
Appendix

The series of the most important conjectures that were generated and confirmed during the retrospective analyses in classes 1B and 2B are the following.

- C1.* Students divide imaginary data sets into three groups of low, ‘average’, and high values.
- C2.* Students either characterize spread as range or look very locally. We call the first view a range view of data and the second a density view (“here the dots are close to each other and there they are spread out”). There are no examples of views of spread as dispersion from a measure of center.
- C3.* Students are inclined to think of small samples when first asked about how one could test something (batteries, weight).
- C4.* Students do not expect variation in industrial contexts such as the battery life span context.
- C5.* What-if questions work well for letting students think of aggregate features of a graph or a situation. What would a weight graph of older students look like? What would the graph look like if a larger sample was taken? What would a larger sample of a good battery brand look like?
- C6.* If students have to draw their own graphs, they often draw vertical value-bar graphs although Minitool 1 only offers horizontal bars.
- C7.* Students’ notions of spread, distribution, and density are not yet distinguished. When explaining how data are spread out, they often describe the distribution or the density in some area.
- C8.* Students often mistake the median for the midrange.
- C9.* Even when students see a large sample of a particular distribution, they often do not see the shape we see in it (lesson 8 of 2B).

