

INTRODUCTION

Education is a dynamic field that is constantly evolving, trying to follow and integrate scientific achievements and social developments as a cognitive product. Teaching is about the communication between the teacher and the learner, so that the learning process is facilitated to interact with the subject. This mediation seems to become more attractive when it incorporates the arts, although a question still lingers, whether the artistic survives the utilitarian (Moerman, 2018) through this process. The topic that will concern us in the two courses (teaching and learning plans) that we will develop is the integration of music and creative movement (dance) in the teaching of mathematics in primary school education. The arts will act as a methodological tool for the acquisition of knowledge and the creation of meaning, and at the same time will ensure the appropriate pedagogical climate with positive emotions. The overall goal is to develop an educational framework where the teacher, students and knowledge (mathematics) interact with equality, freedom and efficiency. At the same time, through the aesthetic education that ensures the inclusion of the arts in the educational process, all the multiple intelligences proposed by H. Gardner (2008) are strengthened and developed.

In the Erasmus+ program we are implementing under the title "Math through Music and Creative Movement" we had the opportunity to develop remarkable synergies. Four educational organizations, a dance school, a music school, a technological university and a private primary school collaborated and exchanged expertise to implement alternative teaching practices with the integration of the arts. The character of each organization also determines its role in the program. The role of our school is to test the proposed methodological approaches in practice and to investigate their functionality. At the same time to share the experience of these actions with teachers who are interested in the results.

In the two open online courses (MOOC: massive open online courses) that we are proposing, we will develop two themes. The first in collaboration with the Laboratory of Distributed Multimedia Information Systems and Applications of the School of Electrical and Computer Engineering of the Technical University of Crete

(Laboratory Of Distributed Multimedia Information Systems And Applications - School of Electrical and Computer Engineering, Technical University of Crete) which will deal with the teaching of Binary System in Primary School. This specific action was implemented for two school years 2021-22 and 2022-23 with interesting results. The second theme concerns symmetries, drawing inspiration from Michaël Launay's book "Le grand roman des maths - De la préhistoire à nos jours" in its English (2018) and Greek translation. We also provide a theoretical text on how combining mathematics with music and creative movement can help the development of multiple intelligences.

Educational objectives:

- Development of methodologies and experimental programs that integrate music and creative movement (dance) as teaching tools in teaching mathematics.
- Creating an educational framework where teachers, students and the subject "communicate" freely, equally and effectively, giving pleasure from the learning process.
- Reinforcement of aesthetic education using the arts and development of multiple intelligences.
- Promotion of interdisciplinary cooperation between educational organizations by sharing know-hows and experimentation procedures.

References:

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Moerman, P. (2018). Dance Art, Math, Education – An Eternal Triangle. In: Eve Torrence, Bruce Torrence, Carlo Sequin, Kristóf Fenyvesi (ed.), *Proceedings of Bridges 2018 on Mathematics, Art, Music, Architecture, Education, Culture* (pp. 347-350). Phoenix, Arizona, available in <https://www.diva-portal.org/smash/get/diva2:1244292/FULLTEXT01.pdf>

Konstantinos Manolakis - Graduate of the Pedagogical Department of Primary Education of the University of Patras and MSc in the Administration of Cultural Units. Serves in Mavromatakis International Private School since 1994 as a teacher and with the duties of Director since 2014. He is particularly interested in the connection of Education with Culture (arts, theater, museum, environment, ICT) and the teaching of History. He has organized several relevant educational programs for the school in collaboration with other institutions. He is a writer of pedagogical articles and creator of educational, cultural and museological material. He has trained groups of adults on issues related to the STE(A)M and CLIL methodology as well as issues related to the EU and citizenship. He has been a Teachers4Europe and Scientix Ambassador promoting specific programs in his area and has been awarded for his work.

Artemis Choreftaki - Graduate of the Pedagogical Department of Primary Education of the University of Crete (2020). She is attending the Postgraduate Program: "Education Sciences: Critical Pedagogy and Teacher Training" of the same University. He has attended training programs on intercultural education, special education, dance therapy and the art of rhythm in education. He also holds a C2 level degree in English and certifications in computer skills and First Aid training. Her personal interests include classical and modern dance, Argentine tango and yoga. She has been working at Mavromatakis International Private School as a teacher since September 2021.

Nelia Manolaki – Artist and Architectural Engineering student of Technical University of Crete. She draws, paints and is involved in photography as well. She is a member of Erasmus Student Network of Technical University of Crete (ESN TUC) since 2019, where she was president for 3 years (2019-2022) and Vice President for 1 year (2022-2023). She is also a member of the Communication Team of ESN Greece where she creates graphic designs and writes texts for social media and online platforms. She has participated in many workshops concerning Mobility, Education and Youth, soft and hard skills by ESN Greece and ESN ISBL. She was also part of the core team of TEDXChania, where she was a venue designer and fundraiser for events.