

## Supplementary Materials

# Nature & Architecture: Student-led Biomimicry Innovations in the tropics

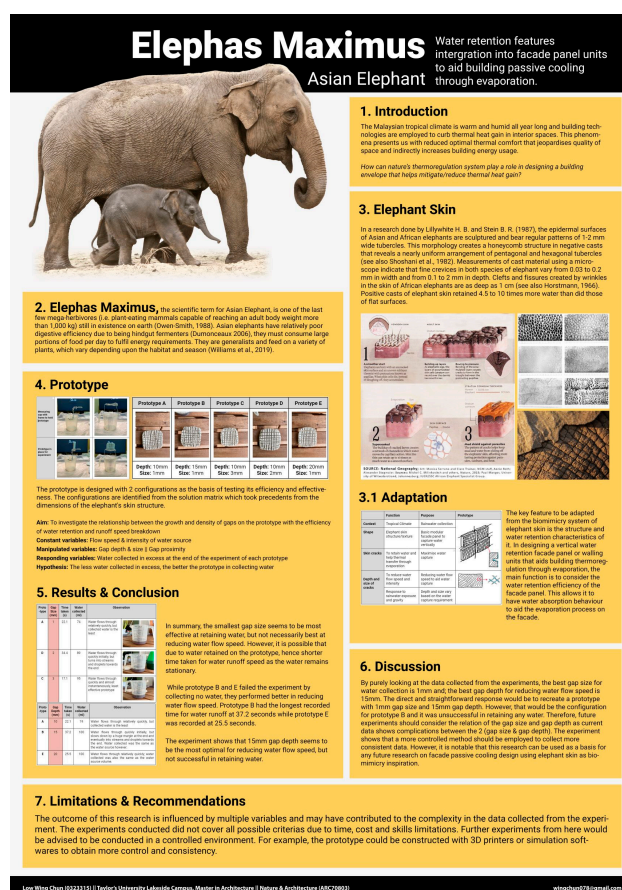
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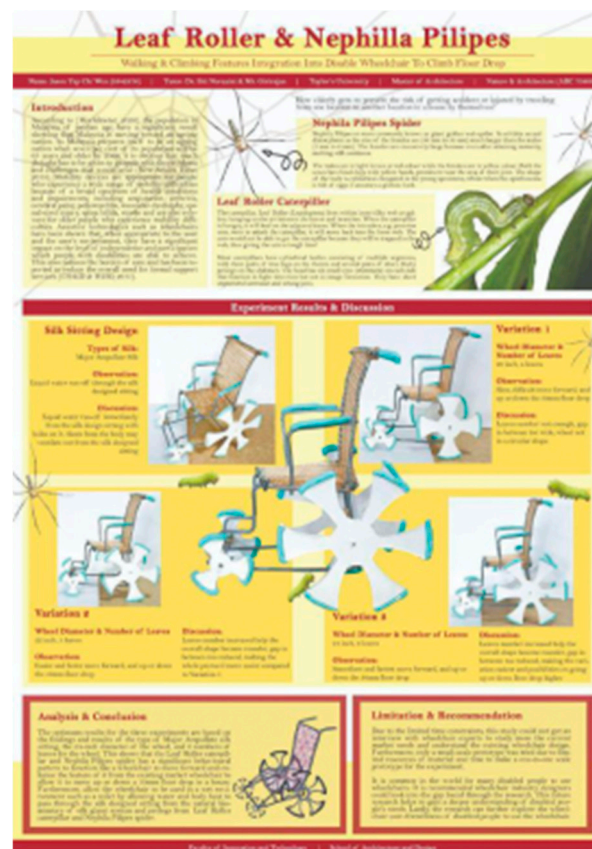
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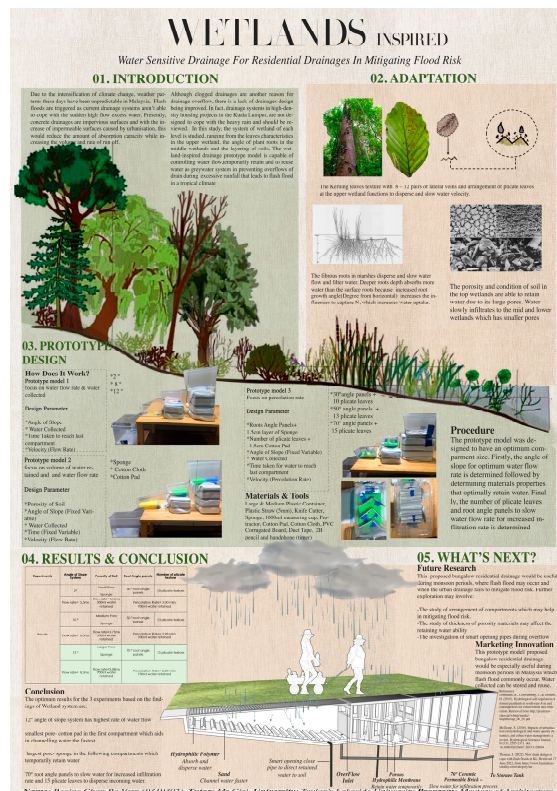
## SUPPLEMENTARY MATERIALS




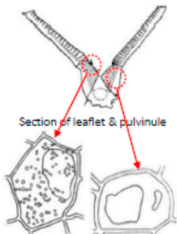

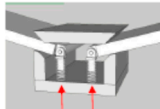

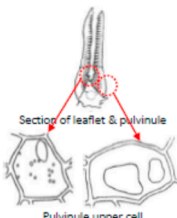

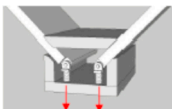
**Figure S1:** Student poster on mimicking the elephant skin texture facades for thermoregulation - (Chun, 2022)



**Figure S2:** Student poster on mimicking the Leaf Roller and Orb Web Spider *Nephilla pilipes* for better transport and mobility - (Wen, 2022)



**Figure S3:** Student poster on mimicking wetlands for better water management - (Vern, 2022)

System / Condition	Biological System	Man-made System
<b>Mimosa Pudica</b> <b>Normal condition</b>	 Under normal condition, leaflets are wide open (approx. 160°).  Section of leaflet & pulvinus Pulvinus upper cell Before stimulated, presence of large central vacuole & aquaporin channels can be found in upper cell of pulvinus. While in the lower cell, large central vacuole is without, without aquaporin channels.	  In this device, combination of magnetic system and spring are used to mimic the function of pulvinus. Under normal condition, flaps are wide open (approx. 160°), as a sun shading device.
<b>Stimulated condition</b>	 Seismonastic movement happens ~ immediate closing of leaflets upon stimulation.  Section of leaflet & pulvinus Pulvinus upper cell After stimulated, an obvious shrinkage of central vacuole & absence of aquaporin channels can be seen in upper cell of pulvinus. While at the lower cell, size of central vacuole is increased. This shows that, after stimulated, water contains in the upper cell is drained out, thus the closing of leaflets. The upper side of pulvinus controls the leaflet movement while the lower side is relatively insensitive.	  After stimulated (by rain), the magnetic field will be activated, pulling the flap downward (approx. 80°), forming a rainwater channel. Once the magnetic field deactivated (after rain), the spring will push the flap upward to the original condition.

**Figure S4:** Student poster on mimicking *Mimosa Pudica* leaves for better daylighting - (Yin, 2017)

[illegible]

**Figure S5:** Student poster on mimicking Bat's Wing for temporary structure - (Meng, 2021)