


# Chapter 6

## Education for Sustainability: Promoting the Sustainable Development Goals in the Development of Mobile Applications


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### ABSTRACT

*Information and Communication Technologies enhance human progress, bringing value to people and society. The role of software in society requires a paradigm shift for software development. The Karlskrona Manifesto reflects this change by establishing a focus on sustainability education. The objective of the chapter is to present the development of an Android mobile application inspired by the Sustainable Development Goals to promote sustainability. The methodology adopted used agile development integrated with the Software Engineering Method and Theory - SEMAT approach. SEMAT and agile development are two complementary initiatives, and perfectly aligned, both are structured and non-prescriptive that help to think and improve software development capability. The developed mobile application, Android, thus allows learning more about sustainability by answering questionnaires, thus contributing for the target audience to apply knowledge in environmental and social domains enhancing human progress, bringing value to people and society.*

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## **INTRODUCTION**

The involvement of higher education institutions in the promotion of sustainable development goals is considered central. Higher Education, in particular in Portugal, can play a decisive role among an age group of students strongly motivated and sensitive to the problem of the SDGs. In this way, it is essential to enhance the appeal to responsible life among students, in view of the principles of Sustainable Development. In this sense, it is considered that the various digital technologies can interact, reason, perceive, learn and act in a given environment.

Some of these technologies enhance the development of paradigms that could play a key role in driving the Sustainable Development Goals (SDGs) in the current contexts of digital transformation. It is considered that, given the potential of Information and Communication Technologies (ICT), these can contribute to achieving the 17 Sustainable Development Goals. Namely exploiting the Information Systems (IS) to make information more reliable and enhancing decision making, strategy definition and implementation of policies based on data analysis. In this sense, the conditions for optimization in terms of resource allocation may be created.

One of the objectives of this research is to promote the use of ICT in favor of people, namely in the search for sustainable behaviors and attitudes, creating better habits of life. In this project, it was also defined as an objective the inclusion of the five dimensions of sustainability from the perspective of the Karlskrona Manifesto, thus connecting the concerns underlying software development in the social, human, economic, technical and environmental dimensions.

This chapter is organized into six sections. The first is the introduction in which the need identified in the organizational context is presented, specifying the objective of the chapter. In the second section, the theoretical framework is presented with regard to the various themes that are addressed in the chapter. The development of the Mobile Application is presented in the third section. The fourth section describes the solutions and recommendations. The fifth section, Future Research Directions, describes the importance of including the five dimensions of sustainability from the perspective of the Karlskrona Manifesto. Finally, in section six, the main conclusions of the work are presented.

## **BACKGROUND**

This chapter discusses the study of some currently available options, in this case applications, and analyzes them to identify their strengths and weaknesses. This study may benefit the development of this project's application. Thus, an explanation of what the Sustainable Development Goals are is presented, followed by an analysis of the applications: "SDGs in Action", "Educa 2030", and "ODS Research and Action".

### **Sustainable Development Goals**

The SDGs define global sustainable development priorities and aspirations for 2030 and seek to mobilize global efforts around a set of common goals and targets (UNDP, 2020). There are 17 SDGs, in areas that affect the quality of life of all the world's citizens and those yet to come. Figure 1 shows the 17 Sustainable Development Goals, and they will be listed below.

The SDGs have implicitly 17 global goals (Figure 1), set by the United Nations General Assembly, (United Nations, 2022) in which it mentions the importance of transforming our world according to

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