

## DESIGN SPECIFICATIONS

| ELEMENT                        | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                     |         |                            |                             |                             |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
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| MATERIALS                      | <p><b>Base/Frame:</b> The frame will be made of oak, a strong material that will provide a sturdy base to the chair, which is necessary especially when considering the constant movement of the kids in their chairs (evident from our visit to the lower school). The base of the chair will be 4 wooden legs to provide a sturdy seating solution that does not pose safety hazards.</p> <p><b>Legs/Seat:</b> This frame will be upholstered in microfiber fabric and will have BioFoam to fill the cushions</p> <p><b>BioFoam</b> → CO2 neutral, non-hazardous, hygienic, light-weight &amp; durable material that serves as vegetable-based (and thus environmentally friendly) alternative to wool filling. Soy-based BioFoam provides an exceptional level of comfort, which is important due to the long periods of time the kids spend in their chairs per day (50% of their day is spent sitting)</p> <p><b>Fabrication Details:</b> The different parts of the chair (base/frame, legs/seat, arms and arm pads) will be put together using wood joinery and wood glue. The fabrics used will be microfiber for the outside fabric, but BioFoam cushioning, and the base of all parts of the chair will be made from oak to ensure of a strong base.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |                     |         |                            |                             |                             |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| HUMAN FACTORS                  | <p><b>Comfort (Ergonomics):</b> My chair will support the neck, back, hips, and spine. This reduces pressure on the body, which is important considering the toddlers spend long durations of time sitting on their chairs throughout the day (again according to my primary research). An ergonomically curved back helps achieve this. I will also use a cushioned seat to provide extra comfort and a foot rest so that the toddlers have a place to rest their feet.</p> <p><b>Safety (Ergonomics):</b> I will include weights on the legs of the chair to ensure that when the kids sit on the edge of their chairs and lean (very common occurrence during visit to lower school), they do not fall. Using wood will also contribute to the safety of the chair, as the kids like to rest their feet behind the legs of the chair, meaning if it is not sturdy enough, they will fall over, resulting in possible injury. The edges of my chair will also be curved to prevent injury if the kids bump into the chair.</p> <p><b>Size/Weight:</b> My chair will accomodate the toddlers' measurements in the 50th percentile (as shown below). Thus, the chair will be 126.40cm tall, the legs of the chair being 34.50cm, the seat being 34.90cm x 9.00cm in dimensions, and the back of the chair being 30cm in width.</p> <table><tr><th rowspan="2">Anthropometric Measurement</th><th colspan="7">Analyzed Value (cm)</th></tr><tr><th>Mean</th><th>Standard Deviation</th><th>Minimum</th><th>Maximum</th><th>5<sup>th</sup> Percentile</th><th>50<sup>th</sup> Percentile</th><th>95<sup>th</sup> Percentile</th></tr><tr><td>Stature (St)</td><td>126.66</td><td>7.52</td><td>109.00</td><td>146.80</td><td>114.69</td><td>126.40</td><td>139.50</td></tr><tr><td>Popliteal Height (PH)</td><td>34.46</td><td>2.29</td><td>28.70</td><td>40.20</td><td>30.91</td><td>34.50</td><td>38.03</td></tr><tr><td>Knee Height (KH)</td><td>39.67</td><td>3.17</td><td>31.00</td><td>48.60</td><td>34.00</td><td>40.00</td><td>44.20</td></tr><tr><td>Thigh Thickness (TT)</td><td>9.31</td><td>1.69</td><td>5.30</td><td>15.50</td><td>6.87</td><td>9.00</td><td>12.35</td></tr><tr><td>Buttock Popliteal Length (BPL)</td><td>34.93</td><td>3.06</td><td>25.90</td><td>43.50</td><td>30.17</td><td>34.90</td><td>39.50</td></tr><tr><td>Hip Breadth (HB)</td><td>28.42</td><td>4.06</td><td>21.30</td><td>39.80</td><td>22.44</td><td>28.30</td><td>36.33</td></tr></table> <p>My chair (as a result of having these small measurements) will be fairly lightweight so that it is able to be easily moved around the classroom, thus encouraging collaboration amongst the children.</p> <p><b>Hygienic:</b> My chair will be 100% stain resistant to ensure that the toddlers' messy nature does not damage the chair in any way. By using microfiber and wood, I am able to avoid water marks (if water is splashed on it) as well as</p> | Anthropometric Measurement | Analyzed Value (cm) |         |                            |                             |                             |  |  | Mean | Standard Deviation | Minimum | Maximum | 5 <sup>th</sup> Percentile | 50 <sup>th</sup> Percentile | 95 <sup>th</sup> Percentile | Stature (St) | 126.66 | 7.52 | 109.00 | 146.80 | 114.69 | 126.40 | 139.50 | Popliteal Height (PH) | 34.46 | 2.29 | 28.70 | 40.20 | 30.91 | 34.50 | 38.03 | Knee Height (KH) | 39.67 | 3.17 | 31.00 | 48.60 | 34.00 | 40.00 | 44.20 | Thigh Thickness (TT) | 9.31 | 1.69 | 5.30 | 15.50 | 6.87 | 9.00 | 12.35 | Buttock Popliteal Length (BPL) | 34.93 | 3.06 | 25.90 | 43.50 | 30.17 | 34.90 | 39.50 | Hip Breadth (HB) | 28.42 | 4.06 | 21.30 | 39.80 | 22.44 | 28.30 | 36.33 |
| Anthropometric Measurement     | Analyzed Value (cm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                     |         |                            |                             |                             |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
|                                | Mean                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Standard Deviation         | Minimum             | Maximum | 5 <sup>th</sup> Percentile | 50 <sup>th</sup> Percentile | 95 <sup>th</sup> Percentile |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| Stature (St)                   | 126.66                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 7.52                       | 109.00              | 146.80  | 114.69                     | 126.40                      | 139.50                      |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| Popliteal Height (PH)          | 34.46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2.29                       | 28.70               | 40.20   | 30.91                      | 34.50                       | 38.03                       |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| Knee Height (KH)               | 39.67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3.17                       | 31.00               | 48.60   | 34.00                      | 40.00                       | 44.20                       |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| Thigh Thickness (TT)           | 9.31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.69                       | 5.30                | 15.50   | 6.87                       | 9.00                        | 12.35                       |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| Buttock Popliteal Length (BPL) | 34.93                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3.06                       | 25.90               | 43.50   | 30.17                      | 34.90                       | 39.50                       |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |
| Hip Breadth (HB)               | 28.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4.06                       | 21.30               | 39.80   | 22.44                      | 28.30                       | 36.33                       |  |  |      |                    |         |         |                            |                             |                             |              |        |      |        |        |        |        |        |                       |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |                      |      |      |      |       |      |      |       |                                |       |      |       |       |       |       |       |                  |       |      |       |       |       |       |       |

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|            | food stains. These materials are also both easily cleanable, requiring only a wet cloth to remove any marks from food or markers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| APPEARANCE | <p><b>Colour:</b> The oak wood parts of the chair will remain the soft brown colour of oak wood, while the microfiber parts of the chair will be different colours (ie: some chairs will have red cushions, others will have orange, yellow, etc. thus filling the "rainbow" requirement of the children). I will also have 3-D shapes (eg: triangular prisms, cylinders, rectangular prisms) sticking out from the back of the chair, which will all be different colours to make my chair more unique. These colours will all be pastel colours.</p> <p><b>Designer's Style/Expression:</b> My chair will take inspiration from Karim Rashid's bold, organic design style by using organic shapes and elements in my chair (eg: making the edges of my chair curved). I will make my chair bold and different through a unique colour scheme and distinct additions to the chair (such as the shapes sticking out from the back of it). These elements not only help to make the chair a reflection of Nour, as a designer, but also help promote creativity and freedom within limits to the children (2 of the core Montessori curriculum values). These more "fun" aspects of the chair will allow the chair to adhere more to the setting for which it was created: the classroom environment.</p> <p><b>Formal Aspects:</b> In terms of structure, the legs of the chair will be square-based prisms at the height of 34.50cm made of oak wood, the arms also being made from oak-wood, but padded with microfiber cushioning, and the back of the chair will be ergonomically curved and made from wood, but again cushioned with microfiber and BioFoam. From the back of the chair, there will be 3-D shapes sticking out from it.</p> |