

Chapter 7

STEM for English Language Teaching

Bilge Akıncı

 <https://orcid.org/0000-0002-4365-7390>

Ministry of Education, Turkey

ABSTRACT

This chapter presents an example of STEM and English language teaching integration. In this study, it was aimed to improve students' English language skills and increase their engagement with the application of STEM. In this descriptive study, a way of integrating STEM into the language teaching process was explained with an applied example. The research is of qualitative design with the implementation of action research method. As a result, the implementation improved students' language skills and gave students the chance of using knowledge of other disciplines in English courses while increasing their engagement. Additively, the implementation developed students' 21st century skills. It is thought this study can be an inspiration for English teachers to apply various approaches in their teaching processes. In addition, the study can be accepted as an example of the contribution of STEM to English language teaching process. Moreover, the study is a representation of teacher research, and this research can be assessed as an inspiration for teachers to turn their practices into research.

INTRODUCTION

As Durnalı, Orakçı and Aktan (2019) emphasized, “for thousands of years, education and training that manifested within a triangle of school-teacher-student has now used new, multifaceted, multi-channel alternatives with the use of technologies in the education system” (p. 228). In the 21st century in which technology has been developing rapidly, states have to prepare themselves for an unpredictable future inevitably. For the states working in order not to lose their power and to take firm steps forward the future, the matter of the necessity for the young people to prepare for future properly is an undeniable fact. Currently, with the improvement in technology it is a frequently stressed topic that lots of jobs will disappear and new jobs will replace them hereafter. While growing children for nonexistent occupations,

DOI: 10.4018/978-1-7998-3146-4.ch007

with the questions of what to make them gain and what kind of techniques should be used in minds, new methods and techniques have been continuing to be developed. To take right steps forward the future besides the developed methods and techniques and currently defined skills, it is crucial to know what qualifications children of 21st century have and choose the right way.

There is no division such as Science and Social Sciences or any other among disciplines in life; they are all nested in each other. According to Honey, Pearson and Schweingruber (2014), STEM implementations are more meaningful for both students and teachers especially when real life issues are stated in STEM subjects in a connected way. Educational settings far from real life are not enough to take attention of generation Z. *“If education is life, all life has, from the outset, a scientific aspect, an aspect of art and culture, and an aspect of communication”* (Dewey, 1897). When a setting in which disciplines are held together, all students can find something to deal with. This can be seen as the key for motivation. When students find a matter that appeals to them, they are into it. Unless this can be accomplished, learning will not occur. For that matter, language teaching should not be separated from other disciplines being taught.

When the matter is language teaching, functions of language should not be ignored. Language is the tool for socializing. People learn language for communication and this is the way of socializing. When there is a common ground for people, they become eager to talk on it. This is the context. For this reason, creating a context for students to find a reason to communicate is the crucial part while teaching a foreign language. For that reason, other disciplines can be used as a context in language teaching for letting language production occurs intrinsically.

The aim of this study is to provide a perspective that STEM is not only for Science and Maths teaching. In this study, it is aimed to inspire teachers to teach both English and other disciplines while making students acquire 21st century skills such as problem solving, thinking creatively. For this aim, a process in which STEM and English integration was practiced in order to develop students' foreign language skills and increase their engagement. Practicing an integrated STEM approach in a discipline-based structure necessitates a deep reconstruction of the curriculum and courses (Nadelson & Seifert, 2017). In this study the reconstruction process was tried to be accomplished in English course base.

A qualitative method was used on the basis of action research in the study. Action research is a process completed by the person participating in the action itself (Sagor, 2011) and it is utilized to develop or make some changes in his or her activities in a particular setting, making the research a process for self-reflection (Herr & Anderson, 2015). In action research, the research was done by educational practitioner in the teaching and learning setting to collect information on students learning and teaching effectiveness (Mills, 2000). The researcher was the teacher who prepared and implemented the lesson plan at the same time. The journal of researcher teacher in which observations of the teacher were noted weekly and photos and videos recorded during the process were the data collection tools used in the research. The study took place in a 4th grade class (10 year-old students) in a primary school in Turkey.

A 5E lesson plan for STEM and English integration was prepared before starting the practice. The lesson plan was prepared by four English teachers, one of which is the researcher, in the scope of an international eTwinning project named as “From Scientix to STEM” in accordance with the provided STEM lesson plan template by Assoc. Prof. Dr. Bekir Yıldırım and one of the coordinators of the project, Gökhan Arıkan. There were differences in the appliance of plan because of the different conditions each teacher had at her school and the stated implementation in the study was conducted by the researcher teacher.

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/stem-for-english-language-teaching/254940

Related Content

Framing Responsive and Responsible Learning in Project-Based Assessment: A Study on the Malaysian General Studies Subject

Aiedah Abdul Khalek (2023). *Cases on Responsive and Responsible Learning in Higher Education* (pp. 305-322).

www.irma-international.org/chapter/framing-responsive-and-responsible-learning-in-project-based-assessment/319555

Virtual Collaboration in Distance Learning Environments: A Case Study

Virginia Tucker (2019). *International Journal of Online Pedagogy and Course Design* (pp. 18-30).

www.irma-international.org/article/virtual-collaboration-in-distance-learning-environments/236166

Empowering Teachers Who Work in Inclusive Practices: E-Coaching

Cigdem Uysal, Sunagul Sani-Bozkurt, Gulden Bozkus-Gencand Hasan Gurgur (2021). *Handbook of Research on Emerging Pedagogies for the Future of Education: Trauma-Informed, Care, and Pandemic Pedagogy* (pp. 386-400).

www.irma-international.org/chapter/empowering-teachers-who-work-in-inclusive-practices/276977

E-Social Constructivism and Collaborative E-Learning

Janet Salmons (2011). *Instructional Design: Concepts, Methodologies, Tools and Applications* (pp. 1730-1743).

www.irma-international.org/chapter/social-constructivism-collaborative-learning/51908

Going Online: A Pedagogical Assessment of Bioethics Distance Education Courses for Health Sciences Professionals

Shawneequa L. Callier, Attila Hertelendy, Joan Butler, Thomas D. Harter, Marcia Firmaniand Melissa M. Goldstein (2017). *International Journal of Online Pedagogy and Course Design* (pp. 57-70).

www.irma-international.org/article/going-online/164974