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Panel Thoughts

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Two Foci:

- Development of intuitions over the early childhood, middle and high school years
- The relationship of probabilistic understanding to interpretation of risk claims
- Neither are related to the formal classical approach to teaching probability in many curricula, nor to the debate on the relationship between classical and frequentist approaches to probability.

1. Based on student interviews from age 7 to 15…

- When drawing objects from containers, and other data settings,

  students display appreciation of VARIATION (of outcomes) before they display appreciation of EXPECTATION (as identified as a probability).
- This needs to be build into the curriculum so that probabilities (and means) are not the first encounters students have with chance.

1. Based on student interviews from age 7 to 15…

- Exposure to a range of outcomes, perhaps including student-created graphs (informal), will reflect variation in real-life and chance contexts.
- This will lead to a more evidence-based exposure to expectation, leading to probability.
- Language in the early years (e.g., likely, unlikely) needs ALSO TO INCLUDE vocabulary of variation (e.g., change, range, clumps, gaps).

1. Based on student interviews from age 7 to 15…

- Reflecting ideas of variation in the early years will lay a better foundation for ideas of distribution met in the high school years.
- As distribution is one of the major ideas in probability (and statistics), variation is an important building block.

2. RISK in the school curriculum

- RISK attracts much interest and research in relation to students at the school level.
- Often it focuses on life style alternatives considered threatening to students (e.g., drugs, driving, sex practices).
- Issues of psychological bias play a large part in decision making (both by the educators and the students).

2. RISK in the school curriculum

- What is missing from in-school programs is acknowledgement of the importance of …
- (i) students' understanding of probabilities as reported in the media (or other reports) and
- (ii) the accompanying need for understanding of conditional statements and how they modify chance claims.

2. RISK in the school curriculum

- I WONDER IF those who want students to make decisions they consider "appropriate" actually want students to understand the probabilities involved, especially if they are small numbers reflecting low probabilities.
- What is needed are links across the school curriculum to tie the mathematics of chance and probability to contexts where it can assist in decision making.

2. RISK in the school curriculum

- An applied component of the curriculum should consider RISK in terms of HAZARD and OUTRAGE, combined with how psychological bias influences people's interpretations of numerical values for hazard and risk.