Premise

Following the October 2025 High School Pilot, students completed a short written assessment designed to evaluate conceptual understanding. The assessment was taken by **16 students working in pairs** (8 groups total). Notably, students entered the session with **no prior exposure to quantum concepts**, as measured by a comparable pre-test in which no group answered any questions correctly.

The assessment consisted of **two tiers of questions**:

- **Basic questions**, which all groups were expected to complete
- **Advanced questions**, which were optional and intended for groups with remaining time

All groups completed the basic questions, and **4 out of 8 groups** also attempted the advanced questions.

Responses were scored using a **4-point rubric per question** (0, 50, 75, 100), corresponding to completely incorrect, partially correct, mostly correct (right idea), and fully correct answers.

Across all groups, the **average score on the basic questions was 83%**.

Across the groups which attempted the advanced questions, the **average score was 78%**

Basic questions

1. If a qubit is in the down, or $|1\rangle$ state, what is the probability that it measures to the $|0\rangle$ or up state when measuring along on the Z basis?

2. If a qubit's state is in the bottom hemisphere in the Bloch sphere representation, what can we say about its probability of measuring to $|0\rangle$, or up?

3. If a qubit is in the up, or $|0\rangle$ state, what is the probability that it measures to $|0\rangle$ again, given that you measure along a perpendicular basis to the Z basis (for example left/right)?

4. If two qubits are entangled in the Singlet state, and one qubit is measured to $|1\rangle$, what is the probability that the other qubit will measure to $|1\rangle$ if measuring along the same basis?

5. If two qubits are entangled in the Singlet state, and one qubit is measured to $|0\rangle$, what is the probability that the other qubit will measure to the front hemisphere (not the upper hemisphere) when measuring in the front/back basis?

Advanced questions

1. If two qubits are entangled in the Singlet state, what is the probability to you that the first qubit measures to $|0\rangle$ in the Z basis, given that it is the qubit which is measured first? What about if it's measured second, after the other qubit is measured in the Z basis (but you do not know the measurement result)?

2. If two qubits are entangled in the Singlet state, what is the probability that the second qubit measures to $|1\rangle$ in the Z basis, given that the first qubit was measured in the front/back basis to the front?

3. If two qubits are entangled in the Singlet state, is there any scenario in which the probability of measuring the second qubit in a specific basis is anything but 50/50 between the two states of the basis, given that you do not have any information on what happened to the first qubit?

4. What does the conclusion about the above question lead you to believe about faster than light communication with entangled qubits?

Important notes

Since this pilot, we have continued to refine and improve the lesson structure, activities, and assessments. The questions shown here are included **for reference only**, as an example of the types of concepts explored during early classroom pilots.

To learn more about the **most up-to-date versions of our lessons and materials**, or to discuss how they can be adapted for your classroom or program, please don't hesitate to reach out.

If you have any questions at all, we'd be happy to chat — **contact us anytime**.

Contact Details

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