EXTENDED-ABSTRACT

I WANT TO PLAY PIANO Chasing a Dream with Netychords

DAVYS MORENO, Research Centre on Didactics and Technology in the Education of Trainers, Aveiro, Aveiro, Portugal

HELDER CAIXINHA, University of Aveiro, Aveiro, Aveiro, Portugal

NICOLA DAVANZO, University of Milan, Milan, MI, Italy

FEDERICO AVANZINI, University of Milan, Milan, MI, Italy

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Davys Moreno
Research Centre on Didactics and Technology in the Education of Trainers
University of Aveiro
Aveiro, Portugal
davys.moreno@ua.pt

Helder Caixinha
DigiMedia/DeCA
University of Aveiro
Aveiro, Portugal
caixinha@ua.pt

Nicola Davanzo
Laboratory of Music Informatics
University of Milan
Milan, Italy
nicola.davanzo@unimi.it

Federico Avanzini
Department of Computer Science
University of Milan
Milan, Italy
federico.avanzini@unimi.it

Abstract

A child with motor and communication disabilities due to cerebral palsy learned music and piano in an artistic school in Portugal through an intervention that emphasized pedagogical differentiation and curricular adaptations, integrating technology, software, and assistive devices. This article introduces the Netychords Accessible Digital Musical Instrument (ADMI), which the child uses alongside Assistive Technologies to perform on a virtual piano with the Symphony Orchestra of the University of Aveiro. Netychords demonstrates how digital technologies can create accessible instruments, enabling musical expression for individuals with motor limitations. The adaptive design process behind Netychords, tailored to the child's abilities, serves as a model for similar solutions in special needs contexts. By extending access to music education and artistic participation, such innovations highlight the potential of inclusive approaches to empower individuals with disabilities, fostering creativity and enabling active involvement in cultural and artistic endeavours.

CCS Concepts

• **Human-centered computing** → Accessibility; Accessibility technologies.

Keywords

Cerebral Palsy, Learning Music, Assistive Technologies, Accessible Digital Musical Instruments, Netychords

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1 Introduction

After resolving all the ethical issues at the University of Aveiro (UA), an Action Research project was carried out to find solutions so that children with Cerebral Palsy (CP) can develop their potential and artistic skills using technologies [1] [2]. This study involved the promotion of interdisciplinary collaborative work between health, engineering, research and education professionals. As can be seen in the film, the child was able to successfully learn music at the Artistic School (EA) [1] [2] [3], using ADMI Netychords as a musical instrument, along with the support products you normally use: computer, Eye-tracker PC Eye 5 and Grid3 [3][4]. Next, we present the objectives and methodology used.

2 Objective

Present ADMI Netychords practically and visually, making the public aware, through a success story, of the use of technology for participation through inclusion in Artistic Music Education Programmes.

3 Methodology

This is an interpretative case study, of a multiple nature, phenomenological character and qualitative methodology, in which a child with CP uses technologies as a means of interaction and communication both in everyday life and in learning music [1] [2] [5]. The concert, in which the child plays the piano as a soloist using ADMI Netychords, was held in public and recorded in video and audio format on 3 June 2024 at the UA. Footage was taken of the child's daily life at home, at the mainstream school and the AS. Informed consent, image and audio authorisations were requested from all the people and guardians of the children who were photographed or recorded in the different contexts presented. A descriptive analysis of how Netychords works was carried out to better understand how to use the software.

4 Accessible Digital musical Instrument (ADMI) NETYCHORDS

This ADMI was developed at the University of Milan [4][6] and, is used by children to play the piano due to its accessible, complete and diverse layout. The functions are superimposed on the computer screen according to the user's needs. Provides: (i) a complete style

of musical possibilities which are presented in the user interface; (ii) a settings panel, which can be hidden to give full space to the virtual keyboard; (iii) an interface that can be operated entirely by eye-tracking. The buttons are large enough and, can be selected by looking, and 'clicked by double blinking' and (iv) a settings saving system. Minor changes, bug fixes and new elements will always be made so that the software is always up to date [4][6].

5 CONCLUSION

This is a true story, the result of an action-research project carried out at the UA in Portugal. In this context, the promotion of active learning and the use of innovative technologies that the child employs, together with some assistive technologies that he regularly uses to access learning at school, were very important in achieving the objectives proposed for this study. We hope that with the example presented here, we can provide some clues to promote participation through inclusion, convinced that the problem is never with the child, but with our creative ability to find appropriate solutions for each situation, so that in the future when it comes to learning music, no child is left behind.

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