Preface

The concept of digital natives, firstly introduced in 2001 by Marc Prensky, refers to all who were born and who have grown up with digital technologies. Today, over the last decade, it is important to understand the technological profile of this new generation that was born in a digital world and that remains immersed. As it is believed that present and future learning environments should motivate and engage learners in reflective thinking and active knowledge construction, the potential of technology is in knowing how to help students and teachers in doing so. In other words, to find patterns of discourse to implement and accomplish the necessary interaction, mediated by technology, in the learning process. Moreover, given the intense competition in knowledge-based economies and the wide omnipresence of information and communication, it is also essential to offer different educational supports that can integrate the idea of educating students for global citizenship. Having this issue as a backdrop, the overall goal of this work is to contribute to the understanding of how HEI need to anticipate and prepare themselves for this new native generation. Thus, the Handbook of Research on Engaging Digital Natives in Higher-Education Settings aims to publish literature reviews and evaluations of good practices in higher education that support and inspire colleagues to a better understanding of how to use technology for learning and teaching activities.

Although the target audience of this book is composed of academics, students, researchers, and education policy representatives, we definitely hope that the audience can act as an important anchor for all those that are committed with higher-education settings regarding the issue of engaging (digital natives) students in the learning and teaching process.

The Handbook of Research on Engaging Digital Natives in Higher-Education Settings is a compilation of 20 contributions of the central concerns, challenges, opportunities, experiences, and commitment of 50 authors from 10 countries over 4 continents that really work and live side by side with today’s students.

The Handbook of Research on Engaging Digital Natives in Higher-Education Settings is organized in three parts: Digital Natives, Strategies of Teaching and Learning, and Virtual Education. While the seven chapters of the first part address the nature of the concept, the seven chapters that follow report about how different methodological approaches can be designed to meet the cultural changes that derive from the concept. Finally, the last six chapters focus on the subject of education within a wider digital exploration context.

In the first chapter Native or Novice? An Exploratory Study of the Access to and Use of Digital Technologies among Pathway Students, Velliaris and Breen report on a small-scale exploratory study that aimed to uncover the digital technology access and practices in both everyday life and academic study of ‘new’ international first-year ‘pathway’ students.
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The second chapter Turning Digital Natives from Consumers of Digital Products to Producers of Knowledge, by Andreatos, discusses a set-up of new objectives for modern education and presents some active learning methods and resources to help educators achieve said objectives: the use of Web 2.0-based tools, media and applications; the use modern portable devices and the possibilities they offer in learning; the use of Open Educational Resources (OER) and MOOCs in education; the use of multiple Free and Open Source Software (FOSS) products in education; and the use of blended learning settings in a face-to-face learning environment.

In the third chapter Profiling Internet Use of Portuguese Higher-Education Students, Santos e Azevedo provides a picture of the engagement between higher-education students and the Internet, especially as regards to Web 2.0, and to the knowledge, attitudes, skills, and opportunities associated with these. For this purpose, the following chapter presents the results of a review of empirical studies conducted on a set of dimensions of Internet use, including access, intensity, scope, and participation in the creation and sharing of content.

The fourth chapter Social Space or Pedagogic Powerhouse: Do Digital Natives Appreciate the Potential of Web 2.0 Technologies for Learning?, by Rutherford and Standley, suggests that, despite being digital natives and aware of the technologies, students may not realize the potential of Web 2.0 technologies as tools for the development of their learning, compelling educators to actively expose learners to the range of potentials of Web 2.0 technologies.

In the fifth chapter Strategies to Reduce Attrition among First Year Computer Science Students, Borzovs, Niedrite, and Solodovnikova explore the causes of undergraduate students’ dropout and find methods to determine potential dropouts in advance. The study might indicate the wrong choice of the study field and possible lack of understanding of what is programming by enrolled students. An action plan is proposed to reduce dropout.

The sixth chapter Assessment ‘for’ Learning: Embedding Digital Literacy and Peer-support of Learning into an Assessment, by Rutherford, and Prytherch, evaluates an assessment strategy designed to reinforce learning whilst supporting the understanding by the whole student cohort, through development of multimedia learning resources. The analysis reveals that students were aware of how technology would impact on different learning styles, and of the needs of diverse learners. The key observation is that digital natives are a rich (and largely untapped) resource for the development of materials that can support their learning and that of their peers.

In the seventh chapter Model for Identifying Competencies and Learning Outcomes (MICRA), Rocha, Gonçalves, Cota, e Pimenta introduce and describe an innovative model for a thorough, organized, and systematic analysis of the educational context based on the official documents of the Course Units (syllabus and assessment components). The authors suggest that the adoption of this model by different institutions may contribute to the interoperability of learning outcomes, thus enhancing the mobility of teachers and students in the EHEA (European Higher-Education Area) and third countries.

The eighth chapter Competences and Learning Profiles of Digital Age’s Students, by Loureiro, and Messias, starts from the fact that students’ learning profile is becoming more proactive in searching for information and in constructing valid knowledge to state that the demands of the information age raise the necessity of students to acquire different skills and competences – 21st century skills. Then the authors present the different students’ learning profiles and the type of learning environments available online.
In the ninth chapter Digital Natives in Online Learning Environments: New Bottle Old Wine - the Design of Online Learning Environments for Today’s Generation, Bilgiç, Doğan, and Seferoglu guide instructors to design their online learning environments based on the new generation’s needs and expectations. The application that was developed aims to design an online learning environment for higher-education students that authors hope to improve digital natives’ needs and expectations.

The tenth chapter Framework for Noninvasive Learning Experience Management in Third Millennium Higher Education Ecosystems, by Noriega, proposes a thinking planning tool as an holistic approach and problem solving strategy. This Design Thinking planning tool is proposed for either building a student-led participatory research-based learning experience or for acting as a communication platform and community organizer to be used by students, teachers, student advisers, and administrators.

In the eleventh chapter Advances in Anatomical and Medical Visualisation, Rea highlights the history of anatomy in medical education, and clearly illustrates the key changes that are paramount to today’s digital natives’ learning. This chapter clearly illustrates how to merge traditional teaching methodologies with those of the digital age. It also highlights key areas to enhance employability of students that are seeking employment in an ever-changing market.

The twelfth chapter Learning Management System 2.0: Higher Education, by Alas, Yunus, Sabtu, Hamid, and Smith discusses factors for higher institution in determining a future direction for its Learning Management System (LMS) to take advantage of pervasive knowledge management, efficiency, and effectiveness of operations. The authors found that the trends of cloud computing and big data will be predominant factors in viewing future LMS adoption and implementation. In addition, big data in LMS seems to redefine the value added from online learning by empowering students to achieve richer outcomes in terms of resource adoption, knowledge creation, and knowledge sharing.

In the thirteenth chapter Researching the Use of Communication Technologies in Higher Education Institutions in Portugal, Batista, Morais, and Ramos describe a model of analysis designed with the purpose of identifying and characterizing the use of Communication Technologies by Portuguese Public Higher-Education Institutions to support learning activities. The results show that institutional policies and resources are in place and being used to support learning; learning management systems and interpersonal communication technologies are intensely used and widely adopted; and there are gender differences insofar the students’ use of Communication Technologies is concerned. These insights give valuable information for ongoing decision-making processes regarding the institutional adoption and development of learning models that take advantage of these technologies.

The fourteenth chapter Using the WebQuest Approach to Elicit Student Engagement in a University Course: A Case Study, by Assunca investigates whether the integration of a WebQuest into the learning processes can help foster student engagement through interactivity, and thus improve his learning outcomes. Findings indicate that educational technologies such as the WebQuest can potentially raise student commitment in learning and also help develop learning outcomes. Implications of these findings are also discussed.

In the fifteenth chapter Tips Towards Tackling Distance Education Modules: The Case of the Doctoral Program on Multimedia in Education, Pombo, and Moreira propose a methodological framework to implement modules, in distance education, supported by online pedagogical elements linked to innovative teaching methodologies. Its goal is to bring some contributions to those who are in charge of course design, providing a useful framework to improve active and technologic-enhanced collaborative learning in similar environments.
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The sixteenth chapter Master in Innovative Tourism Development: A Blended Learning Experience in the Polytechnic Institute of Viana do Castelo, by Vieira, Balula, and Almeida analyses a first experience with blended learning undertaken by Portuguese Higher Education Institutions. It presents the institutional background and rationale behind the course’s implementation, identifying its strengths and weaknesses, as well as areas of potential development. Based on an evaluation research carried out throughout the course’s first three editions that involved students, faculty, and institutional leaders, the chapter summarizes the main results of a long term-study, putting forth a set of recommendations for improvements and defining potential areas of intervention in future editions of the course.

In the seventeenth chapter The Problems and Support Services in Web-Based Distance Education: Expectations in Support Services, Aksal, Gazi, Sari, Beringel, and Emiroğlu present a reference guide for course planners or course designers of Web-Based distance-education services at higher education institutions. This chapter aims to anticipate realistic potential problems that can happen during the course design, and provides guidelines either for those who are currently involved in Web-Based distance education systems or for those who aim to make a significant improvement in the current courses.

The eighteenth chapter Web-Based Course Design Models, by Çinar, and Tüzün presents the results obtained from a literature review on Web-Based instructional design models in order to form a basis for Web-Based course design practices. The pioneering studies in literature focused on the components of Web-Based instruction and on how to direct learning processes in an interactive environment. This particular research aims to provide guidance on how design instructions shall be implemented so as to address and resolve the problems that may come across in this process.

In the nineteenth chapter Towards a Model of a Didactics of eLearning: An Application to Education for Sustainable Development, Amador, Nobre, and Barros analyze and discuss some of the problems that Higher-Education Institutions are facing with the change in the profile of students who reach this level of education. In this context, issues related to the implementation of several professional-knowledge areas (conceptual, pedagogical, and technological) acquire a new dimension due to the need to transpose them into online learning environments. This starting point is a deep understanding from the analysis of three theoretical perspectives: digital natives and social and cultural settings, models of didactic transposition, and education for sustainable development. It is the authors’ goal to discuss a didactic transposition model adapted to eLearning that answers the needs of this specific public.

The twentieth chapter Motivational Active Learning in Blended and Virtual Learning Scenarios: Engaging Students in Digital Learning, by Pirker, Riffnaller-Schiefer, Tomes, and Gütl, focuses on enhanced learning strategies with Motivational Active Learning (MAL) in different computer-supported scenarios. This chapter outlines the potential of the pedagogical model MAL in the context of blended and virtual learning scenarios.

Once this detailed table of contents is presented, it is our goal that readers can find this handbook useful in preparing daily life classes and contexts of learning, within the area of digital natives. As a scientific work, all contributions not only valued literature reviews and descriptions of research practices, but also put an emphasis on the skills of teaching and learning. More specifically, we hope that the evaluations that authors made out of their (good) practices can motivate colleagues to a better understanding of how to use technology for learning and teaching activities, directly focused on these digital natives’ students. This means we valued contributions that contextualize and consider the transferability of the
theories and practices. So, and as we hope the book to be a platform of discussion to create knowledge and exchange ideas on the issue, it seems to us that all stakeholders with interests in higher education are potentially interested on the theme.

We hope you find it useful and inspiring. Enjoy it!

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