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USING TECHNOLOGY IN TEACHING WRITING FOR PUBLICATION

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Abstract: Presenting scientific results in the format of a research paper is one of the new challenges the researchers have to deal with. The paper describes a software interactive tool, *Academic Discourse Organizer***,** designed at Tambov State Technical University to facilitate the learning process and acquire the necessary writing skills. The use of this interactive tool is based on the guided approach to teaching how to write a paper. The tool navigates authors though the writing process and makes them focus on all important aspects of their research. The user-friendliness of the tool and its functions allows its users to accomplish their writing goals more effectively.

Introduction

One of the priorities in higher education is to increase the publication activity of both teachers and students. This involves the ability of graduate students and young scholars to present the findings of their research work in the format of a research paper. In other words, the groups of "authors" mentioned above have to be familiar with the academic writing conventions and use them appropriately. In order to achieve this, they have to

– get the idea about the structure of a research paper;

– be familiar with the requirements for publications in international journals;

– be able to organize the step-by-step work on the text of the paper;

– know how to deal with scientific literature for research purposes;

– understand the procedure of a research experiment and how to describe it;

– be familiar with various formats to present and visualize experimental data;

– develop the skills of critical understanding of the findings obtained and be able to draw relevant conclusions;

– be able to edit the text of the paper.

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Although hundreds of guidelines [1], including algorithmic step-by-step instructions on how to submit and prepare a manuscript for publication are available to the prospective authors, many of them still find the process of writing a research paper quite challenging and off-putting. Quite often the attempts to have the paper published turn out to be useless. The reasons why the authors fail to have their paper accepted are numerous: they might have failed to meet the publisher requirements, or they might not have written their paper in compliance with the academic writing rules (by selecting inappropriate vocabulary, violating the norms of formal style, or using hedging devices incorrectly), or they might have had language difficulties (numerous errors), etc. All these problems are related to poor presentation of the scientific work and ineffective communication of scientific results to the reader.

In the age of rapid development of information technology, it is obvious that computers are becoming widely used in the classroom. In general, educational use of technology has migrated from "technology tutoring" to the "technology tools". Basically there are several approaches and definitions of computer – facilitated training. For example, the term – "computer-based instruction" – is used to describe the use of computers or associated technology to improve students' skills, knowledge, or academic performance [2]. The term "computer-assisted instruction" refers to the application of software designed to provide instruction and practice for meeting specific learning objectives or goals with drill-and-practice or tutorial instruction [3, 4]. Another notion – computer-enriched instruction – means that computer technology is used to facilitate instruction, for example, computer is used as a calculating tool, a programming tool, and to conduct simulations [3]. One more interesting concept is "computer-managed instruction", also known as integrated learning system. It implies that computer technology and extensive software programs are designed to present students with learning materials over extended periods of time while keeping track of their progress [5].

The biggest advantage of using computer integration solutions is that teachers guide students in their use to accomplish their goals. Students are guided by teachers and learn how to organize and present the results of the research in the appropriate form. On the one hand, students work independently and get a unique learning experience as they discover knowledge by themselves. On the other hand, their learning is scaffold by the teacher who is ready to step in with ideas and guidance.

The new demands of Tambov State Technical University (**TSTU**) regarding English language teaching consist in providing training to enable graduates, postgraduates and specialists to write their research articles for publication abroad. The assumption is that such publications will promote Russian science globally across state borders. To comply with the new demands, the Laboratory of Academic Writing and Communication at TSTU initiated a project of teaching academic writing to the groups of learners mentioned above. The idea of the project was to create a personalized internet site that would integrate elements of "artificial intelligence" and guide the user towards producing research articles of appropriate quality. The paper describes the structure and functions of the new website. The site has been constructed and is now available for piloting.

In this paper, we will describe how technology can be applied to teach students and young scholars to write research papers.

What is Academic Discourse Organizer?

We applied a ***guided writing approach*** to work out the algorithm of teaching to write a research paper. This algorithm was then programmed as a software tool that we called *Academic Discourse Organizer* (**ADO**).

The website with ADO is available for free to all users, no matter where they are affiliated. The registration procedure is very simple: to create an account, save the login and password. The website is absolutely anonymous – the user does not have to submit any personal data.

The internet site has a number of sections: *My Archive*, which contains a collection of the author's articles already written on this site; *My Library,* which stores literary sources and short notes that the author compiles while reading for a research project; and *My Projects, which* has articles that are currently being written in the format of the program. Each of these sections (tabs) serves its own purpose and helps to organize the writing process effectively. The sections are user-friendly and easy to navigate. For example, *My Projects* section is quite laconic, but it contains all the necessary data such as the title of the paper, the date of creation, and a "delete" option.

A unique feature of the tool is its automation of different parts of the article.

The program prompts the structure of the article, guides the contents of every section of the research paper, provides semi-automatic compilation of the abstract, key words and conclusion, automatically formats the list of references in Chicago style, and makes it easy to quote from the sources in the body of the article. For example, when working on the introduction to the article, the user sees the following prompts:

- Announce the topic;
- Illustrate it with examples;
- Define key concepts;
- Mention topical literature;
- Elaborate the controversies;
- Show relevance of the research puzzle;
- Formulate the hypothesis;
- Brief on the methods;
- Elucidate the intended contribution

Inexperienced writers tend to ignore some of the "ingredients" of the article, or even omit some of its sections. These "hints" guide learners though the writing process and make them focus on all important aspects of their research.

Although the tool is already available for users, some of the features, such as *Useful Language* have to be added. This section will facilitate the use of academic vocabulary and will help learners to choose clichés, fixed phrases, and hedging devices more effectively.

Pilot Results and Challenges

The results of the pilot show that the ADO works well for both experienced researchers and those who are working on their first article in English This facilitation tool helps writers to make their writing process more organized and hassle-free as automated and semi-automated functions do some of the job for the author. At the same time, learners can get a better understanding of the article structure and focus on the content without violating the rules of academic writing.

This software can be incorporated into face-to-face courses as a tool for learning purposes to familiarize learners with the IMRAD (Introduction – Methods – Results – Discussion) structure, to train paraphrasing, summarizing, and editing skills, and using academic language appropriately.

However, the major challenge that we have to cope with is low English language proficiency. The least successful experience so far has been allowing students with insufficient command of English to write their research articles in English, using the tool. But the result was the unpublishable article as the number of errors was blocking comprehension of the content. In such extreme cases, it proved efficient to teach students to write their article first in L1 on condition that the ideas are put in the most transparent language with well-shaped sentences. Machine translation does the rest of the job. Software translator is not part of the tool because the choice of the translation program allows students to use the state-of-the-art option. Final editing is done interactively by the students under their teacher's guidance. The justification and value of such approach is that the skills of communicating research ideas in the reader-friendly style are truly necessary for writing both in L1 and L2.

This prompts the need to apply a bilingual approach to teaching academic writing to students, postgraduates and researchers. Part of the discussion is done in the students' L1 for better clarification of the research idea, explaining the structure of the future publication, getting students to know the requirements for publications abroad and achieving the required level of writing an academic paper.

Conclusion

When writing a research paper, a scholar aims to communicate technical results of the research to the broader scientific community. In this regard, scientific communication is a critical step and a driving force of scientific research. Therefore, the design and construction of a research paper is a serious undertaking.

Tambov State Technical University is setting an ambitious goal to enable students and faculty to write research articles in English and have them published in high-quality journals. This is done for better dissemination of research results in the academic community across the borders. An important strategy that the developers of the ADO software had in mind was to raise the author's autonomy in doing their writing leaving for the teacher the role of a facilitator. The site does the job of directing the process, organizing discourse and formatting the text. To achieve this, the site provides for observing the conventions required in the academic circles. The use of software tools for learning purposes is a promising guided writing approach, enabling learners to acquire the necessary writing skills.

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Применение компьютерных технологий для обучения написанию научной статьи

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Ключевые слова: академическое письмо; компьютерное обучение; интерактивный ресурс; научно-исследовательская статья.

Аннотация: Представление научных результатов в формате научной статьи на английском языке представляет определенные трудности для исследователей. Для обучения целевой аудитории – молодых исследователей, аспирантов и магистрантов университета предлагается использовать интерактивный ресурс, *Academic Discourse Organizer*, созданный и разработанный в Тамбовском государственном техническом университете для обучения письму в научно-исследовательских целях и формирования необходимых навыков. В основе применения данного интерактивного ресурса лежит использование алгоритмизированного подхода к организации процесса письма и оказания поддержки автору, направляя и фокусируя его внимание на важных аспектах исследования. Интерактивный ресурс удобен в использовании, а его функции позволяют пользователям более эффективно решать поставленные задачи.
