

The Importance of Teaching Reading and Scientific Writing Skills to Biology Students at the University of Chadli Bendjedid – El Tarf

أهمية تعليم القراءة ومهارات الكتابة العلمية عند طلبة البيولوجيا بجامعة شادلي بن جديد - الطارف

Abdelkader Khaldoun

scotkader@yahoo.fr

Faculty of Letters, Human and Social Sciences

Department of Foreign Languages

Department of English

Badji Mokhtar University, Annaba, Algeria

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Abstract :

Along with the constant growth in English as a Foreign Language (EFL) instruction, there is an increasing concern over the promotion of reading and writing skills mainly in the field of English for Specific Purposes (ESP) through a variety of procedures, techniques and strategies. The present paper aims to investigate the importance of teaching reading and writing skills to Biology students at Chadli Bendjedid University through a number of techniques and orientations. To achieve the stated objective two research questions were raised to carry out the study and, hence, a questionnaire administered to ESP teachers at the department of Biology was used as a data gathering tool. The findings showed that those ESP teachers are entirely aware of the significant role of teaching reading and scientific writing skills to the targeted students. Furthermore, results afforded more insights about the orientations needed to be adopted for promoting reading and writing performance for Biology students. Some recommendations were provided to demonstrate the usefulness techniques that would be implemented in teaching scientific reading and writing skills.

Keywords: Biology, Scientific English, reading and writing skills, teachers' attitudes

Résumé : Parallèlement à la croissance constante de l'enseignement de l'anglais langue étrangère (EFL), la promotion des compétences en lecture et en écriture, principalement dans le domaine de l'anglais à des fins spécifiques (ESP), exige de plus en plus une variété de procédures, de techniques et de stratégies. Le présent article vise à étudier l'importance de l'enseignement des compétences en lecture et en écriture aux étudiants en biologie de l'Université Chadli Bendjedid par le biais d'un certain nombre de techniques et d'orientations. Pour atteindre l'objectif déclaré, deux questions de recherche ont été posées pour mener à bien l'étude. Un questionnaire adressé aux enseignants d'anglais du département de biologie a donc été utilisé comme outil de collecte de données. Les résultats ont montré que ces professeurs d'ESP sont parfaitement conscients du rôle important que jouent l'enseignement de la lecture et de l'écriture scientifique aux élèves ciblés. En outre, les résultats ont permis de mieux comprendre les orientations à adopter pour promouvoir les performances de lecture et d'écriture des étudiants en biologie. Certaines recommandations ont été fournies pour démontrer l'utilité des techniques qui seraient mises en œuvre pour enseigner les compétences scientifiques en lecture et en écriture.

Mots clés : biologie, anglais scientifique, compétences en lecture et en écriture, attitudes des enseignants.

ملخص: إن الاهتمام المتزايد بتعليم اللغة الإنجليزية كلغة أجنبية (EFL) أدى إلى تعزيز مهارات القراءة والكتابة أساساً في مجال اللغة الإنجليزية لأغراض محددة (ESP) من خلال تقديم مجموعة متنوعة من الإجراءات والتقنيات والاستراتيجيات. تهدف هذه الورقة إلى التحقق من أهمية تدريس مهارات القراءة والكتابة لطلاب الأحياء في جامعة الشاذلي بن جديد من خلال عدد من التقنيات والتوجهات. ولتحقيق الهدف المحدد، تم إثارة سؤالين بحثيين لإجراء الدراسة، ومن ثم تم استخدام استبيان تم إدارته لمعلمي اللغة الانجليزية في قسم علم الأحياء كأداة لجمع البيانات. أظهرت النتائج أن مدرسي اللغة الانجليزية يدركون تمامًا الدور الهام لتعليم القراءة ومهارات الكتابة العلمية للطلاب المستهدفين. وعلاوة على ذلك، أعطت النتائج المزيد من الأفكار حول التوجهات اللازمة لتبني أداء القراءة والكتابة لطلاب البيولوجيا. وفي الأخير قد تم تقديم بعض التوصيات لإثبات الفائدة التي سيتم تنفيذها في تدريس مهارات القراءة والكتابة العلمية.

الكلمات المفتاحية: علم الأحياء، اللغة الإنجليزية العلمية، مهارات القراءة والكتابة، مواقف المعلمين

Introduction

The status of English as being “the International Language” or “the Lingua Franca” creates a feverish desire among people all over the globe to learn it. According to the 2000 statistics, a quarter of the world population speaks English (Crystal, 2003). The current world position of English has brought into existence a language that takes over almost all life spheres and applications. The international domains of business, politics, education, media, and entertainment among others are just examples. It is a fact that led educational authorities to include English in their curricula as a language that should be taught and learnt for different reasons and purposes.

Such surge definitely necessitates a thorough process including the elaboration of adequate teaching approaches, methods, and techniques in accordance with not only learners’ abilities, needs, and interests, but teachers’ orientations, attitudes, and purposes vis-à-vis the specific purposes of teaching English. This implies that English is learnt not as an end target but as a means for study or work i.e. the content should necessarily serve the discipline (subject course) in terms of lexis, grammar, register and skills through the implementation of appropriate tasks and activities. Drawing on what was explained; the study seeks to investigate the importance of teaching reading and scientific writing to Biology students through a number of techniques and strategies. Hence, the aim was to bring forth answers to the following questions:

- a- To what extent, are teachers’ current techniques suitable for teaching reading and scientific writing in English for Biology students?
- b- What orientations need to be adopted for developing the reading and writing skills for Biology students?

1. Literature Review

1.1. Reading Comprehension: An Overview

Reading comprehension is a highly complex process due to the many variables related to the text itself (interest in text, understanding of text types) that contribute to its success. Whether the text is in one’s native language (L1) or in a second/foreign language (L2/FL), the process of reading is still a complex one. Generally speaking, reading is a matter of how the reader views and processes of the text. This processing needs knowledge of how texts are structured by writers. Once the reader is able to recognize the text as a hierarchy of different units at different levels, i.e., from words to sentences to paragraphs to discourses, s/he will be able to analyze it as a whole mass that needs to be decomposed into smaller components easy to understand. This linguistic knowledge is an important aspect in the process of reading comprehension (Demel, 1990). In this respect, Levenston, Nir, and Kulka (1984) (as cited in Pugh & Ulijn, 1984, p.203) report that studies in text processing have shown that in the overall understanding of a text, the reader processes information both on the micro-level of single proposition- realized in words and sentences- and on the macro-level of discourse units- realized in intersententially connected stretches of text. However, it is worthy to note that in good reading, interaction demands another kind of knowledge. Widdowson (1983) points out that the text itself does not carry meaning but rather it provides clues through cohesion and text structure that enable readers to extract meaning from the text and then construct it

in their minds using their existing knowledge. Interaction during reading is a process of combining textual information with the knowledge the reader brings to the text. Therefore, the linguistic knowledge of the text should be recognized alongside with readers' prior knowledge about what they read. Coffin and Hewings (2003) claim that many students need guidance in comprehending the conventions of science genres in order to cope with their subject matter.

1.2. Reading Comprehension and Scientific Texts

McWhorter and Kathleen (2003) posit that science texts always deal with unfamiliar topics. They explain that a science text is detailed and technical, and involves new and extensive vocabulary. Accordingly, reading science texts involves extracting meaning by negotiating the understanding between the text and the reader's experiences and memories of the topic. In addition, the reader needs to apply reading strategies to understand and strengthen the approach to science reading (predicting, skimming, scanning, inferring, guessing the meaning of new words and summarizing). Michael (2003) suggests more specific reading strategies that can be applied by the bilingual reader in reading science texts written in English. Similar to Laurie's (2007) strategies, the strategies suggested by Michael involve the pre, while, and post reading stage.

1.3. Writing in Biology

Due to its complexity, it has been argued that writing is the most difficult language skill (Kroll, 1990; Ortega, 2004). The difficulty lies not only in formulating and organizing ideas, but in transferring them into written text (Kroll, 1990; Myles, 2002). Writing in various academic disciplines, such as Science or Medicine, is even more complex (Cozens, 2006). Due to the status of English as an international language and the increasing number of students learning English as a L2, writing skills are essential for both educational/occupational purposes. There has been extensive research into students' problems and needs regarding this (Bacha, 2002; Hyland, 2003). As far as Biology students are concerned, they often need to write in English in their academic life and in their professional careers as researchers in the future (Chang, 2007).

The benefit of writing in science academically requires understanding what is good in short and long terms. By writing in Biology, students can deepen their understanding of the subject rather than study for exams (Moore, 1994). Many Biology teachers rarely ask students to write something in the classroom; they instead prefer to use true-false or multiple choice questions-based exams (Moore, 1994). So, writing academically requires understanding what good writing is: it should be clear, comprehensive, organized, impartial, accurate, objective and simple (Barrass, 2002). Coffin and Hewings (2003) claim that many students need guidance in comprehending the conventions of science genres in order to cope with their subject matter. For example, in biomedical journals, the conventional division of a scientific paper is illustrated as introduction, materials and methods, result, and discussion (O'Connor and Woodford, 1976).

1.4. Learning Science Constructively Through Reading and Writing

Meaningful learning is the process of actively constructing conceptual relations between new knowledge and existing knowledge (Glynn, 1991; Glynn, Yeany, & Britton, 1991). Conceptual relations in science are of many kinds: hierarchical, enumerative, exemplifying, sequential, comparative, contrasting, causal, temporal, additive, adversative, and problem solving (Mayer, 1985; Spiegel, & Barufaldi, 1994). Relations of these kinds are woven into well-written scientific texts. Students should learn concepts as organized networks of related information, not as lists of facts. Science teachers realize this, but are not sure how to create relational learning in their students, particularly in large classes and the concepts are complex; and complex concepts are the rule rather than the exception in biology (e.g., photosynthesis and mitosis-meiosis), chemistry (e.g., chemical equilibrium and the periodic table), physics (e.g., gravitational potential energy and electromagnetic induction), earth science (e.g., plate tectonics and precipitation), and space science (e.g., the sun and planetary motion). It is common that many of these concepts are introduced to students in their L1 or L2/FL in the elementary school years, and by high school, all students are expected to be scientifically literate and to understand these complex concepts.

So, in order to read a well-written scientific text and endeavor to write about it, students need to familiarize themselves with the conceptual relations that form the basis of real scientific expertise and understanding. For this reason, reading and writing activities are optimal means for engaging students' minds and fostering the construction of conceptual relations. Students who are learning constructively will challenge the science text they are reading or writing, struggle with it, and try to make sense of it by integrating it with what they already know in their L1 or L2.

2. The Method

Participants

The participants of this study include six teachers who are currently teaching English at the department of Biology, Faculty of Natural Sciences and Veterinary in El Tarf University. Those teachers were two males and four females who have been teaching English for five to six years at the same department. In effect, those participants accepted to answer the questionnaire from which they can provide their view points and attitudes towards teaching both reading and scientific writing skills to Biology students in the academic year of 2016-2017.

Procedure

In order to attain the research goals and examine the teachers' views and current techniques used for teaching reading and writing skills to Biology students a questionnaire was administered to the abovementioned six teachers. This questionnaire is made up of 15 open and close-ended questions that are provided to get information about the various techniques used by the participants. It would be wiser in this research to use an interview with this small sample population, but the focus was to rely on a questionnaire for giving each respondent the opportunity to express his/ her view points freely and to show the techniques used in their classrooms without forgetting any detail.

3. Results

The analysis of the first three questions revealed basic information about the respondents. As far as gender is concerned there are two males and four females; their ages range from less than 30 (80%) and between 30 to 40 (20%); and most of them (70%) have been teaching English for less than five years, whereas the rest of them (30%) have an experience ranging from five to ten years. This demonstrates that most teachers of English at the Department of Biology are young teachers who may have better disposition for adopting new orientations in teaching reading and writing skills. Within question four, 50% of the participants confirmed that they did not teach English for other disciplines and have no experience in teaching ESP, while the other participants with 50% argued that they teach English to other disciplines like Information Technology, Law and Mathematics. In question six (Q6), respondents were asked to pick up the skill they rely on most in the class. All respondents reported that they focus a lot on reading and writing skills. Question (7) asks about how many times teachers let their students read scientific texts. All teachers share the same idea that students must be asked to read. This leads us to say that all teachers are aware of the importance of reading as a skill that students should master.

For the purpose of answering question eight (Q8) which is about students difficulties in reading scientific texts, all the participants (100%) confirmed that students find difficulties in reading scientific texts and they provide the followings as justification:

- Mispronouncing the majority of scientific vocabulary.
- The miscomprehension of scientific key concepts.

In Q 9, the six teachers answered that they do offer positive and constructive advice of any written production of their students stressing the idea that students need teachers' advice to guide them to go through the right path seeking for achieving better results.

With reference to question (Q10), all participants (100%) agreed that when finishing the course they ask their students to write a report of the presented course in English as a home work. In Q (11), all the participants (100%) share the same idea that students find difficulties in writing

scientific texts. In the second part of the question Q (12), respondents provide the following difficulties:

- Grammar mistakes (the use of tenses)
- Orthography
- Sentence structure.

The analysis of question (13) concerning the role that teacher plays to encourage students write a paragraph revealed that 50% of the participants argued that their roles would be as a guide in the writing assignment. This indicates that the role of the ESP teacher inside the classroom is more than necessary.

In question (Q14), which asks whether or not teachers motivate students to write a scientific pieces of writing, the six participants admitted that writing a scientific topic would enhance students' curiosity and self confidence. This suggests that the first gate to students' success in writing can be achieved by creating a motivating atmosphere. Moreover, they explained that they motivate their students by doing the followings:

- Opening discussion questions to exchange ideas and benefit from each other.
- Asking various questions about the topic, creating debates, suggesting topics that are close to their interest and needs.

Concerning question (15), all informants responded that it is efficient to correct students' mistakes so as students recognize their mistakes and ultimately can solve the problem of style, grammar and spelling.

4. Findings and Discussion

The main objective of the teachers' questionnaire was to survey the teachers' views on the importance of teaching scientific reading and writing skills to Biology students. The findings provided evidence that all participants in this study are aware of the importance of teaching reading and scientific writing skills to the targeted students. Surprisingly, the findings revealed that most participants are not well trained to teach ESP courses.

All teachers share the same belief that writing and reading scientific text would raise their students' motivation and self reliance on writing independently. It is noticed that most participants do not promote teaching strategies of reading comprehension and strategies that involve the mental process for lexical acquisition. While the findings provide evidence that teachers in this study consider the significance of teaching reading and writing skills, they were asked to teach terminology related to the area of study (Biology) since English module is not really regarded as a fundamental subject. That is, time devoted to English is not sufficient to teach in details ESP students the strategies of reading and writing skills.

The findings draw our attention that integrating reading and writing activities may play a crucial role in comprehending science content in greater depth, focusing on related ideas and themes. Moreover, through reading and writing students will have a prior learning that will ultimately make real world connections, i. e. from theory to practice.

5. Recommendations

The findings of our study suggest that more research is needed on ESP reading and writing, especially in the Algerian context to determine the comprehension difficulties as well as to identify the factors underlying the students' poor achievement in reading and writing performance. Therefore, based on the results of this study, we may put forward the following suggested orientations.

- 1- To begin with, most teachers find themselves alien in teaching scientific texts. Thus, it is suggested that being trained to be specialized in specific field would reduce the difficulties experienced by teachers.
- 2- It is also convinced that it is necessary for teachers to attend some training programmes if they are doing well in teaching writing and reading strategies.

- 3- ESP teachers would open the window to discuss the need for specific teaching programmes, either for reading comprehension or written production. This would be of great utility as it helps teachers to assess their students' needs, to decide about the contents, to ensure motivation, and hence to achieve ESP teaching objectives. In brief, training teachers or inviting specialized lecturers, and designing specific teaching programmes for ESP students would improve the teaching / learning of writing and reading skills.
- 4- Empowering our teachers through team teaching would be the most afforded recommendation. In the department of Biology, coordination should not be confined to English teachers only, but it should also include lecturers and teachers of other subjects.
- 5- Finally, teachers need to reconsider the strategies of reading and writing skills to understand in advance their functions. In response to the claim that the definition of writing and reading skills are complex and challenging, it is suggested that the best way to tackle the problem is to involve our learners in the process of writing and reading in ESP.

Conclusion

This study is an investigation of ESP teachers' current techniques in teaching reading and writing skills to Biology students. Therefore, the paramount purpose of the study is to probe the orientations that need to be adopted for developing the reading and writing skills to Biology students. The results obtained from teachers' questionnaire support the belief that if Biology students at Chadli Bendjedid University have been taught through different techniques in reading and writing activities, they will overcome their difficulties in such tasks. This study demonstrated that the inadequate orientation in developing the teaching of reading and writing skills for Biology classes is an obstacle that deprives students from reaching comprehension in reading and being able to write in their specialty in English. As a result, Biology students require a re-teaching of reading and writing skills employing different techniques. Hence, we believe that in the department of Biology, and by extension in the other Algerian Universities, the teaching of reading and writing skills should urgently be reconsidered and ESP reading and writing courses should be implemented as well.

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