



PictoCal: a digital calendar of daily activity based on pictograms

Paula M. Castro, Adriana Dapena, and Francisco Laport*

CITIC Research Center & Universidade da Coruña, A Coruña, Spain
paula.castro@udc.es, adriana.dapena@udc.es, francisco.laport@udc.es

Abstract

This work presents a web service that allows the entity's professionals to create digital calendars for each of the people affected by some type of autism disorder and work with them through pictograms. With this tool, both therapists and families will be able to create calendars and complete each day of any month of the year with pictograms that describe the scheduled activities. These calendars will be completely adapted to the needs and preferences of the users to whom it is addressed. They will be able to create several calendars for different or even the same person, with all the data hosted in the cloud and accessible from anywhere via the Internet. In addition, this web service provides an integrated online search tool for pictograms, so you can search for all the pictograms that are needed to complete the calendar without leaving the platform.

1 Introduction

People affected by Autism Spectrum Disorders (ASD) have great difficulties in organizing daily tasks, adapting to changes in planning or in understanding verbal language when transmitting these instructions [4]. Therefore, it is important to incorporate agendas or calendars [3] that facilitate this work and also to use augmentative and alternative communication to mitigate these difficulties [2].

Currently, printed and laminated calendars are used where the pictograms are pasted, also printed and laminated. These tasks are manually done, exclusively on paper, with a large investment of time and resources by the team of professionals. In addition, any variation in terms of daily scheduled activities means additional work for these professionals. This work methodology does not allow people with ASD or their families to easily access these permanently updated calendars, since they are on such a physical support (paper) in the entity's centers. Moreover, nor does it make communication with these people easier, to anticipate tasks to be carried out, nor with the families, to inform them of the tasks carried out each day or of possible actions for future activities.

This paper presents a web service that allows professionals to create digital calendars for people affected, in general, by some type of functional and/or cognitive diversity and, in particular, by ASD, and to work with them through pictograms. The paper is organized as follows.

*All the authors contributed equally to this work

Section 2 is devoted to show the functionalities of our web and some concluding remarks are made in Section 3.

2 PictoCal

Table 1 summarizes the main functionalities of our web service, which is referred to as *PictoCal*. Figure 1 also shows two examples of screenshots of our development: on the left, an example of a calendar with daily events and, on the right, the screen for creating a new event.

Interface	Use of ARAASAC pictograms: <i>upload from computer or a device</i> <i>real-time upload from ARASAAC</i>
	Adaptation of parameters to each user: <i>text colours</i> <i>text sizes</i> <i>text fonts</i> <i>interface colours</i> <i>placement of elements</i>
Access	Registration Account activation using email Access using registered data Edit data Password change using email
Calendar functionalities	Create a new calendar: <i>predefined templates</i> Modify calendar parameters Eliminate a given calendar
Event functionalities	Create a new event for a day Modify event parameters Eliminate a given event
Export	PDF format

Table 1: Functionalities of PictoCal

PictoCal is a web service accessible from any digital device with an Internet connection, so the user, through a computer, mobile or tablet, will be able to access their data without having to take it with them. In addition, such data will be stored in a cloud database to ensure its persistence. This web service facilitates the work of the team of professionals and the availability of this tool, regardless of the time and the space in which it is used, and the updated information of the completed or future tasks to the families and the people with ASD themselves.

With this tool, both therapists and families will be able to create digital calendars and complete these monthly calendars daily with pictograms that describe the activities or events scheduled for that day. The service will employ the commonly used pictograms of ARASAAC [1], which can be previously downloaded on our computer or real-time searched from ARASAAC without leaving the platform using an integrated online pictogram search tool.

These calendars will be completely adapted to the needs and preferences of the users they

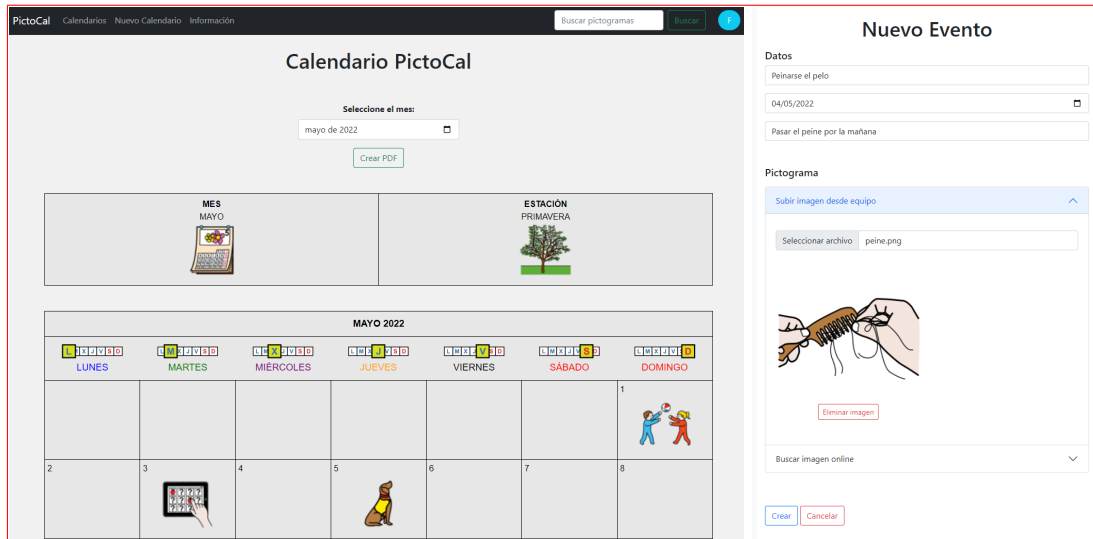


Figure 1: Calendar and events in PictoCal.

are aimed at. The team of professionals could edit or view them on the web at any time, and also export them to a PDF document for subsequent printing or distribution, if desired.

3 Conclusions and Future Work

This tool gives a solution to a need of entities working with people affected by ASD in the area of planning daily activities with improvements in time effort and cost for their therapists and families, allowing for adaptation to their needs and their progress. For users, it provides greater autonomy and reduces stress associated with new tasks or unexpected changes in planning. Its ease of use makes it an indispensable working tool for entities working with users with this type of difficulties.

The professionals of a surrounding entity have carried out user tests of our development, which have proved satisfactory for utilization with their users with ASD.

4 Acknowledgments

The authors thanks ASPANAES the collaboration for the development of this tool. This work has been funded by the Xunta de Galicia (by grant ED431C 2020/15 and grant ED431G 2019/01 to support the Centro de Investigación de Galicia “CITIC”) and ERDF funds of the EU (FEDER Galicia 2014-2020 & AEI/FEDER Programs, UE).

References

- [1] Elisabetta Bertola López. Análisis empírico de las características formales de los símbolos pictográficos arasaac. *Proyecto de investigación.*, 2018.
- [2] Janice Light, David McNaughton, David Beukelman, Susan Koch Fager, Melanie Fried-Oken, Thomas Jakobs, and Erik Jakobs. Challenges and opportunities in augmentative and alternative

communication: Research and technology development to enhance communication and participation for individuals with complex communication needs. *Augmentative and Alternative Communication*, 35(1):1–12, 2019.

- [3] M^a Pérez Sanz and Ana María Torrecillas Martín. Agendas visuales, “no hace falta la agenda, él me entiende”. *El Guiniguada*, 2002.
- [4] James Ed Russell. *Autism as an executive disorder*. Oxford University Press, 1997.