Specs Info:
American Academy of Orthopaedic Surgeons(6/20/2012)
- Average Male Shoe Size(Globally): 9-12
- Average Male Shoe Size (US): 10.5
- NEED TO accommodate size 12 shoes to accommodate global market

Better Homes and Gardens Real Estate “When Buying a New Bed, Size Matters”
- 25” from mattress to floor, which means that most average adults will be able to touch their feet
to the floor while sitting on the side of the bed. This height is also good for older adults who
need to get their bearings before exiting the bed
- NEED AT LEAST 15” ELEVATION to prevent back bending

Elderly Are entertained by small feats of technological ingenuity
- Pop-Out
- Extendable
- 6 drop-pin lockable joints

Easy to Use, Open and Close (limited dexterity and range of motion)
Elderly are hesitant to accept new technology
- Aesthetic appeal with familiarity (Briefcase, Carrying case, Nothing radical)
- Simple yet elegant

Existing Specs:
a. Portable (able to move about bedroom as well as disassembled for transport if traveling)
b. Low cost
c. Ergonomic - Carrying handle attached to the side of the case
d. Safe
e. Aesthetically pleasing SEE ABOVE
f. Durable- Able to withstand everyday use and storage even dropping from waist height
g. Easy to store for daily use - Slim Design like a briefcase, nothing cumbersome or too heavy

Elaboration Upon The Design
The team was given the challenge to construct an object that would allow the elderly, or anyone for that matter, to tie their shoes on an elevated platform while seated without having to bend over and strain themselves. Along with this specification our team also had to compensate with other specifications. This includes, portability, low cost, ergonomic, safety, aesthetically pleasing, durability, easy to store for daily use, as well as being able to store a pair of shoes in the device itself. The resulting prototype object that we created is called *The Shoevalator* (Shoo va lay ter) which successfully met all of the generated specifications. *The Shoevalator* is a simple yet extremely elegant object. When completely collapsed and closed up, it is a sturdy briefcase, with working handle. However, on the innards of the box, there is much more; five main parts. The shoe tray with toe clamps stores the shoes as well as holds them in place and the four hinge arms, that allow the tray to extend up to the desired height, are all encased within the outer skeleton of the brief case. There are also six pins inside, held on the bottom on the case that are removable in order to be placed by the user to hold the joints in place. The user of the object has only one simple task, and that is putting the pins into their designated locations making the hinge arms lock and able to support the weight of the user's leg as they are leaning on the device while tying their shoes. The way that *The Shoevalator* works is, once opened, the tray extends upward toward the user and the legs extend and unfold, as the user then puts four pins into their designated positions on the hinge arms. The arms of the object will now be standing straight up and down and the tray holding the shoes will be flipped upside down. Next the user will flip the tray 180° over and put two pins into the arm and through the tray giving *The Shoevalator* the final bit of stability and allow access to the shoes in a fully elevated position. This simple and elegant solution meets every design specification and will be socially accepted by the elder. The device is portable, as it is designed to look and function, on the outards, as a briefcase with a working handle. Also, the design uses materials of low cost in order to remain cheap and maximize revenue. The design is ergonomic in that it fits all intended users hands with its filleted collapsible handle and easy to open front panel. The size of the tray fits up to a size twelve shoe, allowing it to fit up to the top end of the average male shoe size in its pursuit of a global market. *The Shoevalator* is aesthetically pleasing as it looks just like a briefcase with leather exterior, catering to the taste of an older generation. It is durable
and easy for storage, it could fit in a closet under a bed or even next to a desk, the options are limitless. The last and final specification that the team has met in designing this project was that we accounted for enough room in the storage portion of *The Shoevalator* so that the shoes of the individual will be able to be stored inside while the device is not in use.
Shoe tray clip