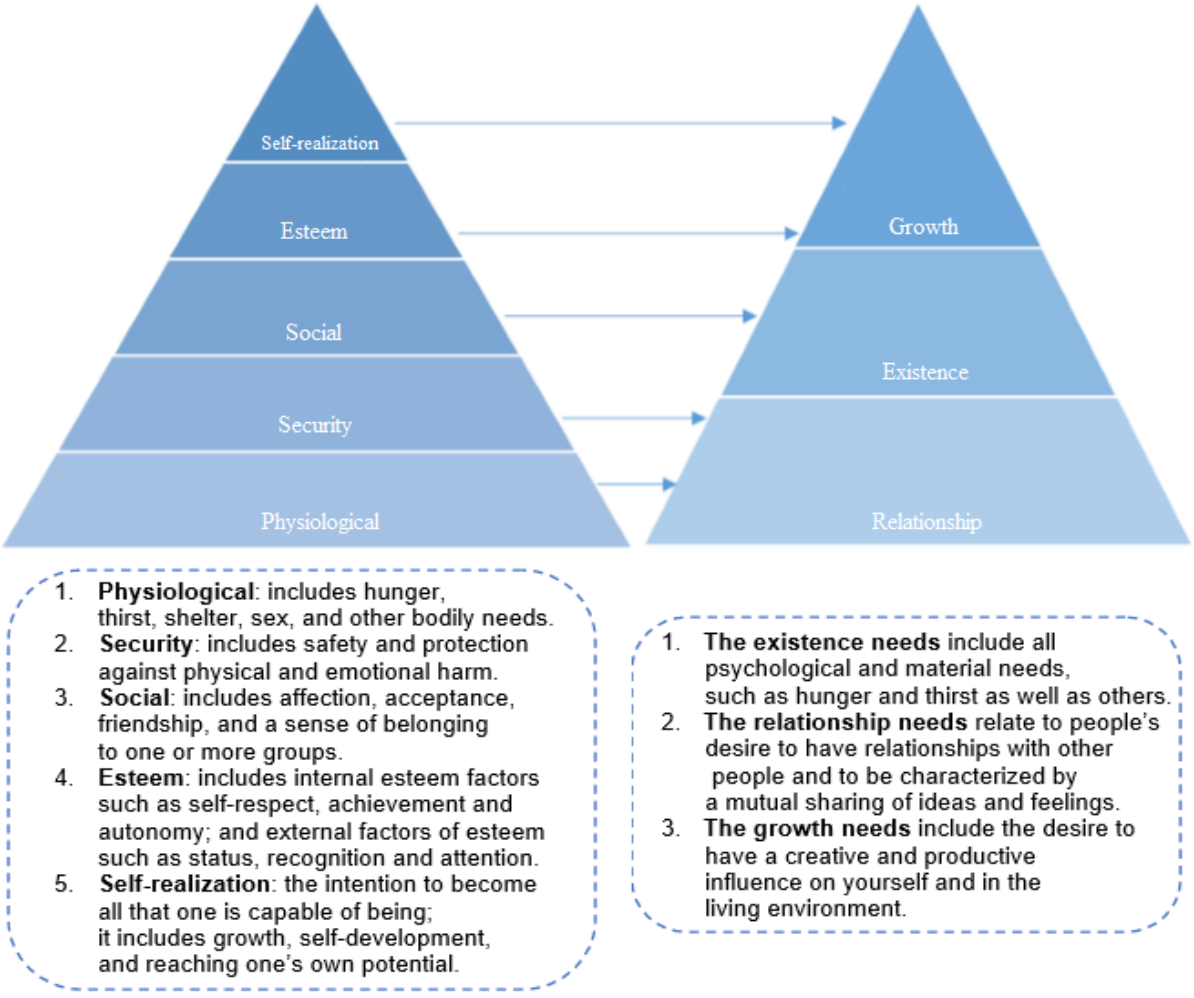
4 Discussion and Results

From the exposure brought, we sought to create a technological resource – the prototype – that aims to meet some basic human information needs, directed to the focused group. The prototype solidified through Proto.io3 software, an application prototyping platform, launched in 2011. The modeling sought to insert some attributes that address basic human needs, including some limitations that will be explained below.

For the study proposed here, it is pointed out that the modeling adopted was unfolded based on Maslow's Theory of Needs (1943), whose proposition of human satisfaction factors are divided into five levels arranged in pyramid form. The bottom of the pyramid comprises low-level needs, which are physiological and safety needs; The top of the pyramid is made up of the high-level needs that represent the quest for individualization of being, the social needs of esteem and self-realization. As one level of need is met, the next becomes dominant.

Moreover, the modeling was also inspired by Alderfer and Schneider's (1973) ERG theory after Maslow's. Such a theory re-signifies Maslow's five motivational groups into just three: existence, relatedness, and grow. The ERG theory, based on the Hierarchy of Needs Theory, was conceived with the intention of better alignment with empirical research. (ROBBINS, 2002). For a better understanding of the adopted theories, figure 3 denotes its particularities:

Figure 3. Maslow Pyramid compared to ERG



Source: Adapted from Robbins (2002).

The ERG theory undoubtedly bears similarities to Maslow's theory. However, unlike

Maslow's theory, the ERG theory admits that more than one need may be active at the same time; If a higher-level need is suppressed, the desire to satisfy a lower level need increase. Still, and according to Robbins (2002) the ERG theory is more consistent with knowledge through differences between individuals. Variables such as education, family background, and cultural environment can change the importance each of the needs groups has for a person.

Given the explanation behind the construction of the prototype and the possible needs of the elderly population, it can be seen that, through the prototype, the elderly ones can independently know what is happening in the city, what needs to be done, strengthening and creating relationships, as well as providing entertainment without the need for someone to carry it, as the prototype provides means of transport access to get around without the need for help.

As for the justification of the main colors chosen for the prototype, it is pointed out: blue has its affective association in truth, affection, peace, warning, serenity, space, infinity, fidelity and deep feeling; and white by the contrast of the other color and by affectionately transmitting cleanliness, peace, purity and soul. (FREITAS, 2007).

That said, the simplified prototype tutorial is presented below, as well as the step-by-step process (shown in figures 3, 4, 5, 6, and 7[2]) – including explanations of functionality, limitations, and possible enhancements to their enhancement.

Figure 4. Active+ Prototype Tutorial
Step 1. Prototype Interface

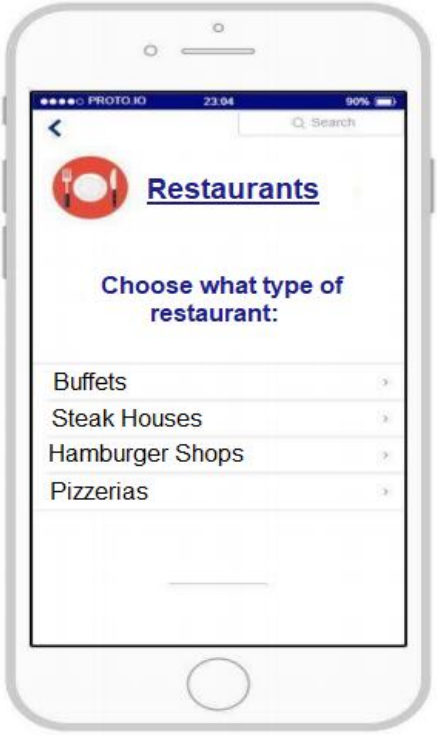
Description: The prototype was created without the need for username and password as it does not store the user's personal data and/or contains personal information. The homepage has as a means of access just the click "Enter" to access the app. The name of the Active+ app comes from the Active word meaning active English, and the symbol "+" referring to the plus, from the word "more", meaning "more active", in order to make the elderly more socially and technologically active. The blue color was thought with the purpose of transmitting calmness, lightness, harmony and freedom, which are psychologically represented by blue, besides being the characteristic color of technology.

[2]All images obtained by software Proto.io. (2018).

Figure 5. Tutorial: Active+ Prototype
Step 2. Prototype home

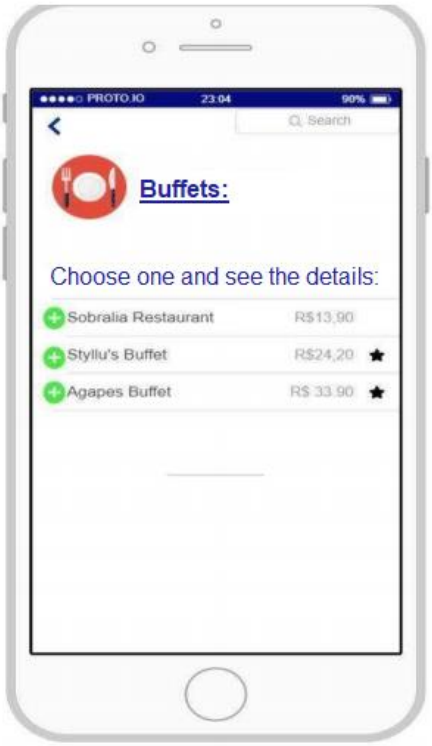
Description: On all pages, a color pattern has remained; already on the main page, the user is faced with all activities that can be performed in the application, developed five possible activities to start, this being a limitation of the application, something to be improved in later incursions. Initially it included "Restaurants", "Games", "Physical Activities", "Churches", and "Events", and in each item, it is possible to click and the prototype redirects the user to the requested page. The prototype has the function to allow the user to choose which of the five activities he wants to perform, and if clicked on the item "Restaurants", will be redirected to the page below.

Figure 6. Tutorial: Active+ Prototype
Step 3. Choosing the types of restaurants in the prototype



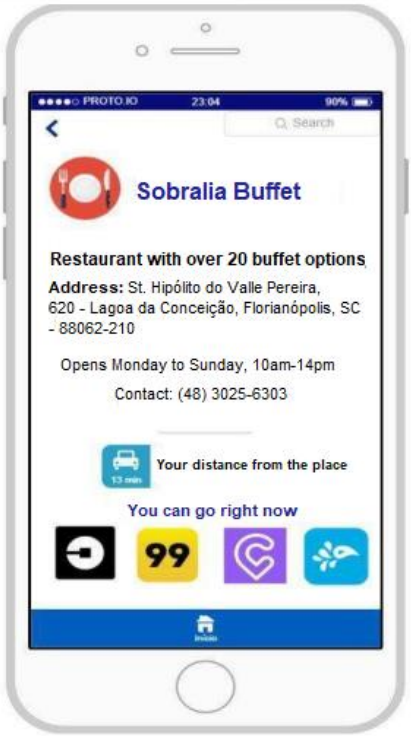
Description: In the "Restaurants" page are presented those available to the user, with limitations of categories. Thus, four categories were initially defined: "Buffets", "Steak Houses", "Hamburger Shops", and "Pizzerias", so that new categories can be improved and included in other versions. From the category view, it is possible to can choose the desired one; all are clickable and redirect to a page with the restaurants of the chosen category that will be shown below. The return and search button are common to all pages, allowing it to return to the previous page or search by location. The user can choose which restaurant he wants to go to available. This functionality occurs in all available activities.

Figure 7. Active+ Prototype Tutorial
Step 4. Choosing the buffets



Description: After clicking on the chosen category, for example, "Buffets", the prototype provides restaurants that belong to the chosen category with the functionality of listing the restaurants and also providing the approximate values of the place. This functionality is also limited by the number of restaurants available and can be further expanded. When viewing available restaurants and values, the user chooses which one favors them best and can click on which one they want for more information.

Figure 8. Active + Prototype Tutorial
Step 5. Chosen Buffet info



Description: By clicking on the desired restaurant, the prototype will redirect to the restaurant page, such as "Sobralia Buffet", including location data, so that the user knows the location, address, opening hours and if necessary, the telephone for contact. With this, the user can decide to go to the place or choose another available. If the user wants to go there, the app offers integration with other transportation apps, outlined below the available options for mobility.

5 Final Considerations

One of the recurring discussions in Information Science concerns with the social nature of the area, implying in the conception and development of mechanisms that materialize social/digital inclusion to those asymmetrically disadvantaged, aiming to provide them with the exercise of contemporary citizenship.

Information literacy is seen as a social movement that contributes to the development of essential skills for the individual in today's society, such as autonomy, freedom, citizenship, quality of life, personal empowerment and independence. Research involving health issues contributes to the understanding of movement as an aid element in the development and maintenance of quality of life, which is one of the elements that integrate the list of capabilities that information literacy can enable. (DE LUCCA; VIANNA; VITORINO, 2018).

In turn, the elderly population is emphatically disadvantaged in the social field. It is known that the capitalist regime tends to disregard individuals outside the economically active zone, and, in the case of the elderly ones, this situation is aggravated by the fact that the retired individual – who is usually the elderly groups – entails a financial burden for the public power. This individual in contemporary societies tends to be stripped of a social role because his wisdom and experience are not valued by that society that tends to privilege capital. In addition, there are other assertive evidences that confirm its constant condition of social vulnerability. (DE LUCCA; VIANNA; VITORINO, 2018).

Through some research, it is observed that this population tends to suffer some declines: decline in functional capacity, which may happen due to aging; social ties, the fact that many loved ones die, or the very issue of mobility; decline in autonomy, which may be compromised when this individual loses his or her functional capacity; or even the decline in purchasing power, because most of the elderly are outside the economically active zone. Consequently, this individual also tends to be stripped of his social role in capitalist society. In this role, information literacy could assume the role of transforming the social reality of these individuals by stimulating their autonomy, freedom and citizenship. (DE LUCCA; VIANNA; VITORINO, 2018).

That said, the research sought to characterize the elderly group and present the possible yet asymmetrical relationships between the group, new technologies, and recurring information needs. Likewise, and from the literature, it was exposed how possibly the development of information literacy occurs in the group, and especially, the incursion of the dimensions of this metaliteracy, whose focus has focused on the technical dimension. Given this, it was aspired to foster a prototype focused on possible solutions to the information needs of the elderly; and with the ultimate purpose of arousing interest in facilitating access to and use of available technologies and in contributing to the development/strengthening of learning to learn: the basic premise of the information literacy movement.

For future researches, the development of the prototype for effective application is indicated, including increased functionality and working on its limitations, improving it for frequent use, and may also be expanded to other vulnerable groups. Finally, it is necessary to reinforce how necessary is the development of empirical practices that aim to supply the information needs and others of the other socially vulnerable groups, aiming to promote the quality of life, empowerment, self-realization and continuous learning through technological and social ways.

References

ALDERFER, Clayton P.; SCHNEIDER, Benjamin. Three Studies of Measures of Need Satisfaction in Organizations. **Administrative Science Quarterly**, v. 18, n. 4, p. 489-505, dec. 1973.

AMERICAN LIBRARY ASSOCIATION (ALA). ACRL – ASSOCIATION OF COLLEGE & RESEARCH LIBRARIES. **Framework for Information Literacy for Higher Education**. 2016.

BARRA, Daniela Couto Carvalho et al. Métodos para desenvolvimento de aplicativos móveis em saúde: revisão integrativa da literatura. **Texto & Contexto-Enfermagem**, v. 26, n. 4, 2017. Available on: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S010407072017000400502&lng=en&nrm=iso&tlng=pt. Access: 10 may 2019.

BASSOLI, Silvana; PORTELLA, Marilene Rodrigues. Estratégias de atenção ao idoso: avaliação das oficinas de saúde desenvolvida em grupos de terceira idade no município de Passo Fundo/RS. **Estudos Interdisciplinares sobre o Envelhecimento**, 2004. Available on: https://seer.ufrgs.br/RevEnvelhecer/article/view/4744. Access on: 10 may 2019.

BELLUZZO, Regina Célia Baptista. Formação contínua de professores do ensino fundamental sob a ótica do desenvolvimento da information literacy, competência indispensável ao acesso à informação e geração do conhecimento. **Transinformação**, Campinas, v. 16, n. 1, 2004. Available on: http://periodicos.puccampinas.edu.br/seer/index.php/transinfo/article/view/723/703. Access on: 10 may 2019.

BELLUZZO, Regina Célia Baptista. Competências na era digital: desafios tangíveis para bibliotecários e educadores. **ETD – Educação Temática Digital**, Campinas, v. 6, n. 2, jun. 2005. Available on: https://periodicos.sbu.unicamp.br/ojs/index.php/etd/article/view/772. Access on: 10 may 2019.

BEZ, Maria Rosangela; PASQUALOTTI, Paulo Roberto; PASSERINO, Liliana Maria. **Inclusão digital da terceira idade no centro Universitário Feevale**. 2006. Available on: http://www.br-ie.org/pub/index.php/sbie/article/view/466. Access on: 10 may 2019.

BIANCHETTI, Lucídio. **Tecnologia digital e novas qualificações**: desafios à educação. Editora da UFSC: 2008.

BIZELLI, Maria Helena Sebastiana Sahão. et al. Informática para a Terceira idade: características de um curso bem-sucedido. **Rev. Ciênc. Ext**., v.5, n. 2, 2009. Available on: http://200.145.6.204/index.php/revista_proex/article/view/43. Access on: 10 may 2019.

BRASIL; MINISTÉRIO DA SAÚDE. **Estatuto do idoso**. Editora MS, 2003. Available on: http://conselho.saude.gov.br/biblioteca/livros/estatuto_idoso2edicao.pdf. Access on: 10 may 2019.

CHARCHAT-FICHMAN, Helenice. et al. Declínio da capacidade cognitiva durante o envelhecimento. **Revista Brasileira de Psiquiatria**, v. 27, n. 21, 2005. Available on: http://www.scielo.br/pdf/%0D/rbp/v27n1/23718.pdf. Access on: 10 may 2019.

CUNHA, Thiago; GARRAFA, Volnei. Vulnerability: a key principle for global bioethics? **Cambridge Quarterly of Healthcare Ethics**, v. 25, n. 2, 2016. Available on: http://journals-cambridgeorg.ez46.periodicos.capes.gov.br/action/displayAbstract?fromPage=online&aid=10225159&fileId=S096318011500050X. Access on: 10 may 2019.

DE LUCCA, Djuli Machado. **A dimensão política da Competência Informacional**: um estudo a partir das necessidades informacionais de idosos da Grande Florianópolis. Dissertação (Mestrado em Ciência da Informação) – Programa de Pós-Graduação em Ciência da Informação, Universidade Federal de Santa Catarina, Florianópolis, 2015. Available on: https://repositorio.ufsc.br/handle/123456789/158842. Access on: 10 may 2019.

DE LUCCA, D.; VIANNA, W.; VITORINO, E. A COMPETÊNCIA EM INFORMAÇÃO DE IDOSOS. **Brazilian Journal of Information Science**: research trends, v. 12, n. 4, p. 32-44, 17 dec. 2018.

EMMONS, Karen. Review of literature: the information needs and information-seeking behavior of older adults. **Drexel university information resources and technology**, 2004. Available on: http://www.pages.drexel.edu/~kje26/. Access on: 10 may 2019.

FONSECA, João José Saraiva da Metodologia da pesquisa científica. Fortaleza: UECE, 2002. Available on: http://www.ia.ufrrj.br/ppgea/conteudo/conteudo-20121/1SF/Sandra/apostilaMetodologia.pdf. Access on: 20 jun. 2019.

FREITAS, Ana Karina Miranda de. PSICODINÂMICA DAS CORES EM COMUNICAÇÃO. **Nucom**, v. 4, n. 12, oct./dec. 2007. Available on: https://hosting.iar.unicamp.br/lab/luz/ld/Cor/psicodinamica_das_cores_em_comunicacao.pdf. Access on: 08 oct. 2019.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). Agência IBGE notícias. 20. dec. 2018. **PNAD Contínua TIC 2017**: Internet chega a três em cada quatro domicílios do país. Available on: https://agenciadenoticias.ibge.gov.br/agencia-sala-deimprensa/2013-agencia-de-noticias/releases/23445-pnad-continua-tic-2017-internet-chega-atres-em-cada-quatro-domicilios-do-pais. Access on: 10 may 2019.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). **Projeções da População**. 2018. Available on: https://www.ibge.gov.br/estatisticas/sociais/populacao/9109-projecao-dapopulacao.html?=&t=o-que-e. Access on: 10 may 2019.

KACHAR, Vitória. Envelhecimento e perspectivas de inclusão digital. **Revista Kairós**: Gerontologia, v. 13, n. 2, 2010. Available on: https://revistas.pucsp.br/index.php/kairos/article/viewFile/5371/3851. Access on: 10 may 2019.

LE COADIC, Yves-François. **A ciência da informação**. Briquet de Lemos Livros, 2004.

LÉVY, Pierre. A inteligência coletiva: por uma antropologia do ciberespaço. **Cibercultura**. São Paulo: v. 34, 1999.

MASLOW, Abraham. **A Theory of Human Motivation**. 1943.

MAIA, Flavia de Oliveira Motta. **Vulnerabilidade e envelhecimento**: panorama dos idosos residentes no município de São Paulo-Estudo SABE. 2011. Tese (Doutorado). Universidade de São Paulo. Available on: http://www.teses.usp.br/teses/disponiveis/7/7139/tde-24102011-080913/pt-br.php. Access on: 10 may 2019.

MINAYO, Maria Cecília de Souza (org.). **Pesquisa Social**: teoria, método e criatividade. 18 ed. Petrópolis: Vozes, 2001.

ROBBINS, Stephen P. **Comportamento organizacional**. São Paulo: Prentice Hall, 2002.

ROSEN, Larry.; WEIL, Michelle. Adult and teenage use of consumer, business, and entertainment technology: potholes on the information superhighway. **Journal of Consumer Affairs**, v. 29, n. 1, 1995. Available on: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1745-6606.1995.tb00039.x. Access on: 10 may 2019.

SANTOS, Robson Luis Gomes dos. **Usabilidade de Interfaces para Sistemas de Recuperação de Informação na web**: estudo de caso de bibliotecas on-line de universidades federais brasileiras. Tese (Doutorado em Design) – Departamento de Artes e Design, Pontifícia Universidade Católica do Rio de Janeiro. Rio de Janeiro, 2006.

VITORINO, Elizete Vieira; PIANTOLA, Daniela. Dimensões da Competência Informacional (2). **Ciência da Informação**, v. 40, n. 1, 2011. Available on: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-19652011000100008. Access on: 10 may 2019.

WILLIAMSON, Kirsty. The role of research in professional practice: with reference to the assessment of the information and library needs of older people. **Australasian Public Libraries and Information Services**, v. 12, n. 4, 1999. Available on: https://search.informit.com.au/documentSummary;dn=983807342399340;res=IELAPA. Access on: 10 may 2019.

WHITE, Heidi et al. Surfing the net in later life: a review of the literature and pilot study of computer use and quality of life. **Journal of Applied Gerontology**, v.18, n.3, 1999. Available on: http://journals.sagepub.com/doi/abs/10.1177/073346489901800306. Access on: 10 may 2019.