Establishment of Egypt-Japan University of Science and Technology in Egypt

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Abstract
In the higher education sector in Egypt, due to the growth of the youth population and generous tuition exemptions for all students of governmental university, the number of students per university has been increased and, as a result, most universities suffer from the difficulties to offer quality education and research environment. To improve this situation, in September, 2009, the Egyptian government established a new university, Egypt-Japan University of Science and Technology (hereinafter refer to E-JUST) in Borg El-Arab City, Alexandria Governorate, with cooperation of Japan International Cooperation Agency (hereinafter refer to JICA) and twelve leading Japanese universities, among which Waseda University, Tokyo Institute of Technology, Kyoto University and Kyushu University are recognized as the direct-supervising universities. The concept of E-JUST is based on Japanese graduate engineering education and research such as research-oriented and laboratory-based learning. In this paper, the authors present the concept of E-JUST and supporting system from Japanese universities.

Keywords: International Cooperation, Higher Education, Egypt.

1. Background
In the higher education sector in Egypt, due to the growth of the youth population and generous tuition exemptions for all students of governmental university, the number of students per university has been increased and, as a result, most universities suffer from the difficulties to offer quality education and research environment. For example, Cairo University, the largest university in Egypt, has more than 260,000 students, and the student's ratio per faculty is more than thirty in the Faculty of Engineering. Despite the generous tuition exemptions, Egypt has been also facing the critical issue of “brain drain” that talented students go to Europe or United States where they can receive advanced education and conduct advanced research. Moreover, it is quite popular for them to find their post or job in those countries while on the contrary, in Egypt, there are few universities or industries ensuring them a high quality research environment.

In order to improve the situation, Egyptian government has been working on reforms of the higher education sector by implementation of quality education evaluation and quality assurance, enhancement of postgraduate schools and promoting research activity etc., based on the national policy of cultivating human resources to develop the country by providing quality education matching to economic and social needs. As one of the outcomes of these reforms, several special universities have been established in collaboration with European countries and this led to the establishment of British university, German University, French University and others. The impact, however, to the Egyptian society from these universities are limited especially in engineering sector because these universities are private universities requiring high tuition fees and have only undergraduate school except for German University.

Under such situation, Egyptian government requested Japanese government to establish a new governmental university which has different concept from existing governmental or private ones. In response to this request, E-JUST was established in Borg El Arab, Alexandria in Egypt in 2009 based on the concept of Japanese graduate engineering education such as laboratory-based and research-oriented.

2. Outline of E-JUST
2.1 General situation of E-JUST
E-JUST is a new governmental university, located in Borg El Arab City, Alexandria Prefecture in the Arab Republic of Egypt, established under the Egyptian Presidential Decree no.149 on 29th May 2009 with cooperation of Japan International Cooperation Agency (JICA) and twelve Japanese leading universities, among which Waseda University, Tokyo Institute of Technology, Kyoto University, and Kyushu University are recognized as the direct supervising universities. At present, E-JUST has seven postgraduate programs under three schools, “Electronics, Communications & Computer engineering”, “Innovative Design Engineering”, and “Energy and Environmental Engineering”, which are opened in stages in the premises of renovated dormitory building of E-JUST and The City of...
Scientific Research and Technological Applications (CSRTA), second largest national research center in Egypt, as temporary campus. E-JUST is planning, in near future, to establish undergraduate programs in the faculty of engineering and in the faculty of humanities and business.

2.2 Vision and Concept of E-JUST

The vision of E-JUST is to educate, foster industry-academia partnerships, and become the driving force in the regional Science & Technology parks, and finally disseminate technical standards and best practices in business and technology. E-JUST is expected to be a catalyst that bridges Japanese universities, Japanese industries, and organizations closely with universities, industries and organizations in Egypt, Arab, and African countries. It is also seen as an important base for Japanese international development programs targeted for Arab and African countries. During its evolution, E-JUST is designed to become a world class Center of Excellence for the higher education and research with regional and global reach.

E-JUST is aimed to become a first-rate international academic institution known worldwide for the high quality of its educational system, the high standard of its graduates and for the achievements of its research centers. Moreover, the vision of E-JUST is to aspire for regional and global synergies by reaching out for students, academic staff and researchers in the region and beyond by building relationships of cooperation with renowned academic and research institutions all over the world.

Based on this vision, the following unique characteristics of E-JUST are presented;

- Governmental university based on partnership between Egypt and Japan
- A first class, leading university (to serve Egypt, Middle East and Africa)
- Role model for Egypt’s 21st century universities and a spearhead for higher education reform in Egypt
- Graduate focused university
- Japanese style approach (laboratory-based, Practical Skill, research-oriented etc.)
- Unique academic programs (close interaction with industry, multidisciplinary, and distance learning.)

2.3 Current Statistics of E-JUST

Currently there are 64 students in total with 23 faculty staff. The students’ number for each program is shown in Table 1. In Feb 2012, E-JUST graduated 11 M.Sc. Students, as first graduates in E-JUST history, from two departments starting from 2009. Among graduates, 8 students continue their Ph.D. course in E-JUST, 1 student went back to his home university as an academic staff, and 2 students continue their Ph.D. course abroad.

<table>
<thead>
<tr>
<th>School/Program</th>
<th>Number of Faculty</th>
<th>Number of student M.Sc. Course</th>
<th>Ph.D. Course</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electronics, Communications &amp; Computer Engineering School</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics and Communications Eng. (ECE) Program</td>
<td>5</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Computer Science and Eng. (CSE) Program</td>
<td>4</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td><strong>Innovative Design Engineering School</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mechatronics and Robotics Eng. (MTR) Program</td>
<td>2</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Material Science and Eng. Program (MSE) Program</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Industrial Eng. And Systems Management (IEM) Program</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Energy and Environmental Engineering School</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Resources and Environmental Eng. (ERE) Program</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Chemical and Petro chemical Eng. (CPE) Program</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>total</td>
<td>23</td>
<td>39</td>
<td>25</td>
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</tbody>
</table>

3. Supporting Mechanism

3.1 General Supporting Structure

In order to support the establishment of the new born university, E-JUST, JICA has formulated a Japanese Supporting University Consortium (JSUC) consisting of twelve Japanese universities; Hokkaido University, Tohoku University, Waseda University, Tokyo University, Keio University, Tokyo Institute of Technology, Nagoya University, Kyoto University, Kyoto Institute of Technology, Ritsumeikan University, Osaka University, and Kyushu University

Among these twelve universities, Waseda University, Kyoto University and Kyushu University were designated as leading universities, and four universities, Kyoto university, Kyushu University, Tokyo Institute of Technology and Waseda University were designated as counterpart universities, which support the seven graduate programs of E-JUST in order to ensure the academic quality and research activities. In addition to these counterpart universities, “University Management Working Group” and “Education and Research Working Group” were organized to support university management of E-JUST. The supporting structure is shown in the figure 1.
3.2 To Enhance University Management and Academic Activities in E-JUST

"University Management Working Group" consisting of five Japanese members, with experience of university vice president or equivalent position, presents the advisory board for the university council of E-JUST to advice on university managerial issues such as policy, strategy, finance and campus development. The university council of E-JUST is the highest decision making board inside E-JUST, and is consisting of the President, Vice Presidents, Deans, and Chairs of each program.

"Education and Research Working Group" consists of members from the counterpart Japanese universities. The role of this working group is to support the Education Council and Research Council of E-JUST for ensuring the quality of education and research activities such as academic staff recruitment, student’s enrolment, quality assurance etc. Both working groups have monthly video conferences between Egypt and Japan and also conduct regular visits to E-JUST.

3.3 To Enhance Educational and Research Activities in Each Program

Each counterpart Japanese university dispatches a visiting professor to E-JUST in each academic semester with duration of 3-4 months. These visiting professors, mostly young researchers, offer regular lectures in E-JUST and provide research guidance as co-supervisors for E-JUST students. Besides, they are expected to work as “coordinators” between E-JUST and their university in Japan to conduct variety of collaborative works. Short term visiting professors are also dispatched for 1-2 weeks to provide parts of lectures or intensive courses as well as discuss academic issues such as faculty recruitment, research direction and collaborative research etc with their E-JUST counterpart.

Additionally, the counterpart Japanese university receives E-JUST faculty members for 2-18 weeks in their laboratories in Japan, called “Fellowship program”, in order to promote the understanding of Japanese engineering education concept. Recently, Ministry of Higher Education in Egypt has granted full scholarships to E-JUST Ph.D. students, who passed certain criteria set by E-JUST, to travel to counterpart laboratories in Japan for 6-12 months.

3.4 General Coordination and Technical Department

JICA has dispatched long-term JICA Experts, staying in Egypt more than two years, in order to implement the project; one project leader, two academic advisors, one technical department advisor and three coordinators at present.

The main role of academic advisors is to supervise the academic and education activities in E-JUST on a daily basis as members of Education Council and Research Council of E-JUST. They work on developing academic systems in these councils with their long experiences in Japanese universities. In E-JUST, technical department, as a unique model in Egypt, was established for a comprehensive coordination body in E-JUST of the equipment planning, maintenance and human resource development of technical staff. Technical department advisor has been allocated to this department and working with Egyptian staff. The project leader and coordinators have been working to coordinate communication between JSUC and E-JUST as well as between both Japanese and Egyptian governments. Moreover, coordinators support the administrative departments through daily activities with Human Resource, Student Affairs, Information Technology, and Public Relation etc.

**Figure 1. Supporting Structure by Japanese Supporting University Consortium (JSUC)**
Figure 2. Lecture of PBL in MTR Program

Figure 3. Visiting Osaka University

Figure 4. Joint seminar with Kyushu University

Figure 5. Practical Lecture

References
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Biography
Okano Takasei received a B.A. of informatics from Kansai University in 2000. He worked in Ministry of Sports and Culture in Burkina Faso as a member of Japanese Overseas Cooperation Volunteer (JOCV) for 3 years since 2000. After completion of his mission in Burkina Faso, he started his study in Kansai University and received M.Sc. degrees of informatics in 2006. He joined Japan International Cooperation Agency (JICA) in 2006 as an associate expert and engaged in the project of “Strengthening the Capacity of ITSS Education at Hanoi University of Technology” in Vietnam in 2007, “Establishment of Tumba College of Technology” in Rwanda in 2008-2009 etc. Since 2009 until now, he has been engaged in the project of “Establishment of Egypt Japan University of Science and Technology” in Egypt as a JICA Expert. He also started his study in the Graduate School of Human Sciences, Waseda University since April 2011.

Adachi Mariko received a B.A. in American Studies from Tokyo University of Foreign Studies, Tokyo, Japan. Having studied International Development at University of East Anglia, Norwich, England, she was dispatched to Jordan as a member of Japan Overseas Cooperation Volunteers (JOCV) under the scheme of Japan International Cooperation Agency (JICA). Followed by this mission, she has worked in JICA Bangladesh Office as a program officer and was sent to Viet Nam as a project coordinator for the project of Japanese Grant Aid for Human Resource Development Scholarship (JDS). After conferment of MA in Education and International Development from Institute of Education, University of London, London, England, she joined JICA as an associate expert and dispatched to JICA Bangladesh Office and to the project of Establishment of Egypt Japan University of Science and Technology in Egypt as a JICA Expert.