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Technology Use in the Documentatation Process for Teaching/Learning English for Chemistry

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Abstract

The present article analyses the documentation methodology as part of the teaching/learning process within the University of Bucharest at the faculties without philological profile by journaling the means for documentation and research of information while in the second part the article focuses on the teaching/learning process using technology in order for students to assimilate specialized vocabulary.

Key words: documentation, library, ESP, technology for teaching

Introduction

Teaching foreign languages has always implied serious and thorough documentation especially regarding specialized language with equally intricate documentation for general English. Nevertheless, specific vocabulary represents a challenge for the instructor as it implies good command both of the English language and the specialised language that has to be taught to the students attending these specializations. From this point of view, the present paper aims at analysing the stages specific to the documentation process for the teaching materials for English for chemistry for the students attending this specialization at the Faculty of Chemistry, at the University of Bucharest.

Types of documentation for teaching materials

The classic route to approach documentation presupposes a research done starting with bibliographic references usually underdone in libraries or archives as the case may be or a overview of books and articles on specific topics but also a thorough preparation before reading them. In the present case, in order to prepare the materials addressed to students for the chemistry specialization, documentation is done with the purpose to familiarize the students with the latest discoveries in their field of study in a synchronous rather than anachronous method to approach these subjects. This demarche can be done with the aid of the Internet which can easily replace the classic library research as it facilitates access to information by immediate availability of information via search engines and directories. The mobile technology facilitates access to information due to its immediate

availability to search for information. Christopher Barth makes an analysis of the phenomenon by differentiating the disruptive and sustaining technologies which either support or cancel almost entirely the already available existing technologies: “Disruptive technologies fundamentally change the value structure of a market, and usually emerge slowly, though they quickly mature. These technologies usually upend traditional products and markets because they approach the market in an entirely new way. (Barth, 2011). He continues his analysis regarding the effect of technology for the documentation process and regards the search engines as a disruptive factor for libraries: “An example of a disruptive technology for libraries is Google and its search algorithms. Full text searching with the accuracy of Google throws into question traditional library catalogues, which though they are based on great taxonomies, have become more and more irrelevant to how our users search for information. Which do most users turn to in order to search first for quick information, Google or the library catalogue?” (Barth, 2011).

In an analysis of the open source that is Google Scholar and how it has been approached by libraries, Karen Hartman and Laura Bowering Muller remark the fact that librarians have hesitated, or rather, did not know how to approach this open source of information but, once the Rutgers University Library was indexed in Google Scholar, it was accessible in all indexes and on the university’s site (Hartman and Bowering Muller, 2008). They continue by noticing the fact that Google Academic is a *blended* source because nowadays it does not integrate itself in a sole category of library resources. It can work as an internet search engine, as an internet research tool, as a citation analysis tool, as a portal of open access materials etc.” (Hartman and Bowering Muller, 2008).

Regarding the evaluation and update of the library search systems, John Crawford makes a complete analysis of the relationship between libraries and their end users saying that the users’ involvement on the resource management system is beneficial as the end user is the beneficiary of the management system being directly affected by it. He states: “consequence of the rise of the profession of librarianship in the 20th century has been the exclusion of users from library management, where, in the case of publicly available libraries, and to a lesser extent, academic libraries, they were once pre-eminent. Regular evaluation of services, by whatever means, allows users to rediscover a voice in library management and express views about service priorities (Crawford, 2005).

Regarding documentation after finding materials regardless of the search method, the Berkley University has developed the *Berkley* strategy which approaches the source of information according to six criteria: “authority, purpose, publication and format, relevance, date of publication, documentation” which have to be observed for effective and rapid search of the source quality (either primary or secondary). In the present case, the ease of access to information on the internet has facilitated documentation with the purpose to familiarize students with the latest developments and discoveries in their field of study, inspiration deriving from the scientific advance of the modern society and from the attempt to develop students’ analytic and critical thinking skills and it also represented an opportunity for students to exercise their knowledge and come with new develop new approaches facilitated by these challenges.

Specialized language in English in the information context

First of all, teaching English of Specific Purposes uses a wide variety of instruments specific to general English also but it differs from it by the particular nature of the course/seminar for the specific needs of the students who do not study philology. Usually, the English language seminar is divided as follows: during the first hour of the class specialised materials are studied while during the second hour specific terminology is consolidated and different grammar themes are approached such as the noun (quite important as hard sciences also borrow terms from Greek and Latin – which involves detailed approach of the singular and plural, irregular plural, false friends, etc.), the verb and its particularities (simple present is usually utilized especially for describing processes while the conditional is used for hypothetical cases of experiments and chemical formulae) but also adverbs, prepositions, gerund and the participle. Thus, the accommodation of the general language to specialized language is done by adapting grammar so that the student can express him/herself in English using correct grammar forms at simultaneously with specific terminology.

Second of all, teaching specialized language represents a challenge as the instructor has to familiarize him/herself first with the terminology, appropriate it and then teach it, explain it to the students, get the students practice new terminology and in the end test their knowledge. This documentation process is – at least for the present case – entirely dependent on technology. Generally, technology is a tool extensively used for teaching foreign languages – starting with the VHS cassettes specific to the 1980-90s till today's mobile applications – starting the 2000s students being called *digital natives* (Prenski, 2001). All these factors aid to differentiate among the multitude of English accents and terminology appropriation by associating them to images thus making learning more dynamic, less boring and challenging students' different types of memory. At the same time, the technological teaching tools bring more freedom and easiness to access different types of materials, documentaries, short or medium clips, older or more recent and also the latest developments in the scientific field. For this reason, the visualization of two YouTube clips of Nobel Prize for Chemistry has allowed the students to become familiar with the Nobel Prize for Chemistry winners in 2018 and become more familiar with their accomplishment. The advantages of watching the awards ceremony is that the Swedish Academy for the Award of the Noble Prize has two tiers of materials: one for the general public and the second for the experts in the field. While the former addresses the general public where the processes are explained so that non experts in the field understand the reasoning behind them, the latter addresses experts in the field. Thus, the English class experiment consisted of showing both clips and observing the extent to which the students manage to understand the chemical intricate processes explained in English. As expected, the students scarcely remembered ideas from the intricate version but had a "aha" moment while watching the short version and explained version addressed to the general public.

The purpose for documentation was to bring the latest materials for the English seminar and to keep track with the society's evolution stemming from the desire to provoke students' interest – who have also watched the award ceremony – but also to start a

debate on the subject by involving the students and encouraging them to express their opinions. Documentation was done exclusively by searching for information and clips on the internet, accessing the site of the Swedish Royal Academy for the Award of the Nobel Prize and downloading the clips from the YouTube platform – usually, the version with English subtitles is preferred as the difference of English accent are influenced by the mother tongue, the sound could be deficient or the students can often mistake paronyms, homonyms, etc.

Also, documentation of the English for specific purposes materials is done by accessing specialized data bases. Usually, these can be accessed at the Central University Library but of recent these can be accessed directly within the wireless internet network within the University of Bucharest. By differences to the YouTube or TedTalk clips, articles are harder to follow, contain intricate specialized jargon and complex sentence at highly academic level. Thus, these are used rarely for the teaching/learning process. Nevertheless, another type of text is more useful and closer to the students' specializations for medical and pharmaceutical chemistry but also general biotechnological chemistry which are drugs prospects. These are shorter – but this depends again on the medicine – and have plenty of specialized language. In order to find these materials, the instructor either searches the materials on the internet both in Romanian and English or the instructor just buys a medicine – usually quite popular – and prepares the terminology in English following the prospect.

Another means to document implies internet search using key words in order to find materials specific to a certain theme from the curriculum and syllabus. Thus, a series of well-made documentaries done in order to explain the Mendeleev Table are the ones produced by BBC. Thus, the series of four documentaries shows the evolution of the chemical elements, their discovery and their position in the table of elements, the explanations for the specific position in the table and the chemical formulae and the symbol of the element. The students reacted quite well to these documentaries – part of the information was already familiar with them but the simple and concise explanation helped consolidate knowledge, appropriate information, find those missing elements from the learning process. These documentaries have proved more useful even than the short clips such as TedTalk because the subject approach was done by journaling the periodic table and the history of the time, by assuming that the viewer is not familiar with the field of discussion and the evolution/invention of different chemical elements while other TedTalk clips are quite specialized and necessitate previous knowledge of the subject.

Conclusions

As a conclusion, the documentation process for teaching English for chemistry means a thorough research work done almost exclusively online by accessing specialized sites, data bases for articles, YouTube clips and documentaries. In order to keep alive the students' interest, the instructor must have permanent contact with the latest information and events in the field, prepare the materials for the seminar, integrate them in the curricula and syllabus so that they make a smooth transition from the compulsory and adjacent activities, each activity having the precise purpose to combine specific language

with grammar tailored to the student's needs and faculty profile by following the four competences and linguistic abilities that have to be developed: reading, writing, speaking, listening according to the European Framework for the Foreign Languages suggested by the Council of Europe.

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