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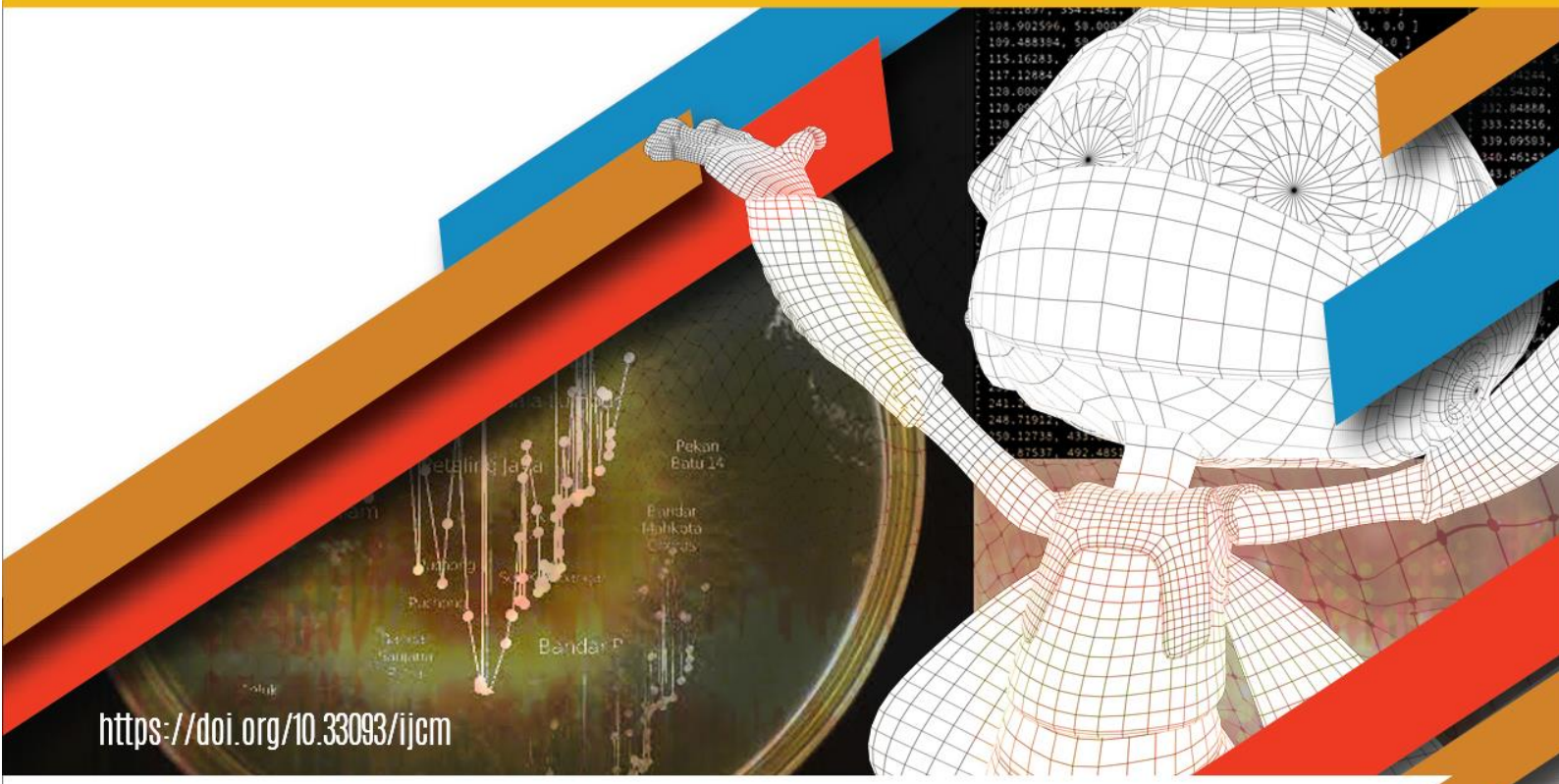

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Editorial Board

Aim and Scope

The International Journal of Creative Multimedia (IJCM) is a peer-reviewed open-access journal devoted to publish research papers in all fields of creative multimedia, including Digital Learning, Film & Animation, Media, Arts & Technology and Visual Design & Communication. It aims to provide an international forum for the exchange of ideas and findings from researchers across different cultures, and encourages research on the impact of social, cultural and technological factors on creative multimedia theory and practice. It also seeks to promote the transfer of knowledge between professionals in academia and industry by emphasising research where results are of interest or applicable to creative multimedia practices. We welcome all kinds of papers that connect academic researches with practical and industrial context in the field of creative multimedia. The scope of the IJCM is in the broad areas of Creative Multimedia following the five major thematic streams, includes but not limited to:

- Digital Learning
- Media, Arts & Technology
- Games and Virtual Reality
- Cinema and Film Studies
- Animation and Visual Effects
- Visual Design and Communication

Foreword from Digital Learning Editorial Team

Greetings from the Editors and welcome to the Special Issue on Digital Learning in the 21st century. In this Issue, we present papers from international and local researchers focusing on research papers in areas of education technology, learning analytics, e-learning, engineering, IT, business and management, creative multimedia and many other domains that seek to improve the learning process of the learner with technologies. These papers were presented in the ELITE 2019 International Conference held in Multimedia University, Cyberjaya, Malaysia on October 2, 2019, in conjunction with the 2019 IDE4TE International Exhibition on Oct 1, 2019. Themed, "Empowering Learning, Innovating Teaching Environments", this event showcased best practices of Malaysian Universities, particularly from the network of Industry Driven Education Alliance (GLU iDE4) comprising of Universiti Teknologi Petronas (UTP), Universiti Multimedia (MMU), Universiti Tenaga Nasional (UNITEN) and Universiti Kuala Lumpur (UniKL), as well as from international presenters from China, India, Bangladesh and Maldives.

The papers presented in this Special Issue centred around 5 sub-themes; 1) Innovative Pedagogies & Instructional Design, 2) New Roles of Teachers, 3) Redesigning Curriculum for Education 4.0, 4) Emerging Technologies In The Classroom, and 5) Designing Learning Spaces for 21st Century Education, and are very timely articles for readers interested in adapting technology in today's classrooms. We hope that these papers will provide further insight and contributions to the knowledge base in these fields and we hope you enjoy reading them.

Prof. Ts. Dr. Neo Mai, Multimedia University, Malaysia

Professor Dr. Neo Mai is the Director for Academic Development for Excellence in Programmes and Teaching (ADEPT) for Multimedia University, and Professor in the Faculty of Creative Multimedia, and the Institute for Digital Education and Learning (IDEAL). Prof. Mai is the Director of the award-winning MILE Research lab and founding Chairperson form the CAMELOT (Centre for Adaptive Multimedia, Education and Learning cOntent Technologies) Research Centre. Prof. Mai's research interests are in the design of constructivist learning environments, micro-learning, team-based learning and web-based education. She was the recipient of the 2014 Excellent Researcher Award, an AKEPT Certified Trainer for Interactive Lectures (Level 1, 2, 3), an HRDF certified trainer and is certified in Team-Based Learning from the Team-Based Learning Collaborative, USA.

Dr. Gan Chin Lay, Multimedia University, Malaysia

Dr. Gan Chin Lay is a Senior Lecturer affiliated with the Faculty of Business, Multimedia University. Her main research interest is in learning analytics, particularly related to technology-enhanced student-centered learning environments. Her research domains include teaching and learning issues such as student engagement, and educational technology integration frameworks.

Dr. Liew Tze Wei, Multimedia University, Malaysia

Dr. Liew Tze Wei is a Senior Lecturer at the Faculty of Business, Multimedia University, Malaysia. He is leading the Human-Centric Technology Interaction Special Interest Group, in addition to serving as the collaboration & innovation coordinator and research & innovation committee member in the faculty. His research interests and contributions fall within learning sciences, human-computer interaction, and media psychology; with a strong focus on experimental research approach.

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Exploring the Potential of Online Tutorial Websites for Developing Technological Skills among Senior Citizens

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Universiti Sains Malaysia, Malaysia

Abstract

Most social media platforms nowadays are designed for intuitive younger users and senior citizens might face difficulties in developing their social media skills. There are several factors that may inhibit senior citizens from learning how to use social media such as lack of suitable platform and mobility limitation. Learning process may occur differently among senior citizens compared to the younger learners due to the digital divide. Senior citizens encounter cognitive and physical declinations throughout the aging process which may affect their learning activities. Hence, the learning platform for senior citizens should be designed in a way that could help them to maximise their learning; an online tutorial website could be one of the alternative platforms. This study is conducted to explore the potential of the existing free online tutorial websites in developing social media skills among senior citizens. Instructional strategies for teaching senior citizens via online tutorial websites are also developed based on previous studies. Three existing online tutorial websites are analysed based on the proposed instructional strategies to gain more understanding regarding online tool in the context of technology learning among senior citizens. Supported by the three cases-in-point, criteria that are crucial in ensuring senior citizens have positive learning experiences via websites are drawn.

Keywords Senior citizens; Digital divide; Instructional strategies; Online tutorial websites

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Introduction

The design of social media is mostly dedicated to the digital natives where they can easily grasp the features offered by using their intuition (Chou, Lai & Liu, 2013). As digital immigrants, senior citizens tend to face difficulties in adapting to the social media applications as their ability to understand how social media works differ from the younger users. In this paper, technological skill is being defined as skills that could be acquired by senior citizen learners to use the digital tools and resources effectively. To date, there are free online tools and platforms that could help them gain understanding of the digital skills in order to use social media applications safely and effectively. This paper attempts to propose a set of instructional strategies for teaching older adults via websites based on suggestions by previous researchers, and explore the potential of the free online tutorial websites in developing social media skills among senior citizens so that they could participate actively in the online society.

The study is presented in three separate sections. The first section discusses overview of senior citizen population in Malaysia and the importance of learning technological skills for active ageing. The second section focuses on the review of instructional strategies for senior citizens and the third section focuses on the evaluation of free online tutorial websites in assisting older adults to learn. Qualitative content analysis is performed on three online tutorial websites namely (1) WikiHow, (2) Lifewire and (3) GCF LearnFree, based on instructional strategies for senior citizens proposed by researchers in the field (Jones & Bayen, 1998; Uechi, 2010; Ahmad et al., 2013; Wolfson et al., 2014).

It is found that although studies that address the digital gap among senior citizens in Malaysia do exist, there are limited studies that focuses on teaching technology skills to older adults and assisting them via online tools such as free tutorial websites. Furthermore, previous study that emphasizes on teaching technology to senior citizens, focus on in-class teaching or workshop and not learning websites (Ahmad et al., 2013).

The following research questions are developed to guide this study:

1. What are the instructional strategies that should be considered when designing an online tutorial website for senior citizens?
2. To what extent do free online tutorial website potentially support the learning process of senior citizens?

Literature Review

Senior Citizen and Social Media Skills

According to the World Population Prospects by United Nations (2017), the total number of the senior citizens is estimated to be 962 million and it compromises of 13 per cent of the global population. In Malaysian context, based on the 'Portal Rasmi Jabatan Kebajikan Masyarakat Malaysia' website, the age range for senior citizens in Malaysia are those who in the age of 60 and above. Malaysian Communication and Multimedia Commission (MCMC) in their 2018 Internet User Survey reported that senior citizens who use internet comprise of 6.5 per cent of Malaysian population for the internet usage. The survey shows that the number of senior citizens who use internet is higher compared to 2016, where senior citizens who use internet are only 2.6 per cent. Besides, the survey also states that visiting the social media platform is the second highest online activity by Malaysian internet users. This indicated that senior citizens in Malaysia are slowly adapting to the usage of the internet and social media.

Social media could still be too complicated to be used by senior citizens. Based on the study by Chou et al. (2013), comprehension gap is one of the reasons why senior citizens find it is difficult to learn how to use social media. The gap includes the jargon terms used in social media and their unfamiliarity with the concept of social media. Indeed, the learning capabilities of senior citizens are different from the younger leaners due to the declination in their physical ability. Senior users also hope that they could participate in their children's life through internet. By being able to use social media platform appropriately, senior citizens could also easily communicate and engage with their family, friends and community (Carley, 2015). However, it might be challenging for senior citizens to grasp how the social media applications work since the design for the platforms is specified for the digital natives. The changes in seniors' physical and cognitive have affected their ability to understand how social media work (Meymo & Kenn, 2017).

Instructional Strategies for Senior Citizens

Senior citizens may take a longer time in adjusting to the current website features due to the declination in vision, hearing and cognition since it will affect cognitive process that involves short term memory (Rusdi, Sahari, & Noor, 2017). Due to the biological factor in human, their vision and cognitive abilities decline throughout the aging process (Pliatsikas et al., 2019). The younger users may not have a problem in using current technologies in their daily life, however, it is difficult for senior citizens to learn current technologies due to cognitive declination (Wolfson et al., 2014). The cognitive declination also affects the performance of the working memory when the information is presented in a big chunk (Heaggans, 2012).

Therefore, instructional strategies play an important role in in helping older adults learn independently and strategically. Based on the study by Ahmad et al. (2013), they found that most of the available websites are developed in way trying to fit all the age levels, however, certain websites are always failing to fulfil senior citizens' need. To date, learning strategies for senior citizens do exist (Ahmad et al., 2013; Jones & Bayen, 1998; Uechi, 2010; Wolfson et al., 2014), but none of them is specifically tailored for aiding older adults via online tutorial websites. Hence, we developed a set of instructional strategies that could potentially help senior citizens learn effectively via online tutorial website based on findings from the existing literature. We looked for the most popular criteria in the domain of teaching older adults to acquire knowledge and skills. The proposed learning strategies contains three main criteria: Instructions, Content to be Learned and Application.

The instructional strategies are then set out as a guide for qualitative content analysis of the selected online tutorial websites (Table 1).

Table 1 Instructional strategies for teaching senior citizens via online tutorial website

Criteria	Strategies
Instructions	• The instruction should be simple and meaningful where unnecessary information will not be included and to minimize the amount of reading needed. • Include clear and explicit learning objectives. • Provide a clear flow for the learning objectives prior the instruction. • Use language that can be easily understood by senior citizens and avoid jargon terms.
Content to be Learned	• Break down the instructional content into small meaningful units with specific goals. • Incorporate guiding images or videos to assist the learning process. • Choose appropriate font styles and size with appropriate background contrast that are easy to read.
Application	• Provide practice for each unit of the instructions.

Methodology

The search for the existing online tutorial websites was firstly conducted by using a group of pre-determined keywords on the Google search engine. The Google search engine was selected since it holds the largest percentage of the worldwide search engine market share. The keywords used include "free learning website for senior citizen", "social media tutorial for senior citizens" and "online tutorial for older adults". The search result led us to recommendations for online tutorial websites from reputable websites such as Makeusof (MUO), Huffpost and Medicare. Besides that, some of the online tutorial websites were directly suggested by the search engine.

Selection of Existing Online Tutorial Websites

We screened through the existing online tutorial websites and selected three websites for the purpose of this study. The selection criteria were: (1) The website must be open to public for free and (2) The website contains tutorials on how to use social media applications. However, these websites are not meant to represent other websites, but to provide further understanding on such online tool in the context of technology learning among senior citizens.

Qualitative Data Analysis

Qualitative content analysis is performed on the three different websites as the first step towards exploring the potential of such websites in bolstering learning process of older adults. A qualitative approach is selected because it could provide in-depth data for this study (Gay, Mills & Airasian, 2012). The data analysis is conducted by investigating the selected websites that could be potentially be used as free online tutorial websites in assisting older adults to learn social media skills. The websites are analysed in terms of the instructional strategies used in delivering the tutorial. Several measures are implied during the data analysis to maintain objectivity and minimize authors' personal biases.

The measures included:

1. The websites are closely analysed based on the instructional strategies for senior citizens suggested by previous researchers in the field (Ahmad et al., 2013; Jones & Bayen, 1998; Uechi, 2010; Wolfson et al., 2014).
2. Three websites are selected to establish comparison case in discovering similarities and differences to ensure different perspectives were demonstrated (Noble & Smith, 2015).

3. Multiple people are involved in the process of coding the data. The coding team consisted of three researchers in the field: two postgraduate students and one senior lecturer. The data coded are then cross-checked and grouped into three factors: instruction, content to be learned and application.
4. Our findings are then reviewed by experts from the instructional strategy field.

Guided by the second research question and learning strategies illustrated in Table 1, the contents on each website are carefully observed and evaluated. Screenshots are taken and captured as evidences of the learning strategies adhered. We then conducted the cross-case analysis at the end of the study in an attempt to identify the similarities and differences between the cases.

Results

WikiHow

WikiHow is a wiki-style learning website where the users can collaboratively modify the content of the website through the web browser or mobile application. According to the statistics from WikiHow's website, there are 2,006,173 registered users and 205,057 content pages up to 2019. Users can easily access the free how-to articles in many categories such as technology, health and education. There is no need for a registration if the users want to access the articles.

Instructions

There is no consistent length range on the information for each step. Since there are a lot of articles within WikiHow, some articles have short instructions, and some articles have lengthy instructions. The inconsistency of the instruction lengths will burden senior citizens' working memory or they need to perform extra task to browse and select the articles with shorter instructions.

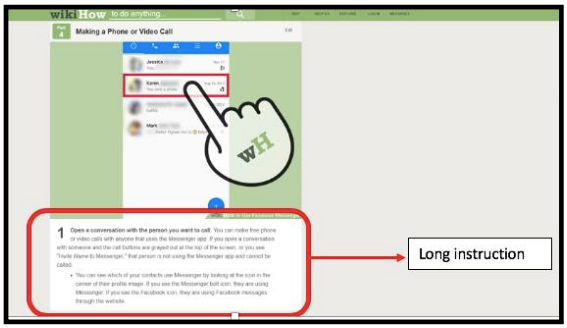

Figure 1 Instruction Length on WikiHow

The language used in WikiHow is a standard English that can be understood by most of the generations. Besides, the explanation is usually synchronised with the guiding images, hence, the misunderstanding in any ambiguous term can be avoided.

Content to be Learned

WikiHow incorporates guiding images for all of the articles as it is one of the standard formats. The font style used in WikiHow is Helvetica and the size are 11. The font style used is appropriate since the framework suggests that Sans-serif font is easier to be read. In term of the font size, it is quite small, and senior citizens might need to zoom the page to enlarge the text.

Application

Some of the articles within WikiHow provide a practice for each unit or for the whole instructions by incorporating the quiz section. However, some of the articles did not provide practice for users. Hence, senior citizens can only practise what they had learned if the articles that they view provide the practice section.

Lifewire

Lifewire is a learning website that provides advices on technology. The website has more than fifty technology professionals who produce articles in many categories such as software development, website design and education. Lifewire states that their article consists of informative visual and straightforward instruction. Currently, Lifewire holds 17,000 articles that are continuously refined for the past 20 years. Apart from that, Lifewire states that their website does not include jargon terms within the articles to ensure that everyone can learn about technology.

Instructions

It is found that there are inconsistencies on the length of instructions on Lifewire. Some of the instructions within the articles are straightforward and not too wordy where unnecessary information is not being included. This could minimize the amount of reading needed. However, some of the articles are lengthy (as shown in Figure 2)

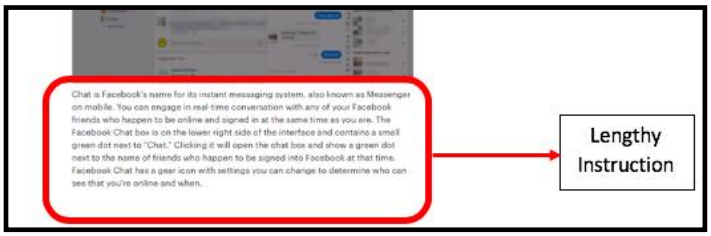

Figure 2 Instruction Length on Lifewire

Some of the articles provided divide the instructions into smaller parts and the goals are clearly stated. However, some articles present the instruction in a paragraph under one learning objective. The flow for each learning objectives prior the instruction lacks clarity.

Content to be Learned

Lifewire justified that their website does not include jargon terms and the information is always straightforwardly delivered. Lifewire also includes informative visual to help users understand the content better. The font style used in Lifewire is Helvetica and the size is 11. The font style used is appropriate since the study suggests that Sans-serif font is easier to read. The font size used is considered quite small and senior citizens might need to zoom the page to enlarge the text.

Application

Lifewire does not provide a practice section for the articles since the website is more like a blog-style platform.

GCF LearnFree

GCFLearnFree.org (GCF) is a free learning website that focuses on technology, job training, reading and math skills. The GCF website is accessed by a wide range of people from senior citizens who want to learn technology to professionals who want to polish up their skills. Besides that, GCF is also used by some organisations such as K-12 schools, community centres and correctional facilities. According to the website, the production team in GCF consists of software developers, graphic designers, instructional designers, curriculum coordinator and many others who are responsible in developing the content within the website. There is no registration needed to access the self-paced tutorials within GCF.

Instructions

The tutorials within the website consistently provide a simple and brief explanation for the steps and there are some longer explanations for the information that involves the concept explanation. Hence, GCF minimizes the amount of reading needed during the instruction as what is suggested by the framework.

Figure 3 Instruction Length on GCF

For each tutorial in GCF, the instructions are broken down into smaller units as what is suggested by the framework. Users will first see the list of objectives and goals before proceeding with the tutorial. Besides that, the objectives also obey the instructional strategy from the framework which suggests that the learning objectives should be clear and explicit. Furthermore, GCF provides a clear flow for the learning objectives prior the instruction. By looking through all the objectives before starting the tutorials, senior citizens can anticipate what they are going to know by the end of the tutorial.

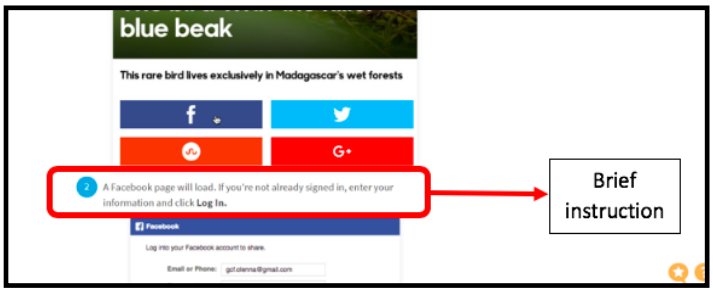

Figure 4 Learning Objectives on GCF

Content to be Learned

GCF provides clear images to help the users understand the explanation better. Besides, GCF also provides videos for a more interactive information presentation. The language used within GCF is straightforward and no jargon terms are included within the instruction since the target users for GCF are people from various ages and backgrounds. Hence, the language is used as explicit as possible to

ensure everyone can understand the instruction. The font style used in GCF is Source Sans Pro and the size is 14.5. The font style used is appropriate since the study suggests that Sans-serif font is easier to be read. In term of the font size, it is quite large and appropriate for senior citizens.

Application

Senior citizens should be allowed to practise what they had learned from each unit to ensure their information retention. However, GCF only provides quiz by the end of the tutorial and not after each unit within the tutorial. Nevertheless, the tutorial format in GCF is consistent where every tutorial has the quiz section by the end of the tutorial, hence, senior citizens are still able to practise what they had learned.

Summary

Based on the qualitative content analysis, we found out that GCF adhered to most of the instructional strategies for teaching senior citizens via online tutorial website. The instructions on GCF are brief and comprehensive as it minimize the amount of reading needed while WikiHow and Lifewire have inconsistent length format. Furthermore, the instructions on GCF and WikiHow are broken down into smaller units and steps but Lifewire only did on certain articles. Plus, compared to WikiHow and Lifewire, GCF displays all the learning objectives prior the instructions. Despite that, the objectives provided by all the websites are clear and explicit. All the websites provide guiding images and videos for the instruction, nevertheless, GCF had an advantage by incorporating interactive guiding images. The language used for all the websites are straightforward and no jargon terms are included, hence, the language used is understandable by most of the people. The font styles used are also appropriate for all of the websites; however, WikiHow and Lifewire do not use suitable font size according to the strategy. Lastly, GCF consistently provides a practice session at the end of the instructions compared to WikiHow and Lifewire.

The table below summarises the comparison for the online tutorial websites.

Table 2 Summary of online tutorial website comparison

Criteria	Strategies	WikiHow	LifeWire	GCF
Instructions	• The instruction should be simple and meaningful	Inconsistent length format	Inconsistent length format	Yes
		Yes	Yes	Yes

	• Include clear and explicit learning objectives.	No	No	Yes
	• Provide a clear flow for the learning objectives prior the instruction.	Yes	Yes	Yes
	• Use easy language and avoid jargon terms.			
Content to be Learned	• Break down the instructional content into small meaningful units with specific goals.	Yes	Only for certain articles	Yes
	• Incorporate guiding images or videos to assist the learning process.	Yes	Yes	Yes
	• Choose appropriate font styles and size with appropriate background contrast that are easy to read.	Appropriate font style but with small text size	Appropriate font style but with small text size	Yes
Application	• Provide practice for each unit of the instructions	Only for certain articles	No	Only for the whole topic

Discussion and Conclusion

Instructional strategies play an important role in ensuring the success of the instruction. Suitable instructional strategies should be integrated within the instructional programs that are dedicated for senior citizens. Previous study by Jones and Bayen (1998) recommended specialised instructional strategies for teaching senior citizens computer skills since most of the older adults are prone to cognitive declination. Besides this, result from another study by Nahm and Resnick (2008) showed that by incorporating some of the instructional strategies suggested by Jones and Bayen (1998), the senior citizens were more comfortable in using the computer or web-based learning platform. A study by Duay and Bryan (2008) explored senior citizens' perspective on the instructional strategies in learning technology; the result showed that the participants found some of the strategies proposed by Jones and Bayen (1998) could facilitate them

in acquiring technology skills. Furthermore, there are more recent studies which referred to the recommendations by Jones and Bayen (1998) in coming out with their own suggestions on instructional strategies for senior citizens in learning technology (Heaggans, 2012; Raistrick, 2016; Wolfson et al., 2014). Therefore, previous studies showed that the instructional strategies for senior citizens may help them in learning technologies despite of their cognitive and physical declination. However, most of the previous studies only focus on the instructional strategies' recommendation for in-class teaching and there are little current studies regarding the instructional strategies for online tutorial website. In addition, there are also little study in identifying the effectiveness of the instructional strategies for senior citizens in term of learning technological skills.

Since the focus of this study is to explore the potential of the free online tutorial websites in developing social media skills among senior citizens, we developed instructional strategies for the online tutorial website taking into consideration the strategies suggested by previous researchers. The online tutorial websites are seen as an effective tool that could help to overcome barriers faced by senior citizens such as the limitation on face-to-face training, mobility and cost (Heber et al., 2017). Besides the conveniences offered by the website, it is also crucial to consider incorporating instructional strategies that could cater senior citizens' needs so that they too could learn effectively from the online tutorial websites. The instructional strategies for this study focused on three main criteria namely instruction, content to be learned and application. Our findings demonstrated that the strategies suggested could potentially determine whether an online tutorial website is useful and appropriate for senior citizens' use.

Our findings also suggested that there are existing online tutorial websites that could potentially facilitate senior citizens in developing technological skills. Based on the qualitative content analysis for the potential online tutorial websites, we found that GCFLearnFree.org incorporated most of the instructional strategies that we had developed. However, an improvement could be made on the practice included within the tutorial to ensure that senior citizens could consistently practise what they had learned. Despite that, the instructions within the tutorial were presented in a way that could accommodate senior citizens' learning process. Hence, the existence of free online tutorial website such as GCFLearnFree.org could potentially facilitate senior citizens in developing technological skills.

The instructional strategies proposed in this study are hoped to provide an insight for future developers or instructional designers who wish to develop an online tutorial website for senior citizens. They

could also provide a discernment on the instructional strategies that could be implemented into the websites. Nevertheless, this study has its limitations. Although the suggested learning strategies could serve as guidelines for developing a free online tutorial website for senior citizens especially for learning technological skills, external considerations should be taken into account. Factors that could limit the ability of senior citizens such as Internet accessibility, devices with adequate processing power, and knowledge and skill support should be considered. Our future goal is to expand this study to acquire further insights from the senior citizen community towards design and development of websites with better educational feasibility and value. We intend to investigate and explore the use of free online tutorial website as a learning tool among senior citizens.

References

[1] Ahmad, N. A., Razak, F. H. A., Zainal, A., Kahar, S., & Adnan, W. A. W. (2013). Teaching Older People Using Web Technology: A Case Study. *2013 International Conference on Advanced Computer Science Applications and Technologies*, 396-400.

[2] Carley, H. (2015). Issues Involving Social Networking and Senior Citizens. *International Conference on Multidisciplinary Social Networks Research*, 363-371.

[3] Chou, W. H., Lai, Y. T., & Liu, K. H. (2013). User requirements of social media for the elderly: a case study in Taiwan. *Behaviour & Information Technology*, *32*(9), 920-937.

[4] Duay, D. L., & Bryan, V. C. (2008). Learning in later life: What seniors want in a learning experience. *Educational Gerontology, 34*(12), 1070-1086.

[5] Heaggans, R. C. (2012). The 60's Are the New 20's: Teaching Older Adults Technology. *SRATE Journal, 21*(2), 1-8.

[6] Heber, E., Ebert, D. D., Lehr, D., Cuijpers, P., Berking, M., Nobis, S., & Riper, H. (2017). The benefit of web-and computer-based interventions for stress: a systematic review and meta-analysis. *Journal of Medical Internet Research, 19*(2), e32.

[7] Jones, B. D., & Bayen, U. J. (1998). Teaching older adults to use computers: Recommendations based on cognitive aging research. *Educational Gerontology: An International Quarterly*, *24*(7), 675-689.

[8] Meymo, S., & Kenn, N. (2017). *Why do elderly not use social media?: An investigation of the elderly's attitudes to HCI.*

[9] Murman, D. L. (2015). The impact of age on cognition. *Semin. Hear, 36(111–121).*

[10] Nahm, E. S., & Resnick, B. (2008). Development and testing of the Web-Based Learning Self-Efficacy Scale (WBLSES) for older adults. *Ageing International, 32(1).*

[11] Pliatsikas, C., Veríssimo, J., Babcock, L., Pullman, M. Y., Glei, D. A., Weinstein, M., & Ullman, M. T. (2019). Working memory in older adults declines with age, but is modulated by sex and education. *Quarterly Journal of Experimental Psychology, 72*(6), 1308-1327.

[12] Raistrick, C. (2016). *Social Media for Senior Citizens: An Introductory Course.*

[13] Rusdi, R., Sahari, N., & Noor, S. F. M. (2017). Usability guidelines for elderly website interface. *Asia-Pacific Journal of Information Technology and Multimedia*, *6*(2).

[14] Uechi, N. (2010). An instructional video module on spreadsheets accommodating the needs of senior citizens. *Technology, Colleges, and Community Worldwide Online Conference.*

[15] Wolfson, N. E., Cavanagh, T. M., & Kraiger, K. (2014). Older adults and technology-based instruction: Optimizing learning outcomes and transfer. *Academy of Management Learning & Education*, *13*(1), 26-44.

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Authors' Bio

Tan Yun Yi is currently a Senior Lecturer at Universiti Sains Malaysia. She obtained her Bachelor degree in Digital Media (Hons) from Multimedia University in 2009. She was later awarded the fellowship award to further her postgraduate studies. In 2018, she received her Ph. D in Educational Technology from The University of Hong Kong, Hong Kong. Her area of specialisation includes educational technology, social based learning, multimedia design and technological creativity. Her research interest is also driven by her curiosity in creative media and technology, and also how they could be used to enhance learners' learning experiences.

Nabilah Abd Raman is a graduate from Universiti Sains Malaysia. She completed her degree in Bachelor of Education (TESOL) (Hons) in 2018. Right after her graduation, she furthered her postgraduate study in Master of Instructional Multimedia which also took place in Universiti Sains Malaysia. She finished her master's degree within one year and graduated in 2019. She is highly interested in design and technology fields which she believes will greatly elevate learning and teaching experience.

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