Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Abstract

Abstract writing is a very important since it is the piece of formal writing which should attract the attention of the reader and make him/her read the rest of the paper. Thus, it must be clear, concise, coherent, and powerful enough to attract the reader and provide him/her with the key information about the content of a research paper. All university students have to write an abstract in English in their qualification papers. However, non-native students of English usually have difficulties in writing an abstract in English. For example, the Czech students lack formal writing skills in English since the skill of formal writing is not developed enough in their native language, i.e. Czech. Therefore, the aim of this article is to discuss the use of an off-line scaffolding tool, which can help students develop an abstract in English, as well as to demonstrate how this tool can be incorporated in the whole Course of Practical English taught at the Faculty of Informatics and Management of the University of Hradec Kralove in the Czech Republic. The application was developed for students as support to a face-to-face class instruction, which proved to be insufficient in teaching students how to write an abstract in English. The application reflects the structure and sentence functions of the abstract and provides students with a model abstract, as well as with additional formulations. Overall, the application was designed with the purpose to enhance student’s skill of writing an abstract in English, as well as to lead students to successfully complete the task by making the application user-friendly - easy-to-use, accessible and transferrable as far as the knowledge is concerned. The application aims to enhance students’ autonomous learning by tailoring the content to their specific needs and making it accessible anytime and from anywhere.

© 2020 The Authors. Published by Elsevier B.V.
This is an open access article under the CC BY-NC-ND license (https://creativecommons.org/licenses/by-nc-nd/4.0)
Peer-review under responsibility of the scientific committee of the KES International.

Keywords: abstract; qualification papers; scaffolding; structure; off-line; tool
1. Main text

Abstract writing is one of the most difficult pieces of writing since it is the piece of formal writing which should attract the attention of the reader and make him/her read the rest of the paper [1]. Therefore, it must be clear, concise, coherent, and simple, as well as its content must be stimulating enough to involve the reader in it [2-3].

The abstract can be defined as a summary of empirical or theoretical research. It usually contains the following parts: the research problem, methods used, findings/results, and conclusions/recommendations [4-6]. Most often, 25% of the space is spent on the research problem, 25% then on the part of the methods used, 35% covers the part on results, and 15% of the space corresponds to conclusions/recommendations [7].

The abstract is informative in its nature and provides the key information about the paper content. It usually consists of one single paragraph, it is most often double-spaced and written in Times New Roman, 12pt font. It length ranges between 150-200 words on average in case of the qualification papers [4]. Furthermore, the authors of abstracts should avoid using lengthy sentences, colloquial or slang words, contracted forms of auxiliary verbs, references to other literature, elliptical sentences, redundant words or phrases, any sort of image, illustration, or figures [8-9].

There exist three types of abstracts: descriptive/indicative, informative, and critical. The descriptive or indicative abstract is usually short, about 100 words. It provides information about the aim, methods, and scope of the research. The informative abstract is about 200 words long and describes the aim of the paper, methods used, results, and conclusions/recommendations. It provides comprehensive information about the content of the whole paper. The critical abstract, which is the least common form of all three abstracts, is usually between 400 and 500 words long and in addition to the informative abstract, it gives a judgment or comment about the validity, reliability, or completeness of the paper [8-9].

People usually write abstracts when submitting articles to journals, when applying for research grants, when writing a book proposal, when completing the Ph.D. dissertation or M.A. thesis or B.A. thesis, when writing a proposal for a conference paper, or when writing a proposal for a book chapter [10]. There are several steps in the whole process of writing an abstract, which are illustrated in Figure 1 below and are adapted according to [11].
All university students have to write an abstract in English in their qualification papers. Especially for non-native students of English as a foreign language, such as the Czech university students, this appears to be a slight problem for two main reasons. Firstly, their formal writing skills in English are usually not at satisfactory level [12] and secondly, the skill of writing is not developed enough in their native language, i.e. Czech [13]. In the Czech cultural environment, the skill of writing is namely perceived as a linguistic skill which is taught at elementary schools and accomplished through mastering grammatical and spelling rules [14]. Therefore, the Czech students usually lack experience in writing any coherent text, which, if acquired, could promote their higher order thinking skills, such as critical thinking skills or skills of reflection [15]. As Christian and Kearns [16] maintain, learning how to write a good abstract is essential since it can help students reinforce and synthesize the content of their research paper.

The aim of this article is to discuss the use of an off-line scaffolding tool, which can help and stimulate students to develop an abstract in English, as well as to demonstrate how this tool can be incorporated in the whole Course of Practical English taught at the Faculty of Informatics and Management of the University of Hradec Kralove in the Czech Republic.

2. The off-line scaffolding application tool for writing an abstract in English

This off-line application was developed for students of Management of Tourism at the Faculty of Informatics and Management (FIM) of the University of Hradec Kralove (UHK) as support to a face-to-face class instruction, which proved to be insufficient in teaching students how to write an abstract in English. In this class, which is aimed at students in their third year of study and is one of the 13 lessons (1 lesson lasts 90 min) of professional English during the summer semester, students are explained how to write an abstract in English. This is done on the basis of watching a youtube video – Writing an abstract – common mistakes, in which the lecturer analyzes a wrongly written abstract, discusses the most common mistakes and provides the correct form of this abstract (Fig. 2) [17].
Fig. 2. Youtube video on writing an abstract in English and its most common mistakes.

After watching the video, the English teacher discusses the most common mistakes with his/her students and s/he also analyzes the structure of the abstract, based on the top-down approach, which reflects the abstract content. The top-down approach is a form deductive processing [18]. Students have to deduce the structure and individual functions of sentences from the video presentation on abstract writing. Furthermore, the teacher with students also explore other possible mistakes (e.g., avoidance of contracted verb forms or the use of ich form), which have not been mentioned in the video. Afterwards, students practice to formulate the individual parts of the abstract according to the model abstract from the video, using the content of their qualification paper, in this case the Bachelor paper. For more information, please consult [19].

However, all this teacher’s effort did not have a desirable effect on students’ final outcome, which was proved by tens of wrongly written abstracts last year, although students’ level of English was at B2 level according to the Common European Reference Framework for languages [20]. Moreover, all the materials on writing an abstract in English were also implemented in an online blackboard Course of Practical English, which students could exploit as well (Fig. 3) [21].
However, as it has been pointed out in the Introduction, the Czech students do not have enough experience in formal writing. Therefore, the teacher looked for another scaffolding strategy in the form of an off-line tool. The concept of scaffolding is based on Vygotsky’s theory of the Zone of Proximal Development [22], which was later developed by other educational researchers, including the language teachers. In this article, scaffolding is perceived as a type of teacher guidance that assist learners study new skills, concepts, or levels of understanding that leads to the learner successfully completing a task [23-24].

Technically, the application was created in Python 3 with the main module Tkinter, which allows GUI (graphical user interface). PyCharm from JetBrains (a Czech company) was used as an editing program [25].

The content of the application was developed on the basis of the youtube video and five rhetorical moves with their specific functions [26-30], which are described in Table 1 below.

| Move | Function |
|------|----------|
| Move 1 – Situating the research | Setting the scene for the current research, stating topic generalization/ topic sentence |
| Move 2 – Presenting research | Setting the aim/goal of the paper, research question/hypotheses |
| Move 3 – Describing the methodology | Describing the methods, materials, subjects … |
| Move 4 – Summarizing the findings/results | Reporting the key results/findings of the research paper |
| Move 5 / Discussing the research | Interpreting the results/findings, providing recommendations |

Figure 2 below illustrates the off-line application, which reflects these moves and their functions.
The application is generally used as a text editor that simplifies the work of students when writing abstracts. As it can be seen in Fig. 1, there is a model abstract created by the teacher in order to facilitate students’ writing. The student/user can edit his/her work directly in the program and add his/her phrases or s/he can choose other relevant phrases from the menu offering other appropriate formulations, which concern the aim, methods and findings. In addition, students can save the whole text of their abstract. The application can be downloaded from https://sourceforge.net/projects/abstract-uhk and it is free since it has been developed for educational purposes by a family member of the English teacher.

The application was designed with the purpose to enhance students’ skill of writing the abstract in English, as well as to make the application user-friendly, i.e. easy-to-use, accessible and transferrable as far as the knowledge is concerned. The application aims to enhance students’ autonomous learning by tailoring the content to their specific needs and through an online blackboard course by making it accessible anytime and from anywhere.

So far, there has been a positive response from the students. According to the on-line discussion, they find the application useful and enjoyable. In addition, it provides them with more confidence knowing that they had it at hand. They find the content explicit enough in order to develop their own abstract. The application was successfully employed in the summer semester of 2020 when the spread of COVID-19 virus made face-to-face teaching impossible. Students’ final credit test results revealed that the application proved to be beneficial for the development of abstract writing among the students of FIM UHK.

Although the application is aimed at the Czech students of English as a foreign language in writing their abstracts of qualification papers, it can be exploited by other non-native students of this language, as well as by academics and/or researchers in developing abstracts of their own research since, as the research shows, there does not exist any similar, easy-to-use application.
3. Conclusion

Overall, teachers constantly search for new strategies or techniques in order to enhance students’ learning and their learning outcomes. They are eager to make their learning autonomous and motivate them to study on their own. Therefore, they develop scaffolding strategies, which might assist students in their independent learning. As Khan [31] states, a valuable educational process is formed by using different learning approaches, tools, and strategies. At present, with the use of modern technologies in education, it is even easier. This article introduced one of the off-line support, which should enhance students’ skill of formal writing, in this case the abstract writing. For further research into the use of modern technologies in language education also see the current research of Pikhart [32-34].

Future research will then explore to what extent this scaffolding application seems to be useful and successful in writing abstracts in English.

Acknowledgements

This article is supported by the SPEV project 2020, run at the Faculty of Informatics and Management, University of Hradec Kralove, Czech Republic. The author thanks Josef Toman for his help with the data collection and Stepan Frydrych for developing the scaffolding application for writing abstracts in English.

References

[1] Hyland, Ken (2009) “Teaching and researching writing.” UK, Routlege, Abingdon.
[2] Sanganyado, Edmond (2019) “How to write an honest but effective abstract for scientific papers.” Scientific African 6: e00170.
[3] Nagda, Suhasini (2013) “How to write a scientific abstract.” J Indian Prosthodont Soc 13 (3): 382–383.
[4] Gahan, Courtney (2018) “How to write and format an APA abstract.” https://www.scribbr.com/apa-style/apa-abstract/
[5] Publication Manual of the American Psychological Association (7th Ed.) (2020) https://apastyle.apa.org/products/publication-manual-7th-edition/
[6] Camps, David (2010) “The abstract: The letter of presentation for a scientific paper.” Colombia Medica 41 (1): 82-84.
[7] “Writing an abstract.” https://writingcenter.gmu.edu/guides/writing-an-abstract
[8] Research Guides (2020). https://libguides.usc.edu/writingguide/abstract
[9] “Abstracts.” https://writingcenter.unc.edu/tips-and-tools/abstracts/
[10] “Writing abstracts.” https://www.cs.bham.ac.uk/~pjh/modules/current/06991/lectures/writing/writing2_handout.pdf
[11] Anderson, Oliver (2018). “How to write an abstract.” https://www.allassignmenthelp.com/blog/how-to-write-an-abstract/
[12] Frydrychova Klimova,Blanka (2013) “Common mistakes in writing abstracts in English.” Procedia - Social and Behavioral Sciences 93: 512-516.
[13] Frydrychova Klimova,Blanka (2012) “Teaching formal written English.” UHK, Gaudeamus.
[14] Cmejrkova, Svetlana (1999) “Jak napsat odborny text.” (“How to write a scientific text.”) Havlickuv Brod, Leda.
[15] Bloom, Benjamin (1956) “Taxonomy of educational objectives: The classification of educational goals.” Handbook I: Cognitive domain.” New York, David McKay Company.
[16] Christian, Natalie, and Katherine D. Kearns. (2018) “Using scaffolding and deliberate practice to improve abstract writing in an introductory biology laboratory course.” Journal of Microbiology & Biology Education 19 (2): 1-8.
[17] “Writing an abstract/common mistakes.” https://www.youtube.com/watch?v=nUlPHiRqEc
[18] Moskovsky, Christo, Guowu Jiang, Alan Reed Libert, and Seamus Fagan. (2015) “Bottom-up or top-down: English as a foreign language vocabulary instruction for Chinese university students.” TESOL Quarterly 49 (2): 256-277.
[19] Frydrychova Klimova,Blanka (2015) “Teaching English abstract writing effectively.” Procedia - Social and Behavioral Sciences 186: 908-912.
[20] CERF “The Common European Framework of Reference for Languages.” Cambridge University Press, https://www.coe.int/en/web/common-european-framework-reference-languages
[21] “Online blackboard course on English for students of Management of Tourism.”https://oliva.uik.cz/webapps/blackboard/content/listContent.jsp?course_id=1108_1&content_id=141917_1&mode=reset
[22] Vygotsky, Lev Semyonovich (1978) “Mind in society: The development of higher psychological processes.” Cambridge, MA, Harvard University Press.
[23] Maybin, Janet, Neil Mercer, and Barry Stierer. (1992) “Scaffolding: learning in the classroom”, in Kate Norman (ed) Thinking Voices, The Work of the National Oracy Project, (pp. 186–95), London, Hodder & Stoughton.
[24] Mahan, Karina Rose (2020) “The comprehending teacher: scaffolding in content and language integrated learning (CLIL).” *The Language Learning Journal*, doi: 10.1080/09571736.2019.1705879.

[25] Abstract. Exe. https://easyupload.io/sah2nc

[26] Pho, Phuong Dzung (2008) “Research article abstracts in applied linguistics and educational technology: A study of linguistic realizations of rhetorical structure and authorial stance.” *Discourse Studies* 10 (2): 231-250.

[27] Can, Seden, Erkan Karabacak, and Jingjing Qin. (2016) “Structure of moves in research article abstracts in applied linguistics.” *Publications* 4 (3): 23.

[28] San, Lam Yik, and Helen Tan. (2012) “A comparative study of the rhetorical moves in abstracts of published research articles and students’ term papers in the field of computer and communication systems engineering.” *International Journal of Applied Linguistics & English Literature* 1 (7): 40-50.

[29] Male, Hendrikus (2018) “A Structural move analysis of abstracts in undergraduate theses: A case study at Universitas Kristen Indonesia.” https://knepublishing.com/index.php/KnE-Social/article/view/2690/5806

[30] Zanina, Elena (2017) “Move structure of research article abstracts on management: Contrastive study (The case of English and Russian).” *Journal of Language and Education* 3 (2): 63-72.

[31] Khan, Badrul (2005) “Learning features in an open, flexible and distributed environment.” *AACE Journal* 13 (2): 137-153.

[32] Pikhart, Marcel (2019) “Computational linguistics and its implementation in e-learning platforms.” *Lecture Notes in Computer Science* 11701: 634-640. Cham, Springer.

[33] Pikhart, Marcel (2020) “Aspects of intercultural communication in it: Convergence of communication and computing in the global world of interconnectedness.” *LNEE* 590: 251-256.

[34] Pikhart, Marcel (2019) “Interculturality in blended learning: challenges of electronic communication.” *Smart Education and e-Learning 2019. Smart Innovation, Systems and Technologies* 144: 97-106. Springer Nature Singapore Pte Ltd.