Montessori Memo

Quarterly, Curated, and Collaborative
Research for practitioners, researchers, and community members

MONTESSORI MEMO™

A quarterly, curated memo of peer reviewed research and policy papers accessible and contributed to by a broad community of Montessori and non-Montessori researchers and practitioners via our virtual community found in the *Montessori Forward* app.

HOW TO GET INVOLVED

Individual researches, practitioners, and community members are encouraged to recommend peer reviewed research and policy papers that you find relevant via the form found in *Montessori Forward*.

The Center for Montessori Studies collaborates across the Montessori community, Association Montessori International and American Montessori Society, and values the institutional collaborations with and among KU Center for Montessori Research, National Center for Montessori in the Public Sector, and Montessori Public Policy Initiative.

RESEARCH: MONTESSORI

Title   An fMRI Study of Error Monitoring in Montessori and Traditionally-Schooled Children

Citation

Denervaud, S., Fornari, E., Yang, X., Hagmann, P., Immordino-Yang, M. H., & Sander, D. (2020). An fMRI study of error monitoring in Montessori and traditionally-schooled children. *Npj Science of Learning,5*(1). doi:10.1038/s41539-020-0069-6

Summary/Abstract   The development of error monitoring is central to learning and academic achievement. However, few studies exist on the neural correlates of children's error monitoring, and no studies have examined its susceptibility to educational influences. Pedagogical methods differ on how they teach children to learn from errors. Here, 32 students (aged 8–12 years) from high-quality Swiss traditional or Montessori schools performed a math task with feedback during fMRI. Although the groups' accuracies were similar, Montessori students skipped fewer trials, responded faster and showed more neural activity in right parietal and frontal regions involved in math processing. While traditionally-schooled students showed greater functional connectivity between the ACC, involved in error monitoring, and hippocampus following correct trials, Montessori students showed greater functional connectivity between the ACC and frontal regions following incorrect trials. The findings suggest that pedagogical experience influences the development of error monitoring and its neural correlates, with implications for neurodevelopment and education.

Title   Evaluation of the Montessori-Inspired Lifestyle® as the Foundation of Care in Assisted Living Memory Care

Citation

Gaspar, P.M., Westberg, K. (2020). Evaluation of the Montessori-Inspired Lifestyle® as the foundation of care in assisted living memory care. *Journal of Gerontological Nursing*, *46*(5), 40-46. https://doi.org/10.3928/00989134-20200409-01

Summary/Abstract   The Montessori-Inspired Lifestyle® (MIL) was implemented as the foundation of care in several assisted living memory care (ALMC) neighborhoods to enhance meaningful social roles, engagement, and focus on residents' remaining capabilities. The purpose of this quality improvement project was to evaluate the outcomes regarding resident levels of engagement and prescribed antipsychotic medications before and after MIL implementation. A total of 85 residents were observed for 10-minute periods seven times during 1 day to ascertain the level of engagement during meals and planned and unplanned activities. Positive engagement minutes increased after MIL implementation for activities and meals. Outcomes of this project support the MIL as a foundation of care for ALMC residents and have raised the awareness for addressing diverse cognitive abilities. The need for reoccurring training for the sustainability of this model of care was recognized.

Title   Journal of Montessori Research Spring Issue

Citation

Murray, A. K. (2020). Spring Issue, *Journal of Montessori Research*, *6*(1). https://journals.ku.edu/jmr/issue/view/1787

RESEARCH: RELATED

Title   Early Signs of Specific Learning Disabilities in Early Childhood

Citation

Balikci, O. S., & Melekoglu, M. A. (2020). Early signs of specific learning disabilities in early childhood. *International Journal of Early Childhood Special Education (INT-JECSE)*, *12*(1), 84–95. https://doi.org/10.20489/intjecse.722383

Summary/Abstract   Since comprehensive evaluation of academic skills cannot be extensively conducted in early childhood, specific learning disabilities cannot be diagnosed in preschool-aged children. To evaluate academic skills, children must be school-aged and interventions cannot begin in the preschool period. However, specific learning disabilities in children may also be noticed during preschool. Preschool teachers need to determine which kids are at risk of having specific learning disabilities so that they can be detected early and an intervention provided. Preschool teachers need to be aware of the early signs of specific learning disabilities to distinguish between typically developing children and those at risk of having specific learning disabilities. In this review, studies describing the preschool characteristics of students at risk of having specific learning disabilities are examined, and the early signs of specific learning disabilities and early intervention processes are described based on the literature. Research suggests that the signs of specific learning disabilities can be seen in early childhood. The need for preschool teachers and families to be sensitive to the characteristics of children at risk of specific learning disabilities in the context of early intervention is discussed.

Title   Analysis of Training Offers on Active Methodologies for University Teachers in Spain

Citation

Higueras-Rodríguez, L., García-Vita, M., & Medina-García, M. (2020). Analysis of training offers on active methodologies for university teachers in Spain. *European Journal of Educational Research*. *9*(3), 1223-1234. https://doi.org/10.12973/eu-jer.9.3.1223

Summary/Abstract   The current offer of training courses for university teachers is due, among other needs, to the implementation of an educational model based on student learning, promoting the use of active methodologies for their motivation and academic performance. An exploratory-descriptive and ideographic study is presented where the main technique is the analysis of content. To this end, 15 Spanish universities with the greatest prestige were analyzed according to the parameters of the Academic Ranking of World Universities (ARWU) in relation to the topics related to active methodologies and the profile of university teachers. The results show the different teacher training courses that have been carried out during the 2019/2020 academic year. We find that there are more universities that present more training of this type than others, and who this type of training is aimed at: new teachers and teachers with professional experience. The conclusions are related to the importance of the courses for the professional development of university teachers, since they should not be anchored in the same methodology, but should be open to new challenges and always taking into account the students, enhancing their motivation and academic performance.

Title   Chinese and US Preschool Teachers' Beliefs About Children's Cooperative Problem-Solving During Play

Citation

Jin, M., & Moran, M. J. (2020). Chinese and US preschool teachers' beliefs about children's cooperative problem-solving during play. *Early Childhood Education Journal*. doi:10.1007/s10643-020-01087-9

Summary/Abstract   Many researchers have investigated the cooperative problem solving (CPS) of children during play; however, there is a lack of studies focused on teachers' beliefs about how to support the development of children's CPS in classrooms. This study aims to investigate the pedagogical beliefs of Chinese (n = 3) and US (n = 3) teachers about the CPS of children during play and their decision-making capabilities in supporting children to advance this skill in classrooms. A semi-structured interview was conducted with the integration of video-stimulated recall approach in order to achieve this aim. Results confirm that the Chinese and US teachers believe that children are competent and have the autonomy to decide how to solve problems with their peers. The beliefs are similar across the teachers, whereas their execution of these beliefs varies, which reflects their cultural uniqueness in scaffolding and creating classroom environments.

Title   Supporting Self-Directed Learning in a Project-Based Embedded Systems Design Course

Citation

Larson, J., Jordan, S. S., Lande, M., & Weiner, S. (2020). Supporting self-directed learning in a project-based embedded systems design course. *IEEE Transactions on Education*, *63*(2) 88-97. https://doi.org/10.1109/TE.2020.2975358

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Summary/Abstract   Contribution: This article shares the learning ecosystem of a project-based embedded systems course, identifying course elements that support self-directed learning and how assignments guide students toward becoming adaptive experts. Background: The technology advances while the fundamentals of electrical engineering remain static. Educators can increasingly prepare students to identify what they need to know to solve problems and avail themselves of resources to learn. This article seeks to further understand ways that a project-based learning approach in an undergraduate embedded systems course can facilitate students' self-directed learning. Research Question: In what ways can a project-based learning approach in an undergraduate embedded systems course facilitates the self-directed learning amongst students? Methodology: This article, conducted in the context of an existing embedded systems design (ESD) course, relied on interviews of students, teaching assistants, and faculty along with document analysis and a mixed inductive-deductive thematic analysis. Findings: A learning ecology of the course is presented. This includes descriptions of space and facilities that influence student motivation, means by which the pedagogical intent of the instructor impacts the student experience, how the course builds on project-based learning knowledge, how the content is distributed using knowledge sharing, how Making supported the ecosystem, how students and instructor occupy similar roles, how the curricular design process was conducted, and how the open ecology promotes student self-direction.

Title   Changing the Grammar of Schooling: An Appraisal and a Research Agenda

Citation

Mehta, J., & Datnow, A. (2020). Changing the grammar of schooling: An appraisal and a research agenda. *American Journal of Education*, *126*(4), 491–498. https://doi.org/10.1086/709960

Summary/Abstract   In 1994 and 1995, David Tyack, William Tobin, and Larry Cuban (Tyack and Cuban 1995; Tyack and Tobin 1994) coined the term "grammar of schooling" to characterize the long-lasting and largely unchanging core elements of schooling. These elements include batch processing of students, separation of classes by academic discipline, age-graded classrooms, teaching as transmission, leveling and tracking, and schooling as a mechanism for sorting students by perceived ability. In recent years, however, there has been a range of efforts that in different ways try to move us away from the century-old grammar of schooling. These include personalized learning, blended schools, competency-based schooling, deeper learning, community-infused and social justice-oriented schools, and many more.

Title   Review of Methodological Proposals: A Categorical Grouping Taxonomy

Citation

Rodríguez-García, A., & Arias-Gago, A. R. (2020). Review of methodological proposals: A categorical grouping taxonomy. *Alteridad Revista de Educacion,15*(2), 146-159. https://doi.org/10.17163/alt.v15n2.2020.01

Summary/Abstract   Currently, there is no taxonomy linked to the methodology that groups different methodological elements according to their active and instructive nature and the educational stage to which they are best suited in terms of use. Therefore, the objective of this research was to establish a taxonomy considering 76 resources, strategies, techniques and didactic methods obtained after a review of the main national and international literature. To establish the taxonomy, the EVEMDT scale was developed and validated through the expert judgment procedure. It was administered to a panel of 30 experts who attended a training seminar given by the researchers, to assess the instructive or active nature and the adequacy to the educational stage of the 76 methodological elements. The results made it possible to establish a taxonomy where 25 and 51 resources, strategies, techniques and instructional and active didactic methods appear respectively, also classified according to the educational stage to which they are best adapted in terms of use. It is concluded that the taxonomies with which to compare the results are meager, an aspect that allows this to be a reference for teachers when deciding what resources, strategies, techniques and didactic methods to use depending on the educational stage in which The students are located and the role they want to give them in their learning processes.

Title   Music Beyond...Therapy. An Educational Tool for Inclusion

Citation
Zappaterra, T., Curatola, A., & Lamanna, V. (2020). Music beyond...Therapy. An educational tool for inclusion. *Italian Journal of Special Education for Inclusion, 8*(1), 201-217. https://ojs.pensamultimedia.it/index.php/sipes/issue/view/224/72

Summary/Abstract   Music is an integral part of every person's life. Scientific research has shown the effectiveness of music in medical-rehabilitation contexts to the extent that it is considered, for some categories of people (disabled, socio-cultural, elderly), for the exclusive use of the psychotherapeutic field. The purpose of this review is to demonstrate the importance that music has also in the educational and didactic field to "exploit" its peculiarities, "beyond" the therapeutic component to include the many different contexts of life. Among these, the "digital environments" make music the protagonist of a "world 2.0", within which, starting from the strengths of the differentiated Method of Maria Montessori, it is possible to create a union between pedagogy and musical education. The last section deals with deafness and music as a specimen, highlighting how theoretical and empirical research on this topic has dealt with it from a threefold perspective: on the one hand, music as rehabilitation therapy for deaf people; on the other, music's contribution in the overall education of the deaf; finally, music as entertainment and its enjoyment as an expression of quality free time for deaf people.