Instituto Tecnológico y de Estudios Superiores de Monterrey

Quantum Computing

Reading 6

From Cbits to Qbits

Ariel Arturo Goubiah Gamboa Vázquez
A01749802
a01749802@itesm.mx

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Abstract

In this text, that is based on the paper: "From Cbits to Qbits: Teaching computer scientists quantum mechanics" by David Mermin, two ideas are extracted arbitrarily and discussed, according to the interest of the author.

1 Idea 1

The importance of pedagogy

Pedagogy is the study of teaching methods. And its importance can be described in many ways. Let us think about the working force of a nation. We can enumerate a set of properties over the population that is in the working force, such as gender, and age, but also we can somehow describe their educational level. If we gather all the information about the academic formation of the people that is in the working force, we can estimate what type of economy does this country have. For example, we expect people from highly developed countries to have a higher educational level than people from developing countries, and this is because highly developed countries compete in innovative and high technology markets, and this requires people with a set of skills that are obtained through education.

In order for a country to progress, a lot of factors come into play, where the educational level of the population is an important factor. If we take into consideration this last idea, we can argue that pedagogy is a tool that societies can use in order to create a set of teaching methods that are effective for students to learn according to the industrial and technological needs, and taking into account the human needs and the cultural interests of the students.

2 Idea 2

A new field requires new HR

We know that physicists are really good at understanding how the universe behaves under certain conditions, and computer scientists are great at creating abstract and concrete artefacts that are useful to solve problems that are relevant. In the past, physicists and computer scientists have worked closely, but since the birth of quantum computation, this relationship has grown stronger, because quantum computation involves both physicists and computer scientists and both disciplines provide some tools that are fundamental for its development. In one hand, computer science provides a framework that defines how should a computer work in order for it to be useful. On the other hand, physics describe how quantum systems work. This later contribution is self explanatory. Quantum computing has several needs, and in order to create a successful quantum computing environment, both computer scientists and physicists must find the best way to share their knowledge in an efficient way. This is a pedagogical problem that can determine the output of the quantum computing race.