Informática Médica transoceânica: uma abordagem baseada em Wiki para ensino e aprendizagem

Medical Informatics across the ocean: a wiki-based approach for teaching and learning

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Resumo

A evidência sugere que a aprendizagem cooperativa contribui para o desenvolvimento de uma maior capacidade de trabalho em grupo podendo contribuir para melhores resultados cognitivos e um melhor desempenho nas atividades académicas. Neste artigo, descrevemos uma abordagem de ensino baseada em wiki que promove junto dos estudantes de expressão portuguesa, a produção colaborativa de materiais de aprendizagem relacionados com a Informática Médica,

Abstract

Evidence suggests that cooperative learning fosters students' ability to work with others and may lead to better cognitive outcomes and higher achievement.

In this article, we describe a wiki-based teaching approach which promotes, within Portuguese speaking countries, student collaborative production of learning materials related to Medical Informatics. To this end, a MediaWiki platform (http://aprendis.gim.med.up.pt) was made available. The type of activities developed are

tendo para o efeito sido disponibilizada uma plataforma MediaWiki (http://aprendis.gim.med.up.pt). Neste trabalho é descrito o tipo de atividades desenvolvidas e apresentado um conjunto de estatísticas relacionadas com a utilização do wiki. Em seguida é discutido o potencial desta plataforma para o envolvimento dos estudantes, revelando que esta abordagem é capaz de promover a aprendizagem colaborativa e permite uma melhoria contínua dos materiais de ensino disponíveis para a comunidade.

described and a set of statistics from wiki activity is presented. The potential of this platform for student's engagement is discussed revealing that this approach fosters collaborative learning and allows for continuous improvement of teaching materials.

Palavras-chave: Wiki; Informática Médica; Aprendizagem Colaborativa.

Keywords: *Wiki; Medical Informatics; Collaborative Learning.*

1. Introduction

Adults learning is problem-centered motived, as part of their daily lives with interest in the immediate application of knowledge (Merriam, 2001). Digital technologies are part of the daily health assistance. Besides, immediate access to qualified contents is critical to train and provide continuing education for professionals. The environment of distance learning is an opportunity to study with autonomy and self-management (Reis, de Melo, Corrêa, Pereira, & dos Santos DB, 2016). Computer and Internet resources have been democratizing access to information.

The roles of teacher and mainly student is now more active than before with extensive vocational training to face the challenges of health care (Zeferino & Passeri, 2007), increasingly wrapped in technology. Digital health gathers advanced medical technologies, disruptive innovations and digital communication to providing best practice healthcare (Mesko, Drobni, Benyei, Gergely, & Gyorffy, 2017).

Previous studies suggest that digital tools, such wikis, blogs and podcasts could offer a way to enhance students', clinicians' and patients' learning experiences, and deepen levels of learners' engagement and collaboration within digital learning environments (Boulos, Maramba, & Wheeler, 2006). Particularly Wikis have evolved along with web 2.0 approach promoting user's active participation in content production. Users have the ability to add, delete, and modify any content collaboratively. Wikis are generally topic-oriented and may incorporate content in the form of audio, images, text, video, and web links providing ubiquitous access to group work, organization and version control, leveling the playing field for heterogeneous students' profiles (Davidson, 2015). Such approach allows different users from around the world to work together, enabling the constant development and enrichment of information online. In fact, by using these kinds of tools, "collaborative intelligence" is built harnessing to make the services better and more responsive (McLean, Richards, & Wardman, 2007).

Several approaches in the health sciences teaching have been developed using wikis (Karimkhani et al., 2015),(Leifer, 2015),(Sampaio-Maia, Maia, Leitao, Amaral, & Vieira-Marques, 2014), however to our knowledge none of these addressed the topic of health informatics. In such context health

informatics presents itself as having an important role in preparing future health professional. With the intent of widening the reach of Health Informatics knowledge in AprendIS was developed as an open platform for those interested in digital health, where discussion, sharing of information and knowledge and collaboration are promoted and valued. Postgraduate students from various medical fields and different universities add content, while they can enjoy the existent ones.
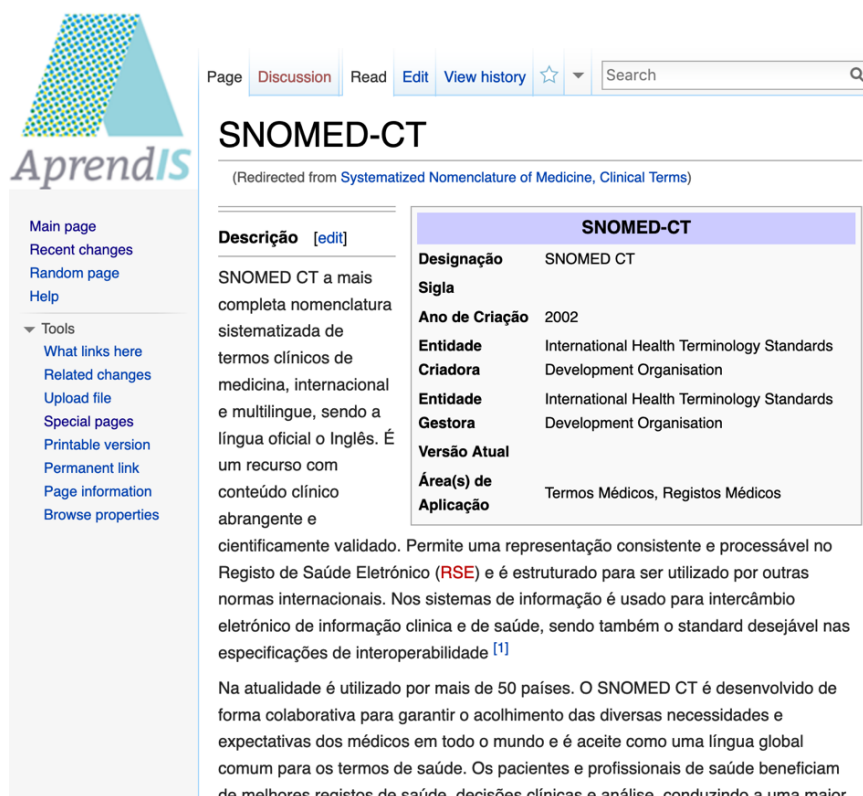
This work aims to describe how the deployment of a health informatics wiki in Portuguese language has been used in multiple teaching contexts and describe how the general usage and outreach amongst Portuguese speaking countries has evolved through the years.

2. Methods

In 2015 AprendIS (Figure 1) was implemented using MediaWiki engine (MediaWiki, 2019) and made available to health informatics students. It includes a guide for wiki editing actions and makes use of Semantic MediaWiki extension allowing the easy development of a flexible knowledge management system. An initial set of topics was included by editors in order to provide a starting content.

AprendIS has been actively promoted within courses related to Medical Informatics both in the Faculty of Medicine University of Porto, Portugal, and Faculty of Medicine of Universidade Federal de Minas Gerais, Brazil.

Figure 1 - Example of AprendIS page

The AprendIS grew from a collaborative initiative of Faculdade de Medicina from Universidade do Porto, Portugal and Universidade Federal de Minas Gerais, Brazil. Besides being available to the

community in general it has been used in several teaching contexts with the intent of incorporating collaborative work and promoting wiki enrichment.

Context of use #1: Using active methodology of learning in Brazil, postgraduate students of the Faculty of Medicine participate in seminars where a set of topics are introduced and extensively discussed. Participants make use of the AprendIS to develop wiki content related to the topics using it as presentation support and stimulating additional collective contributions. Since the launch of AprendIS, 45 postgraduate students and health professionals have introduced topics as part of their formative activities in Medical Informatics. Many times, the subject involves their own experience in medical informatics, telehealth or mHealth presented in the form of text, image, videos.

Context of use #2: With the intent of promoting collaborative and autonomous work, students from Masters in Medical Informatics have posed the challenge of choosing from a given set, a Health Informatics topic and are given a period for studying and developing the wiki content for it. Afterward, content produced is subjected to peer review and revision as a second stage of the task. In one of the years, it was also introduced an additional approach that implied the production of a small video explaining the concept. At first, individual task was assigned and later a group mode was adopted.

3. Results

Data presented were gathered from MediaWiki statistical plugins and from *Matomo* (Matomo, 2019) a tracking engine installed (in 2016) to record AprendIS access trends.

AprendIS was made available to the public in 2015, the trend in the amount of access is described in AprendIS is available since 2015, Table 1. The number of visualizations has increased over the years. Data gathered is also showing an increased rate on the number of returning visits.

Table 1 - Amount of access to AprendIS Semantic MediaWiki

	2016 n (%)	2017 n (%)	2018 n (%)
Visualizations	6585 (9)	24372 (32)	44137 (59)
Returning visits	1296 (11)	4029 (34)	6428 (55)

Geographical representation reflects the two interveners countries in this project, Brazil and Portugal, followed, although in a smaller extent, by other countries from which can be highlighted the activity by Portuguese speaking countries (Mozambique; Angola and Cape Verde). The bounce rate (number of users that only visit one page) is 77%, Figure 2.

Figure 2 - Geographical distribution of AprendIS users (%)
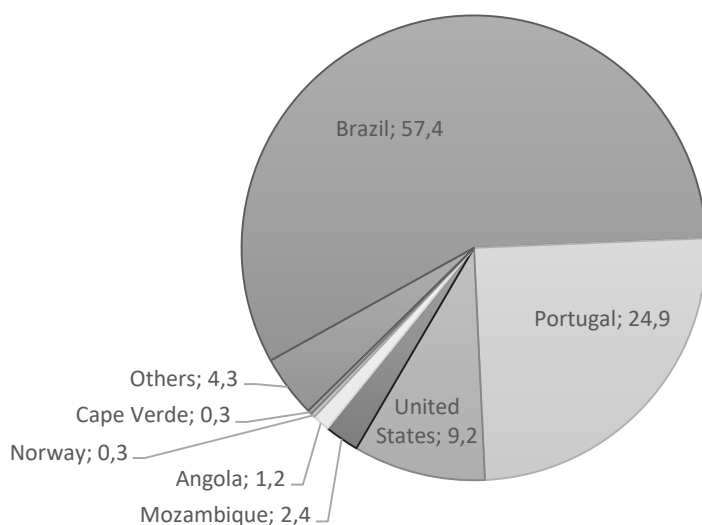
Regarding wiki editing activity, the number of new users has decreased reflecting the shift from individual tasks to group tasks. After a strong start in editing where new concepts were also introduced by editors, the new content is now being fed solely by students' activities, Table 2.

Table 2 - Number of new users and editions in AprendIS

	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)
New Users	60 (43)	43 (31)	19 (14)	18 (13)
Edits	331 (36)	360 (39)	129 (14)	96 (10)

Figure 3 depicts the editing activities distributed along the year months. Although there are some activities in most of the months the major editing occurs between April and May and between September and October, online with the academic calendar and the periods where the wiki-driven student activities take place. In total, there is an average of 16 edits per page for a total of 365 wiki pages. There are presently around 600 empty links awaiting content or external linkage.

Figure 3 - Number of edit actions in AprendIS according to the month of the year for all years
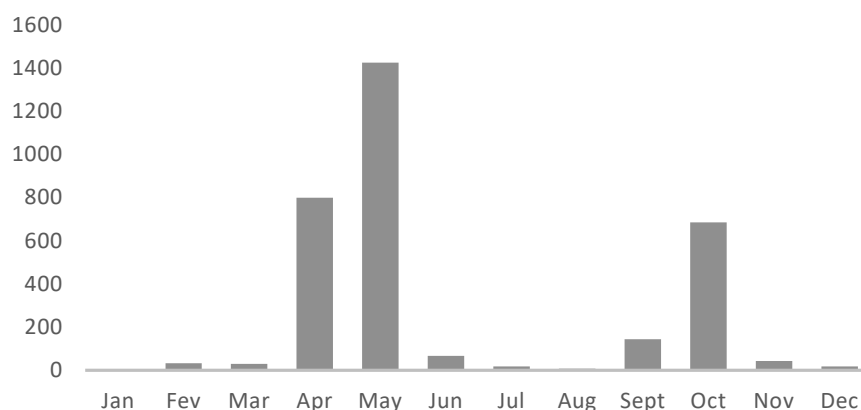
4. Discussion

The main contribution of this trans-university experience has been to offer a growing amount of health informatics contents in Portuguese, fostering the knowledge spreading on topics of real interest. The impact of such educational activities exceeded university boundaries, as documented in the increasing number of accesses to the wiki beyond Portugal and Brazil. One of the present challenges is how to make this increase in visualizations turn into an increase in editing users, some works try to identify the aspects that make a user become an editor and for instance identify that most of the editors start by wanting to fix minor typos (Robert, Ingmar, & Carlos, 2012). In order to facilitate the editing process it was included in first page a small tutorial on how to edit wiki pages.

The inclusion of the wiki in the curriculum provides additional approaches to teaching promoting collaborative work, it is however lacking from a technical point of view additional features to allow a more detailed analysis on the number of contributions by each student.

Nevertheless, these approaches enable students and teachers to share not only literature reviews but their local experiences, based on their scientific investigations on informatics application in hospitals and general healthcare. AprendIS represents a differential for adult education from other traditional formats, driven to professionalization with respect to the andragogy principles of self-directed and motivated by internal factors as proposed by Knowles(Merriam, 2001).

5. Conclusion

AprendIS supports e-health constantly renewing subjects since is a dynamic book that explores many media channels of communication as image and videos, improving the adult student interest. The openness of wiki nature provides an excellent mean for conveying to the global community the knowledge available allowing for an open forum where concepts may be discussed and redefined. The number of open pages waiting to be filled reveals that the work is not finished and there still potential for growth.

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