qolour

Educational Initiatives Manifesto

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Why us?

We are in a strong position to create a cohesive basis for quantum education due to having Qubi. It provides a unifying theme and platform for educational resources to grow naturally. Its versatility and accuracy, as well as its visual and tactile nature allow for it to be the centerpiece of educational resources of varying levels of subject matter complexity and varying learning contexts. Notably, the entry point to quantum becomes significantly easier and more engaging with Qubi, and having a standard platform gives teachers and learners the confidence to move beyond the basics. In addition to Qubi itself, our Qubi app(s) and API(s) will further increase the reach and potency of quantum education efforts. We imagine a future with kids playing quantum games, teachers managing classrooms of Qubis, and organizations creating bespoke Qubi applications or exhibits.

Guiding Principles

1. Interactivity first:

We know humans naturally learn better by practicing skills and utilizing knowledge as opposed to simply memorizing facts. Whenever possible, we strive to teach through experimental exercises or guided practice. We also understand that engaging multiple senses provides a more immersive experience, leading to higher levels of retention. Qubis are the best and most versatile tool for that purpose, and we strive to implement Qubis into lessons wherever they can be used.

2. Accessibility for all:

No two learners are alike. Learners come from varied backgrounds, have different intellectual skillsets, learn in different ways, and are exposed to quantum in different contexts. We strive to create resources and varied learning pathways such that anyone who wishes to teach or learn quantum can use our resources and derive abundant value. In practice, this means creating different versions of lessons which teach the same concepts at different paces, cognizant of different backgrounds, with different contexts (solo learning environments vs one on one vs many to one). We must also focus on creating resources to teach the teachers, as they need to feel comfortable with the lessons to effectively integrate them. Lastly, we will strive to create a process for renting/leasing Qubis in order to reduce material costs for institutions.

3. Promote scientific thinking:

The sciences do not exist in a vacuum. Overarching concepts such as mathematical formalisms, scientific thinking, and problem solving skills apply across disciplines, and even into everyday life. Even specific scientific facts have implications in multiple fields and are relevant far beyond the context where they were initially learned. We strive to instill in learners a well rounded approach of thinking that goes beyond quantum. Specifically, whenever possible, lessons will guide learners to relate concepts to ones they already know, to practice problem solving skills by asking questions and designing paths to arrive at solutions, and to exercise thinking in different levels of abstractions. We are fortuitously positioned to do this as Qubi provides an experimental playground for the naturally abstract concept of quantum states, which are further layered through the lens of computation and algorithms, and relate back to physics and engineering through the physical realization of qubits.

4. Community

Humans derive motivation, support, and camaraderie from each other. We believe teachers and learners alike will benefit greatly from having access to a community of similarly passionate and motivated peers, exchanging ideas, results, and connections with each other. On a lesson-level scale this means we strive to design lessons which include group activities such as experiments and discussions. On an organizational level we strive to create, maintain and promote channels for educators and learners to connect and collaborate. Additionally, we will strive to connect initiatives and individuals with larger organizations for sponsorship opportunities, event coordination, and career development.

Questions about this document? Contact the author below

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