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Journal Name:	Advances in Research
Manuscript Number:	Ms_AIR_19816
Title of the Manuscript:	Advances in Modern Physics: Transition from Positivism to Post-positivism in Education and Research
Type of the Article	Opinion Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	<p>The paper requires revision:</p> <p>1-Lots of english typos 2-Some of the main implications of quantum mechanics in the real world must be discussed in order to understand why such a transition is important. 3-Important references are missed. See some works of Sir Roger Penrose.</p> <p>I look forward to read the revised version. All the bests</p>	<p>Thanks for the respected referee for the valuable suggestions.</p> <p>1- All the English typos is corrected.</p> <p>2-Some of the main implications of quantum mechanics in the real world is discussed between the lines 235-272 and highlighted in the text as follows: One can speculate that the predictions of quantum physics are only valid for the ontological issues in the teeny objects of microscopic world such as atoms, molecules and elementary particles, and the outcomes of these predictions cannot be applied to the macroscopic issues in the real world. In fact they are equally valid for the ontology in the real macroscopic world (Vedral,2011).</p> <p>Let us now explain this important matter with a few examples of the implications of quantum mechanics in the real world. These examples are so stunning that every tiny bits of microscopic quantum phenomenon are integrated and built up in</p>



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		<p>a macroscopic object or body. First of all let us start with one of the most incredible birds, robins. It has been determined by Wiltschkos (1972) that robins, when they migrate to warmer Mediterranean costs, escaping from the harsh winter conditions of Scandinavia, seem to be able to detect one hundredth of very small fluctuations in the orientations of the Earth's magnetic field via a process called "<i>quantum entanglement</i>" (Gauger et. al., 2011) that even Einstein skipped by referring it as "spooky". The birds' somehow built a sort of biological compass, "the quantum sixth sense" that seems to be an excellent indication for one of the strangest features of quantum mechanics. This extraordinary phenomenon was first pointed out with a thought experiment of Einstein and his colleagues Podolsky and Rosen in 1935 as a paradox called "<i>EPR paradox</i>", however it was eventually proved to be a reality (Freedman and Clauser, 1972 and Blaylock, 2010). It describes how two separate and isolated particles have instantaneous connections via a weird quantum link. In the case of robins, the best explanation is that the spin entanglement of electrons occurs within a protein in the bird's eyes due to the Earth's</p>
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		<p>magnetic field, and that makes the entangled electron pairs highly sensitive to direction variations of the Earth's magnetic field, allowing the bird to "sense" which direction it should migrate. The amazing discovery eventually led to the development of "quantum biology".</p> <p>Another important implication of a different quantum phenomena is the "<i>quantum tunneling</i>" (a kind of quantum teleportation) of enzymes (Carlo 2012) inside the living cells, accelerating the chemical processes so that it would otherwise take much more time than lifetimes of the livings and therefore life wouldn't have been possible without this quantum process.</p> <p>On the other hand, one of the most tangible applications of quantum physics is the <i>quantum computing</i> that make direct use of quantum mechanical phenomena, such as superposition and entanglement, to perform fast and efficient acquisition and process on data (Gershenfeld and Chuang, 1998).</p> <p>As seen from these examples taken from the real life, maybe all of the quantum behavior are not only applied in the microscopic world but also in bigger objects such as the birds' eyes and living</p>
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		cells, surprising the most scientists who believed that the quantum laws are only valid at microscopic scale. 2- Some important references and references by Roger Penrose were also ed.
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		