



# Immersion Montessori School

## Mini Camp - STEAM Camp

### Theoretical Background

The STEAM Mini-Camp integrates key principles from science, technology, engineering, arts, and mathematics education, aiming to provide a comprehensive and engaging learning experience for children. This interdisciplinary approach is supported by a growing body of research underscoring the benefits of STEAM education in fostering critical thinking, creativity, and problem-solving skills.

**Interdisciplinary Learning:** STEAM education's interdisciplinary nature encourages children to make connections across various subjects, enhancing their overall understanding and ability to apply knowledge in real-world scenarios. A study by Becker and Park (2011) suggests that integrating arts into STEM education (turning STEM into STEAM) promotes creativity and innovation, as students learn to approach problems from various angles and think outside the box (Becker, K., & Park, K. (2011). Effects of integrative approaches among science, technology, engineering, and mathematics (STEM) subjects on students' learning: A preliminary meta-analysis. *Journal of STEM Education*, 12(5/6), 23-37).

**Hands-On and Experiential Learning:** The Montessori method's emphasis on hands-on, experiential learning aligns perfectly with STEAM principles. Research has shown that children learn best when they are actively engaged and can manipulate materials to explore concepts. Hands-on STEAM activities help solidify abstract concepts by providing tangible experiences (Prince, M., & Felder, R. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. *Journal of Engineering Education*, 95(2), 123-138).

**Problem-Solving and Critical Thinking:** STEAM education is particularly effective in developing problem-solving and critical thinking skills. A study by Sullivan and Heffernan (2016) highlighted how STEAM projects, which often involve real-world problems, enhance students' abilities to think critically and solve complex problems (Sullivan, A., & Heffernan, N. (2016). Robotic construction kit as a learning tool. *Robotics in STEM Education: Redesigning the Learning Experience*, 153-176).

**Collaboration and Communication:** The collaborative nature of STEAM projects, as noted by Johnson (2012), encourages students to work together, share ideas, and communicate effectively. This collaboration is essential in fostering teamwork and communication skills, which are vital in both academic and real-world settings (Johnson, L. F. (2012). The NMC Horizon Report: 2012 Higher Education Edition. *New Media Consortium*).

**Creativity and Artistic Expression:** Integrating arts into STEAM education not only enhances creativity but also allows for the expression of concepts and ideas in diverse and innovative ways. Robinson (2011) argues that fostering creativity in education is essential in preparing students for future challenges and opportunities (Robinson, K. (2011). *Out of our minds: Learning to be creative*. Capstone).

The STEAM Mini-Camp is designed to capitalize on these educational benefits, providing a rich and dynamic environment where children can explore and grow in multiple domains. The camp's structure allows for the seamless integration of arts into STEM,

promoting a holistic approach to learning. By offering activities that span across science, technology, engineering, arts, and mathematics, the mini-camp not only nurtures specific skills in each area but also cultivates an overall sense of curiosity, creativity, and a love for learning.

The emphasis on hands-on, experiential learning, characteristic of the Montessori method, ensures that children remain engaged and active participants in their education. This approach is particularly effective in solidifying complex STEAM concepts, making them accessible and enjoyable for children. The collaborative projects encourage teamwork and communication, preparing students for future collaborative endeavors in academic and professional settings.

Overall, the STEAM Mini-Camp aligns with contemporary educational research, offering a balanced and enriching experience that prepares children for the interdisciplinary, collaborative, and creative demands of the 21st century.

### **STEAM Mini-Camp Detailed Schedule (Monday - Friday)**

8:00 - 9:00 AM: Arrival and Free Exploration

- **Activities:** Upon arrival, children engage in free-choice activities related to STEAM, such as puzzle solving, simple construction sets, or drawing scientific concepts.
- **Environment:** The community room and outdoor space are open for exploration, fostering a relaxed and welcoming atmosphere for the day ahead.

9:00 - 10:30 AM: Montessori Work Cycle - STEAM Focus

- **Hands-On Learning:** A selection of STEAM-focused Montessori materials and activities are available, including basic experiments, engineering challenges, and technology exploration.
- **Guidance:** Educators and guides are present to provide support, introduce new concepts, or facilitate group activities, while allowing for independent learning and discovery.

10:30 - 11:00 AM: Snack and Outdoor Observational Drawing

- **Snack Time:** A healthy snack break for energy replenishment.
- **Drawing Session:** Post-snack, children are encouraged to engage in observational drawing, focusing on natural elements or scientific concepts, enhancing their observational and artistic skills.

11:00 AM - 12:30 PM: Guided STEAM Project

- **Project Work:** A hands-on, guided project focusing on a specific STEAM concept, such as a simple robotics task, a basic chemistry experiment, or an environmental science activity.
- **Collaboration and Inquiry:** Children are encouraged to ask questions, work collaboratively, and apply critical thinking to solve problems and complete their projects.

12:30 - 1:30 PM: Lunch and Free Time in Outdoor Space

- **Lunch Break:** Time for a communal lunch, either indoors or outdoors.
- **Free Exploration:** After lunch, children have free time to explore the outdoor space, engage in informal STEAM activities, or simply relax and socialize.

1:30 - 3:00 PM: Collaborative STEAM Challenges

- **Team Activities:** Small groups tackle STEAM challenges that require teamwork, problem-solving, and creative thinking. These could include building a structure from limited materials, coding a simple program, or designing a sustainable mini-ecosystem.
- **Interactive Learning:** The challenges are designed to be interactive and fun, fostering a love for learning and exploration in the STEAM fields.

3:00 - 3:30 PM: Afternoon Break

- **Relaxation Time:** A short break for snacks and relaxation, providing a necessary rest before the afternoon activities.

3:30 - 4:30 PM: Montessori Work Cycle / Outdoor Exploration

- **STEAM-Focused Activities:** Continuing with the Montessori work cycle, children can engage in self-directed STEAM projects or explore further the concepts introduced earlier in the day.
- **Outdoor Option:** Alternatively, children can participate in outdoor STEAM-related activities, such as a nature scavenger hunt with scientific observations or simple outdoor experiments.

4:30 - 5:30 PM: Enrichment Activity

- **Creative STEAM Projects:** Engaging in creative activities that fuse art and science, such as creating a piece of recycled art or participating in a basic kitchen chemistry cooking activity.
- **Adaptive Schedule:** This period is flexible, allowing children to choose activities that align with their interests and energy levels toward the end of the day.

5:30 PM: Pickup

- **Day End:** Children gather their belongings, share their projects or experiences from the day, and prepare for pickup.