

# Mosaic of Learning Experiences. Xai-Xai, Chongoene, Mozambique

## The School as a Playground for Learning

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### Abstract

The school is the fundamental collective core for reducing vulnerabilities and social inequalities in a country where “the 70% of the population lives below the poverty line. In Mozambique, one in five children has not had access to a formal education; preschool education is neither compulsory nor free...and 14% of children between two and nine years are disabled” (Archstorming, 2019).

Used to interact in the shade or outdoors, this proposal takes up local habits that recall the etymological origin of an *aula*: A school as a Playground for Learning where classrooms become courtyards and viceversa, as the etymological origin of the word *aula* (classroom) in latin.

### Components:

- A **mosaic** with space-time, autonomous and versatile units for learning.
- Expandable classrooms** for indoor learning.
- The haptic surfaces** for outdoor learning.

-**Territorial covers** referencing the traditional roofs of Mozambican rural architecture.

-A **backbone** of the school as an escalated condensation of public / collective spatiality.

-**The guide bands** as a spatial representation in the school of territorial reality (rural, urban and countryside).

-A **leaning tower** as a territorial milestone to be perceived visually and audibly (territorial doorbell).

### Resources for Accessibility

- Ramps / sloping floors all over.
- Band for the blind sidewalk.
- A system of signals in Braille.
- Conditioning of the multipurpose room for various disabilities: autism, reduced mobility, partial or total blindness, etc.

The role of the community in this process is to provide more of its local educational experiences to design the interior of the classrooms and of the exterior spaces, and of course to participate in the construction.

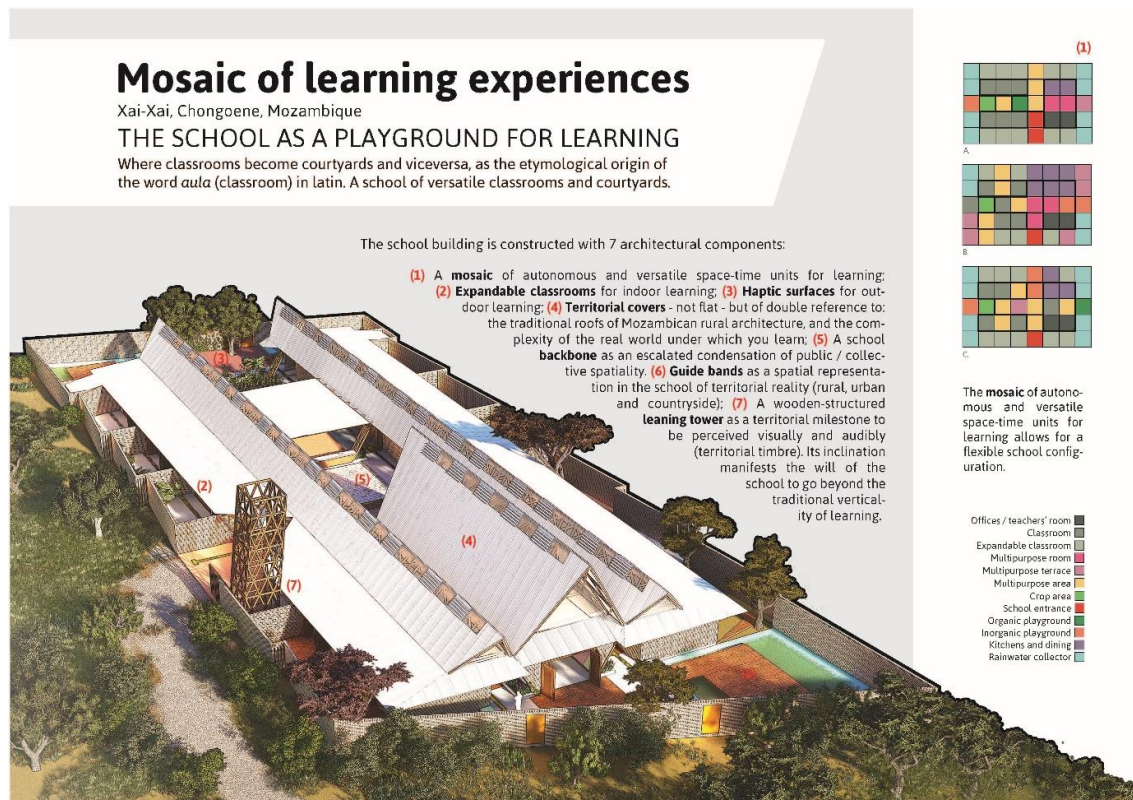
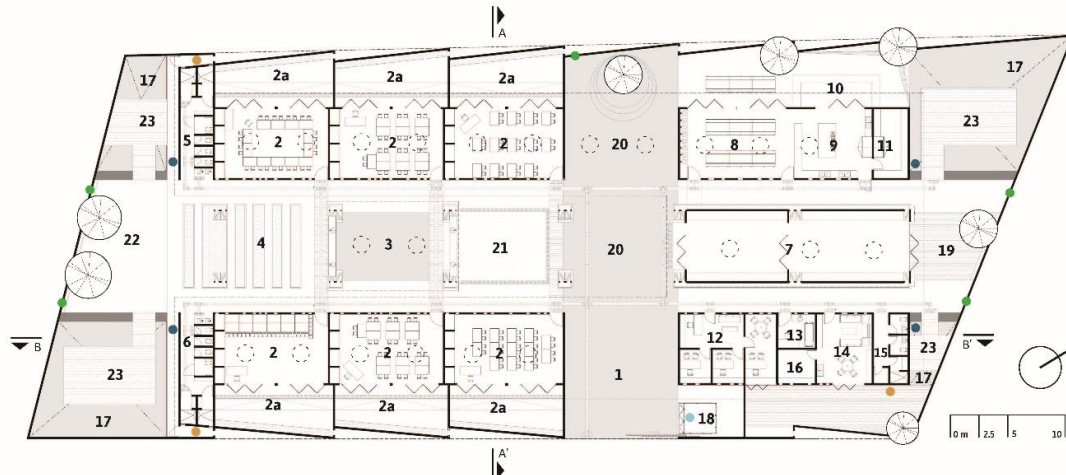
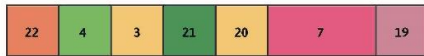


Figure 1. Aerial northeast view.



1. Entrance 2. Classroom 2a. Expandable classroom 3. Covered schoolyard 4. Crop area 5. Girls' bathrooms 6. Boys' bathrooms 7. Multipurpose room 8. Dining room 9. Closed kitchen 10. Open kitchen 11. Pantry 12. Administrative offices 13. Infirmary 14. Teachers' room 15. Adults' bathroom 16. Storage 17. Rainwater collectors 18. Leaning tower 19. Multipurpose terrace 20. Multipurpose area 21. Organic playground 22. Inorganic playground 23. Floating playgrounds. ● Septic tank ● Rainwater tank ● Water tank of 16 m<sup>3</sup> ● Emergency exits



(5) The school's backbone as an escalated condensation of public/collective spatiality.

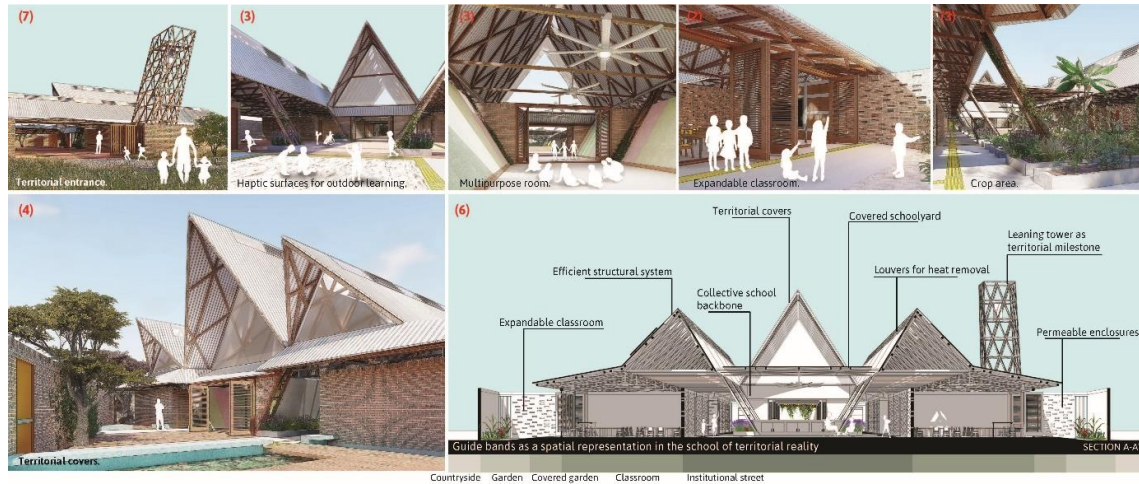
**Bioclimatic Resources**

- Overflies for solar protection of walls and glass.
- Roofs will be covered by a metallic sheet painted white to minimize solar radiation absorption.
- Indirect sunlight and diffused direct light through translucent laminated glass on roofs.
- Permeable enclosures for comfort ventilation.
- High covers to favor the evacuation of heat upwards.
- High louvers for heat evacuation.
- Differentiated pressures in the building's guide bands to favor ventilation.
- All the interior spaces of the school (classrooms, offices, multipurpose room, kitchen-dining room, teacher's room and infirmary) will have fans.
- Also all spaces will have lamps with electricity saving lighting.

**Building Constructive Systems**

**Foundation:** will be by means of solid stone joined with a cement-sand mixture. **Walls:** will be partitions made with compressed earth block walls. **Structure:** will be based on two construction elements: reinforced concrete columns that support a one-layered roof structure made up of a triangular grid structure of wooden sections of 10 x 10cm. **The roof:** its structure is optimized by applying a finite element software achieving maximum deformations of 2.5cm. The structure of the leaning tower uses a triangular lattice made of wooden sections of 10 x 10cm, optimized with a finite element software achieving maximum deformations of 2mm.

Figure 2. Ground floor.



**Principles for an inclusive school**

- The school as an expanded inclusive reality: (a) inclusion of various children's disabilities (b) the school as a scaled representation of territorial reality and the complexity of the real world. (c) the school not as an enclave, but present in its territory.
- The school as a laboratory for rational and sensory learning (haptic). The interior (classroom) and the exterior (patio) as places for learning.

**Resources for Accessibility**

- Ramps / sloping floors between the classroom and its garden expansion.
- Band for the blind sidewalk throughout the school.
- Signals in Braille system throughout the school.
- Conditioning of the multipurpose room for various disabilities: autism, reduced mobility, partial or total blindness, etc.

**Resources for Sustainability**

- Rainwater catch areas located in the four corners of the school lot.
- Photovoltaic cells.
- Structural system in certified native wood.
- Optimization of the structural solution with a maximum deformation of 2.5cm.
- Incorporation of local-community labor.
- Use of bioclimatic resources offered by the place/area.



Figure 3. Renders and sections A-A' and B-B'.