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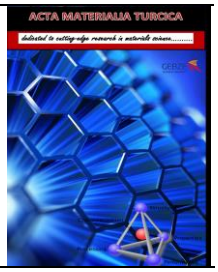

Feasibility of Micro-Nanotechnology in Biomedical Applications

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Abstract:

Higher education is the main role for the development of society. On the regional level, the academic institutes are widespread, but ultimately, they are fictitious and imaginative. Based on the published results of these institutes, they were simply established as if they could be considered close to hidden and unrealistic. Therefore, the education methodology must be reformed immediately. Education reform lies in the application of nanotechnology, and the manner of applying it. High level of technology; CMOS technology, as the core of every single device will have a profound impact on the manufacture of such tiny devices. Therefore, this technology must always be studied in the correct way, and it should continue to be developed and modernized to meet human needs including but not limited to biomedical devices, medicine, drugs, food and drones, etc. Micro/Nanotechnology is capable of performing what no one imagined or even thought possible. Miniature devices using NEMS/MEMS technology have become imperative and urgent to create artificial organs that mimic the affected human organ. Accordingly, a new generation will emerge with new capabilities, new products and new markets. This cannot be done without applying a high-tech system and adapting it leads to good, hope and contentment.

Keywords: Education Reform; Nanotechnology; CMOS Technology; NEMS/MEMS Technology; Biomedical Devices.

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1. INTRODUCTION

Biomedical applications have become widely spread research area in the wide world. Such scientific research always relies on Micro/Nanotechnology (MNT); CMOS and NEMS/MEMS technologies. Therefore, educational aspirations are goal-oriented and based on an instrumental view of higher education, which are considered as central aspiration [1], by means of realizing life aspirations. In addition, educational aspirations are based on a practical view of higher education in its transferability to economic and social capital. Frankly, achieving educational aspirations is to some extent a tool for social and economic progress [2]. To talk about that, the correct teaching process must be compatible with the discipline that deals with modern scientific techniques; in theory and in practice, which certainly leads to knowledge acquisition and thus a higher quality of education, and ultimately community prosperity. The main pillar that harms the academic institution and society's reputation is its commitment to abstract theories only, and it certainly contradicts the basic concept of pedagogy, while the philosophy of pedagogy states that education is the method and practice of teaching, especially academic or conceptual subjects [3]. Therefore, in order to help develop society, education must be applied in a correct way and use the latest concepts and modern theories around the world.

Cultural capital refers to the acquisition of knowledge, behaviors and skills that individuals possess

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and ultimately reflects on world civilization. Therefore, cultural capital that acts as a social relationship within an economy of practices and the system of exchange grants social status and power [4]. Cultural capital is a tool for explaining the differences between the levels of performance and educational attainment of students within the educational system [5]. Cultural capital lies mainly in three types; embodied cultural capital; which may be made up of individual knowledge, sensory perception, and capability, it is the integration of cultural behavior and pursuit within an individual. Institutionalized is the second type, which refers to when an institution recognizes an individual's cultural capital and is usually in the form of educational degrees, such as higher education; i.e. Master and PhD degrees. Finally; objectified cultural capital refers to cultural goods that have a unique meaning in a culture [6]. When talking about it, the highly embodied cultural capital has a keen interest in building strong confidence in the viability of higher education and showing enthusiasm for social and economic progress. So, with lower levels of embodied cultural capitals, lower education is seen as an essential role in achieving economic and social progress.

Higher education should be an avid belief to gain wider life aspirations, thus, it meets desires and achieves the overall and most distinctive intrinsic and extrinsic life goals. Intrinsic life goals are those that originate from and are caused by self. Extrinsic life goals are life aspirations for the sake of fortune, prominence, and prestige, which are based on outside stimulus and promotion [7]. At the level of embodied cultural capitals, the goals of life, whether large or external, mainly affect higher education as an effective factor in achieving economic and social progress. There is no tendency for students to reach external life goals through higher education, on the contrary, there is widespread hatred for this. This conflict may be exacerbated by the increased costs and burden of higher education. This will lead to an education devolve rather than evolving. Such a position places higher education "in the risk category", however, it gets no scrutiny because government policies and strategies devote limited time and effort to increasing development and reducing crime rates instead. Educational aspirations are evaluated from a global perspective, they become more complex especially when comparing developed and developing countries [8]. Hence, individuals should have a wake-up to motivate them and reinforce the idea and the feasibility that they have educational aspirations that definitely lead to socio-economic progress. It is up to the superior decision makers to take action to stimulate this idea. One of the prime examples of motivation is starting a project like Micro-Nanotech (MNT).

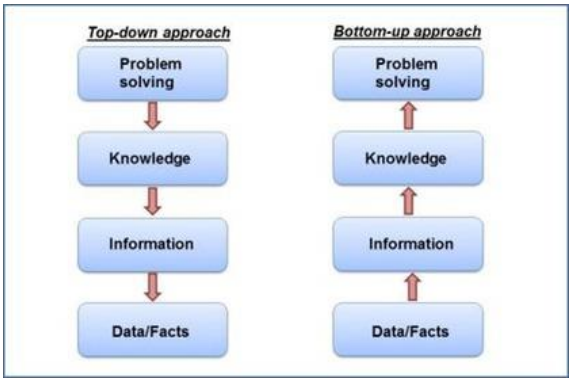

Figure 1. Top-down and Bottom-up methodology approaches.

When considering the strategies, we need to start such an institute, there are two options; either top-down or bottom-up strategies, the structures of these strategies are illustrated in Figure 1. They include processing information and arranging it in sequence for the purpose of making business and strategic decisions [9]. The top-down strategy involves having a vision of the overall goal, as it is divided into smaller goals and problem solving is applied to each of them in a detailed way. As for the bottom-up approach, it begins with the primary data that is analyzed to obtain the information that is then processed to arrive at the appropriate knowledge necessary to achieve the overall goal. The last strategy includes an analysis that can help identify previously unimaginable links and challenges. For the purposes of studying MNT implementation, an upward approach will be applied. Referring to Figure 2, the structure of the teaching methodology is explained from the bottom up; each variable will be revealed as follows.

Raw data is the primary variables that are measured and collected. Also known as unprocessed data, it becomes data that can be analyzed and visualized using various analysis tools, graphs, or charts [10]. This will allow the information to be collected as it is also changed to be more viewable to the target audience. This information must provide an answer to one or several questions, and it can take any form, shape, or entity [11]. Finally, the observer has the knowledge necessary to make decisions. As you can see, data, information and

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knowledge are closely related concepts, however, each has its own role in the bottom-up approach [12].

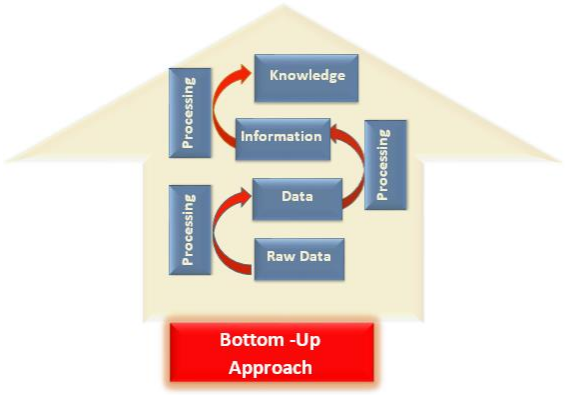

Figure 2. Bottom-up Education methodology architecture.

2. METHODOLOGY and VISION

2.1. Materials

The methodology that should be followed to establish the institute lies within the framework of the educational engineering design approach, which helps decision makers to develop a strategic vision for higher education at a high level of technology, which is the goal at the same time, we seek to get rid of the miserable picture of education that society suffers from, as shown in Figure 3. The strategic vision of this institute is to touch the ceiling of the latest technologies, which focuses on teaching the modern theory of advanced technology; CMOS technology, associated with the design and implementation of integrated circuits (IC) in line with national needs and adapting to regional and international changes.

The vision is to create a global institute for nanotechnology, which will contribute to the market and society as a national trade platform while bringing investment business and a secure safety culture. CMOS technology is the key to a prosperous education for our youth, which will undoubtedly lead to creative and innovative results. This contrasts sharply with the indoctrination of abstract theories currently operating in local academic and scientific research institutes. The level of education boom depends mainly on research and development, which must be nurtured and developed frequently in terms of technology update. Consequently, taking this into consideration would enhance scientific and technological services, and achieve comprehensive sustainable development while integrating all sectors. Accordingly, the higher the level of applied technology provided, the greater the achievements and research and development achievements that will be achieved.

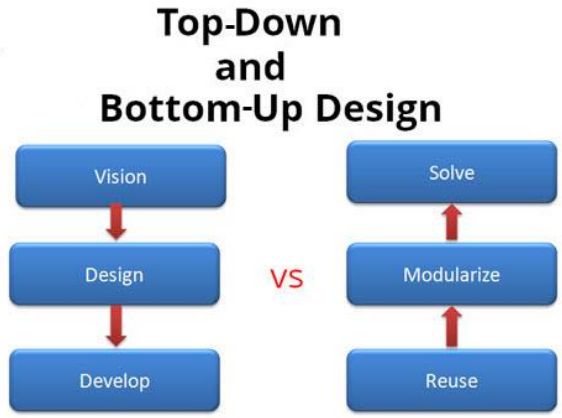

Figure 3. The architecture of the design methodology.

MNT's vision is simply to initiate and direct education in the nanotechnology institutes already or to be established. We believe in our ability to radically change existing academic institutes and build the supporting infrastructure to enable innovative national institutes for nanotechnology to expand globally. To achieve profits with extraordinary potential, we believe it is necessary to create MNT as a platform to address and enhance this potential.

3. MNT's MISSION

MNT's mission is to fully exploit this young technology by making a decisive contribution to shaping its evolution. The goal of the Institute of Micro-Nanotechnology is to apply science and technology knowledge; CMOS and NEMS/MEMS technologies, correctly and strive to enhance national capabilities to make the development sectors in an appropriate manner. Therefore, the institute has an ambition to contribute to achieving development goals by raising awareness of the importance of scientific research and development, in light of international updates and national needs. The institute will not be protected or operated separately or isolated from local, regional and international parties. On the contrary, the administration's staff will always monitor all updates and changes happening around the

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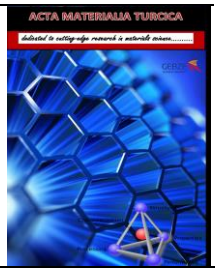

world to build a network with them to enhance our local competencies. In order to better serve the development sectors in an appropriate manner, it is necessary to promote research and development activities and support innovation and entrepreneurship to contribute to the commercialization of scientific and technological ideas in products and companies. Hence, the country will be strongly represented on the global map due to scientific and technological progress.

4. STRATEGY and PHILOSOPHY

In order to understand how an institute like MNT is implemented, one must understand the value of education and how knowledge transfer occurs; to allow learning to happen. Additionally, one cannot stop upon acquiring knowledge; this knowledge must be integrated and applied in the real world. Education, in general, is a process that facilitates the acquisition of knowledge along with the necessary values, beliefs, training and skills. This must be done in a practical way so that this knowledge can be applied in a reasonable and realistic way, outside of theoretical considerations. Therefore, a strategy and philosophy should be mentioned to shed light on this ideology.

The philosophy of this institute relies mainly on joining two parts of technology, theoretical and practical in light of the discipline of international academic institutes. As mentioned earlier, Micro-Nanotechnology represents a technological era that will change every pillar of society and every aspect of trade and commerce: construction, materials, processes and applications. This is precisely the reason why major investment in enterprise means MNT more than just looking to join financing facilities with specific growing companies. More than just a technology strategist and consultant, MNT will be a comprehensive and focused partner supporting various ideas such as emerging industry, emerging national institutes from its inception, and old national institutes. This will help them on their way to a profitable future, creating essential positive value systems, a culture of safety and global reach, an obsession of all stakeholders. MNT's philosophy will deal with matters in a sensible and realistic manner based on a pragmatic approach rather than just abstract theoretical considerations. In fact, one might say it is a practical approach to education.

MNT College relies mainly on creating a network of internal experts by arranging agreements with local universities, which will adhere to the institute's policy. We may cooperate with external experts in light of the institute's demands and needs. Not only will this cover a wide range of technical and scientific subjects, but will also acquire relevant social and economic expertise, giving the institute more flexibility and reliability. MNT must have a high level of interdisciplinary knowledge. The experience gained and competence in identifying and assessing emerging technologies and trends, and realizing the potential of such a process, is very beneficial and will reduce risks when establishing this institute. This will make MNT pioneers in promoting new models for new applications. There is remarkable excitement, fear, and misinformation about nanoscience and nanotechnology. MNT's strategy is to focus on what global universities are actively studying to thrive in this emerging new world. We believe MNT creation is a prerequisite for Nano's commercial success nationally and internationally.

Most commercial analysts agree that nanotechnology is the next big thing that will hit the landscape and offer rich rewards to adapters and early investors. However, the fragmented nature of the first generation of nanotechnologists (manufacturers, integrators, and sellers) coupled with myth, mystery, and lack of common standards could seriously undermine the successful development of nanotechnology in general.

Academia and media sciences may have a particular interest in the complexity and confusion about nanotechnology education. Therefore, decision makers, business leaders and commercial stakeholders need to understand what exactly nanotechnology trends are, and what nanotechnology applications and values can add to their business. By teaching the infrastructure of nanotechnology, undergraduate and graduate, and introducing nanotechnology via the MNT platform, we can demystify the atomic level for everyone. This will help consumers, manufacturers and sellers exploit the positives of this new technology, while highlighting society and protecting it from potential negatives. In the long term, the Institute of Micro-Nanotechnology is moving forward with the creation of a virtual and physical "Silicon Valley" for nanotechnology operators. So, anyone locally, regionally and internationally seeking true knowledge of specific nano applications can visit our real or virtual world. Instead of going out into the world, we'll bring the world to us.

The sky is the limit of nanotechnology, as there are many branches within this broad approach.

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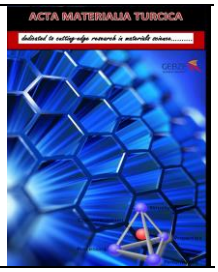

Nanotechnology, as a subsection of nanotechnology, is a new field of scientific and technological opportunities that applies nanoscale manufacturing processes to manufacturing devices needed to study biological systems. Biologists are learning to create new compact nano devices to better improve human being lives. In addition, they implement new models of efficiency and mechanical applications in all sectors of the industry, such as drones. A new set of business opportunities awaits the smart investor in this field.

Nanomaterials, although genetically engineered to the required precision, are essential commercial raw materials, such as crude oil, wheat, or minerals. These nanomaterials are defined for processing throughout manufacturing, cosmetic, food processing, health care etc. Nanotechnology is changing everything we know about information and communication technologies. Therefore, Nano-information technology has become a global nanotechnology market and trading platform. Nano-computers, nanorobots, drones, and related mechanical, molecular, intelligent networks will lead the foundation of new science and offerings, as machines, computers, real estate, biosensors, and objects and people combine to deliver tremendous value in medical advancement, security, manufacturing, tracking, construction, agriculture, and energy efficiency.

5. CONCLUSIONS

In biomedical technology, MNT guidance, management, and creation are essential and core to progress. Primarily, MNT will above all focus on engineering discipline; in particular, Computer, Microelectronics, Medical Engineering, and Communication Engineering. This independent institution will be unique in its philosophy of education and strategy where it will consider the latest theories of science and technology along with its practical directions. Talking about these practical trends will make applications embedded in theories. However, the education system must be reformed at the level of public and higher education, in developing countries radically, as the methodology of teaching science is still being implemented incorrectly and deviates a lot from its principles and disciplines. Meanwhile, their response should be very fast in this area, as technology is growing exponentially. In this way, they can deal with the progress of developed countries and international rankings of universities; accordingly.

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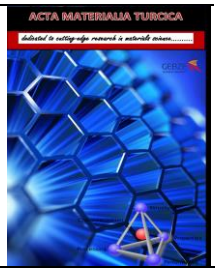

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