Is our Height Data Normal ?

The pilot for CensusAtSchool gave the following data for the heights of 7068 pupils from year 3 to year 11.
Sample Mean 152.4 cm
Sample Standard Deviation 15.43 cm

Height Less than (cm)	Total number of Pupils
106.11	8
121.54	119
136.97	1233
152.4	3441
167.83	5854
183.26	6959
198.69	7067

Check the proportions of this data against the Normal distribution of 68% within 1 standard deviation, 95% plus or minus 2sd's and 99.7 % + or – 3 SD's

Using my data as a model for the whole population and assuming a normal distribution, if I take a party of school children from years 3 to 11 to Alton Towers
I can work out how many will not be able to ride the Scary rides!

E.g. To ride on the Black Hole you have to be over 120 cm.

$$Z = \frac{120 - 152.4}{15.43} = -2.1$$

From the table of Standard normal probabilities a z value of –2.1 is 0.0179 or 1.79%
Therefore only 1.79% of my party will be unable to ride on the Black Hole, which is only about 1 pupil per full busload.

Work out how many pupils will not be able to ride on :-

Gallopers Carousel (130 cm +)
Oblivion (140cm+)
Mini Apple (up to 150 cm only)

However given that I have the actual data I know that there are 103 children with a height of 120 cm or under which is 1.46%
Compare this to our result using the Normal distribution

Recalculate if I decide to only take Years 7 to 11
(Sample statistics from the pilot of CensusAtSchool Mean 162.2 cm SD 10.73 cm
 n = 4019   Normal Distribution assumed)