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ESP FOR THE LIFE SCIENCES DESIGNING AN ENGLISH TEXTBOOK FOR SUSTAINABLE LEARNING

Abstract: *In this paper, the authors describe the preliminary results of an on-going project consisting in the design of a textbook for English for Specific Purposes (ESP) to be used as support for students in several areas of the Life Sciences (Agriculture, Biology, Genetic Engineering, Horticulture, etc.). A case study was undertaken with students on a tertiary level (1st and 4th year students), which included collaborative learner-teacher activities, including the construction of concept maps based on keywords, the results of which are being considered for inclusion in the final textbook. The object of this study is to assess the opportunity of collecting feedback from learners with a view to including it in the textbook design, as well as materials collaboratively chosen and designed by the authors together with students. For this purpose, the research is supported by a conceptual methodological approach having an exploratory objective. The question raised in this study is answered by following a review of the literature related to some major key concepts to be acquired, as well as empirical observations of our ESP classes for the purpose of gathering relevant data from learners, followed by an analysis and discussion of the collected data. This analysis serves as preliminary considerations for our textbook focusing on feedback from the students, while also being a presentation of our outlook on the ESP course upheld for discussion.*

Keywords: *ESP (English for Specific Purposes), language learning, content-based instruction, conceptual maps, quality*

1. Introduction

The paper highlights the extensive impact and social implications of learning English for Specific Purposes based on the ecological approach. This frame of teaching/learning is conducive to the formation of shared values which spur

collaborative mindsets and integration of knowledge on a higher level. Direct examples from classroom practices are illustrative for some key points in the application of biosemiotics and ecosystemic thinking in what we see as ecological language classes.

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Furthermore, the creation of new materials for ESP courses combines content-based material with principles revolving around a holistic value system. Our main focus is the exploration of the design of workflows of language activities from a “quality of experience” perspective so as to maintain learners’ engagement and curiosity. Involving students in creating the collaborative learning experience leads to a more internalized acquisition of language/knowledge, which has extended educational benefits beyond formal language acquisition (*cf.* Dragoescu Urlica, Coroama-Dorneanu & Kamberi, 2018).

2. Methodology

Our methodologies for both research and for practical class application rely on the holistic ecological framework, ecolinguistics and, more extensively, on the semiotics of learning and living systems. This perspective lays emphasis on meaning and content quality above other secondary formal, structural, or quantitative aspects.

The qualitative questions regarding conceptual relevance raised in this research are answered based on a review of the literature related to some major key concepts to be acquired, especially sustainability and systems thinking. We employed free questionnaires during discussions we have drawn up for the purpose of gathering relevant data from learners, followed by an analysis and discussion of the collected data. This analysis serves as preliminary considerations for our textbook focusing on feedback from students enrolled in the module English for Specific Purposes.

3. Results and Discussion

This research is designed as an exploratory study and therefore adopts a qualitative approach. In line with the ecological approach, free surveys were

employed to obtain the opinions and perceptions of learners regarding the ESP environment and the utility of conceptual mapping of relevant content (Ferreira & Lantolf, 2008). The major aim and the values we are striving to enforce reflect the interrelatedness of all living systems, system-thinking and holistic awareness to be achieved across the curriculum for students in all fields.

We hypothesize that the English for Special Purposes language course provides the most suitable setting for promoting respect for the diversity of life and members of the group, for correlations between learners working in collaboration and taking responsibility for their own learning experience and that of peers in the learning environment (Matthews, Cooper, & Hawkes, 2004). We also acknowledge the fact that “learning is the result of complex (and contingent) interactions between individual and environment” (Van Lier, 1996:170). Following the same line of thought, Underhill (1989) refers to a host of inter-related aspects which work together in the dynamics of (language) learning, including co-operation and competition, the individual and the group, how learners interact in relation to each other and what they are doing and goes on to add: “Teachers who claim it is not their job to take these phenomena into account may miss out on some of the most essential ingredients in the management of successful learning” (Underhill, 1989:251). A host of experimental findings collected in observational language classes by Donato (1994) and other researchers also stress the mediatory role of dialogue and collaborative learning.

Moreover, we also employ Content-Based Instruction (CBI) as understood by Fogal (2015:6), whose thesis explores the greater relevance and utility of CBI which is expanded so as to include concept development.

Thus, Content-based language teaching

has worked in our ESP classes hand in hand with tools provided by the widely employed communicative approach (Richards & Rodgers, 2001:151). Besides being one of the most significant and useful language teaching approaches, Communicative Language Teaching (CLT) may be reframed in ecolinguistic parameters by way of encompassing practices such as peer feedback and cooperative language learning. Our ESP materials which undergo constant recalibration take into consideration feedback from learners in highly specific contexts. As we have shown in previous studies, communication from the ecological perspective extends beyond teaching/learning communicative language skills and promotes eco-awareness (Dragoescu Urlica, Coroama Dorneanu, Kamberi & Bogusławska-Tafelska, 2019:138). An integrated perception of ESP learning highlights content-based educational materials which are meant to respond to the students' primary interests in correlation with achieving ecological communication. ESP typically relies on scientific content employed in a given area of knowledge, in this case, English for Life Sciences and areas of study generally related to ecology.

Understanding the conceptual importance of the taught terminology is of great relevance for tackling the impending environmental crisis. For instance, the term sustainability, which we envision as a basis for learning in all other areas of the natural and life sciences within our universities, but also as a foundational frame of mind within the language class itself. The concept encompasses complex, multi-faceted economic, social, and ecological dimensions as "a means of configuring civilization and human activity so that society and its members are able to meet their needs and express their greatest potential while preserving biodiversity and natural ecosystems and planning and acting for the ability to maintain these ideals indefinitely"

(Massotte & Corsi, 2015:151). The whole subset of keywords and ideas which populate the conceptual map of sustainability, for instance, are among the numerous examples we propose to extend to the language class ecosystem which we are striving to make "sustainable".

For this purpose, a proper textbook designed for English for Specific Purposes must be conceived as holistic in scope, displaying synergistic effectiveness and proposing a large array of learning topics. Some of the main areas the content covers include systems ecology and global ecology, living system theory, the history and philosophy of science, biosemiotics, and other topics which emphasize interconnectedness across disciplines. It is essential that these topics be integrated in conceptual maps in eco-holistic study of language and communication. This new framework ecological thinking is trying to introduce lies more emphasis on matters of quality and a global approach which should not be reduced to quantifiable language proficiency. On the contrary, we must consider that "it is quite possible that the deepest, most satisfying aspects of achievement, and the most profound effects of education, both in positive and negative terms, are entirely unmeasurable" (Van Lier, 1996:120).

All things considered, the on-going study is an attempt at implementing the systematicity of the semantics of highly relevant meaning maps which are aimed at optimizing the students' conceptual understanding through the gradual implementation of carefully designed learning activities. We propose that these learning activities and the specific contents of a nascent ESP text book undergo further scrutiny and modification as a result of peer feedback and feedback from students, based on results from experimental ESP classes and our collaborative think-tanks. In addition, the ecolinguistics approach has provided the scaffolding of consistently

organized in-depth conceptual instruction specifically designed for language learning in the field of ESP for the natural and life sciences. We believe these conjugated approaches are likely to lead learners towards a qualitative and systematic understanding of the target concepts in a

4. Conclusion

This study reports on the ESP classroom implementation of integrated, content-based language, focusing on conceptual maps and their interrelatedness. We hope this type of instruction and the feedback we have received in support of this view will generate higher quality in language learning, as well as greater adaptability to conceptual, holistic, and systems thinking. The research we have been conducting in sharing such a view of language learning pursues several complex aspects in synchrony by directing observation over the long term. We have chronicled the interactive events which take place in the language environment and aimed at discerning how these impact and are impacted upon by peers, teachers, learning materials, and reciprocal feedback. Another aim of our project has been to develop our and our students' capacity for collaboration, as we believe that teachers and material developers should not craft knowledge in isolation, without interested stakeholders.

Understanding the interrelatedness of this very process provides a sustainable and ethical basis required for working with others whose lives are affected by our choices, perspectives, and visions. Thus, learners are affected by a plethora of elements and by one another, as they choose to give credit to particular meanings or ways of perceiving conceptual systems. In the

more proficient manner. Despite the emphasis we have put on concept-based instruction, we understand communication and language-learning in a manner which is highly process-oriented, rather than focusing on product, quantitative or formal aspects.

semiotics of sensory experience, identity is based on presence, which gains an essential sensory dimension, while meaning itself emerges by contagion (Landowski, 2002) during the direct encounter between individuals whose presence becomes co-presence as they engage with conceptual maps.

On a deeper level, by espousing ecological and content-based education, understanding key concepts such as community and web of life point to the fact that no organism is isolated and learners are also all interconnected. We each depend on other living and nonliving elements from our surroundings and it is therefore highly relevant to permanently correlate feedback. Furthermore, we emphasize the fact that everything is interconnected and we begin to understand that disturbances in ecosystems affect other unintended elements and produce effects in chain. A follow-up to this content-based research of conceptual correlates is to be further developed in an extended study we plan to undertake at the end of the current year of study. It will also take into consideration the final feedback from the students as to the relevance and coherence of the concepts they will have acquired as a coherent whole.

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