

Keynote Lecture delivered during *the Karachi University Twelfth Education Conference (Education and Research Consultancy)*, Faculty of Education, University of Karachi, Karachi, Pakistan, Monday, August 19, 2024, 1135h-1150h, Auditorium, Faculty of Arts and Social Sciences — Chinese Teachers' Memorial Auditorium, University of Karachi, Inaugural Session, abstract# EDUCONII24-01, p 01



How to Bring University of Karachi Among Top 5 Institutions of Asia?

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Although the Muslims have the honor to establish the first university of the civilization, University of Al-Karaouine, Fez, Morocco, in 859 AD, which is functional to date, there is a lack of institutions like California, Berkeley; Caltech¹; Cambridge; Harvard; Johns Hopkins²; MIT³; Princeton and Stanford as well as research centers like Institute of Advanced Study⁴ and SLMath. Pakistan (AKU, LUMS)⁵ has established some good universities, with state-of-the-art campuses, through collaborations with reputed US knowledge centers. However, they offer education in limited disciplines, not of a universal nature (being from private sector, their fees are out of reach of the middle class) — ‘university’ comes from Latin *Universitas* meaning ‘a whole’. It is considered to be an institution of research, higher (or tertiary) education and community outreach that confers academic degrees in diversified academic disciplines. 77 years have passed since the creation of Pakistan, but no serious effort is made to establish top-ranking institutions in this country through public-private partnership. University of Karachi is a one of the largest institutions of the country in terms of student enrolment and number of PhDs produced, is located in the heart of Karachi, the financial and the business center of Pakistan, which is offering quality education to middle-class families. University of Karachi offers baccalaureate to doctoral and post-doctoral programs in a wide range of subjects. With a purpose-built campus, designed by a French architect, spanning over 1200 acres, this university offers a breathtaking view and a pollution-free environment if one wants to get away from smog of the city. It is high time that University-of-Karachi campus should be converted into a green campus, with net zero carbon emission. With islands of excellence like the International Center for Chemical and Biological Sciences (HEJ Research Institute of Chemistry) and the Applied Economic Research Center, University of Karachi has the potential to come among top 5 institutions of Asia, provided a serious effort is made to establish research centers in STEM (Science, Technology, Engineering, Mathematics) disciplines with a world-class faculty, world-class laboratory equipment and world-class research scholars on the pattern of AS-ICTP, Harvard-Smithsonian Center for Astrophysics and JHU Applied Physics Laboratory. For this purpose, members of boards of trustees of high-ranking universities, world-wide, should be consulted. Smart (Specific-Manageable-Attainable-Realistic-Timebound) goals should be set for this purpose through SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis. Focus should be on assembling many Nobel laureates in various disciplines, so that they may groom and nurture future Nobel laureates from University of Karachi. There should be a balance of student activities cum teaching and research. Key focus should be on fundamental research. Graduating students should be taught problem solving in classroom, laboratory and industry and trained in entrepreneurship through industry-university interface. ORIC should be transformed into Office of Technology Assessment (on the pattern of a similar office established in MIT). Speaker has contributed in both fundamental research in economic science, physics, mathematical concepts applied to medical science and neuroscience as well as applied research and technology (AI-based-smart glasses, bone-scanning system to replace CT scan, air-spacecraft of the third millennium). Equal emphasis should be given to liberal arts to establish relationship of students with Allah Izz-o-Jal, self and environment, fostering national integration and giving a roadmap for nation building. There should be freedom to acquire knowledge, to create knowledge and to disseminate knowledge, without influence and interference of nonacademic personnel. In addition to Quality Enhancement Cell (QEC), external audit should be mandatory to maintain standards and minimize corruption (both soft and hard). University of Karachi should provide ample opportunities for faculty development and grooming, at the same time creating atmosphere for employee satisfaction. The backbone of such an institution should be a vibrant and a dynamic curriculum. As convener of NCRC for Mathematics, Higher Education Commission, the speaker integrated best practices from top-ranking US universities in the model scheme-of-studies prepared for the Pakistani universities. The same exercise was repeated for preparing the NTS Detailed Curriculum for Mathematics intended for GAT (Subject) conducted by National Testing Service — on the pattern of GRE (Subject) administered by Educational Testing Service (ETS). Curriculum development should be a process, not an event, integrating different aspects — philosophy (based on cultural norms and values), contents (addressing indigenous problems) and andragogical techniques (tangible examples given from the locally-available material). Teaching standards should be enhanced through efficiency (proper maintenance and display of attendance through attendance-tracking system, course flyer with weekly breakdown of topics covered, monitoring teams to ensure timely conduct of classes and laboratory sessions, coverage of the entire syllabus as well as arrangement of review sessions, solving of sample-exam paper in class as well as final-exam paper in ZOOM session, after the conduct of final exam) and effectiveness (interfacing with slow, medium, bright, over-smart and trouble-making students, inculcating creative thinking and critical analysis, training in the art of questioning and out-of-the-box thinking, soliciting frank opinion of students about the course, after the result is declared). There should be a zero semester before the start of each baccalaureate program, which focuses on written and spoken functional English as well as essential mathematical-statistical techniques (both of these customized for the specific undergraduate discipline). Physical education (designed to eliminate depression) should be mandatory in each semester. Some of the areas, which need immediate attention by the University-of-Karachi administration, are:

- Taking University of Karachi out of the current financial crunch — audit of funds available with the university, dialog with Government of Sindh/Sindh Higher Education Commission, Federal Government/Higher Education Commission, donations from alumni, gifts from philanthropists
- Making the campus free from bullying and harassment, in particular for the female faculty, students and employees — formulate and implement a comprehensive policy on sexual harassment in light of the existing ones in institutions of United States and Europe
- Transforming the campus into a safe campus from theft and physical assault — installation of cameras and lights on all pathways, patrolling on lesser-traffic pathways, token system for visitors and their vehicles
- Repair of aging buildings as well as roads and construction of new buildings — national and international agencies
- Provision of smart-boards in 50% of the classrooms and multimedia in the remaining 50% — HEC grant
- Professional video-conferencing facilities in each department and institute — HEC grant
- Interview boards for non-teaching employees and selection boards for employees based on behavior-based interviewing — for faculty appointments, the prospective candidates should be required to teach a mock session and prepare a writeup of andragogical as well as research statement-of-purpose (philosophy, methodology, accomplishments and goals)

Through a process of consultation with faculty, students and employees regarding the problems, university is facing and asking them to suggest different solutions, the university community may work out the problems through consultation and coöperation instead of confrontation and chaos.

Keywords: Balance of student activities and teaching cum research • Employee satisfaction • External audit • Faculty development and grooming • Fundamental research • Green campus • Industry-university interface



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¹speaker visited Caltech during August 1980

²established 1876, representing migration of German higher academic system to United States through President Gilman's efforts, who travelled through North America and Western Europe to consult on key appointments — the speaker studied at the Johns Hopkins University (an Ivy League University) during 1983-1986

³the speaker delivered Summer Luncheon Seminar at Harvard-MIT Biomedical Engineering Center on July 16, 1990

⁴established 1933, under the leadership of Director Flexner, who was able to bring 23 illustrious permanent faculty, including Albert Einstein, and 160-170 distinguished scholars every year

⁵The speaker was associated with AKU as sessional faculty as well as PhD faculty during 1996-2006 and had a chance to give a talk on the LUMS campus during the Winter Conference in Mathematics (2004)

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