

Excellence in International Cooperation

Adnan Zahed

1 Introduction

This chapter deals with ‘excellence’ in international cooperation. Section 2 discusses different terminologies such as cooperation, collaboration, and aid and the differences between and relationships among them. This is followed by some general insights concerning international cooperation, as a means to put university cooperation in perspective. International cooperation and university cooperation are further explored and elaborated on from this perspective in Sect. 3. Section 4 discusses student, expert, and teacher exchanges and the effects and proceeds of such exchanges. Section 5 deals with three examples of international cooperation. The first example covers international cooperation in higher education in Saudi Arabia in general, with particular attention given to King Abdulaziz University. The second example discusses international university cooperation and its application in one of the top-ranking world-class universities: the Copenhagen University in Denmark. The final example examines one of the world’s leading programs for international technical cooperation: the ‘Fulbright’ scholarship program. Section 6 contains concluding remarks.

2 Cooperation

Cooperative work is a task that is accomplished by dividing it among participants, where each person is responsible for a portion of the problem solving [1]. Cooperation can be achieved if all participants do their assigned parts separately and bring their results to the table.

A. Zahed (✉)
King Abdulaziz University, Jeddah, Saudi Arabia
e-mail: azahed@kau.edu.sa

The concept of ‘international cooperation’ describes all cooperation activities with foreign countries, whether by non-governmental organizations (NGOs), bilateral (from one country to another), multilateral (involving a number of states), or decentralized (between local authorities).

The most established definition of international cooperation in the literature is by Keohane [2]. Keohane assumes a conflictive policy situation between countries at the outset of each cooperative agreement. Policy adjustments are then negotiated to bring agreements more in line with each actor’s preferences. Once both policies become more compatible, the act of cooperation is completed.

‘Aid’ is something different from cooperation. It still has a social content, since it presupposes a relation between partners, but it does not imply sharing. It implicates inequality and it is sufficient that aid takes the initiative in favor of the other, with a certain degree of privilege [3]. Also, universities can enter into agreements in which one of the partners is ‘aided’ by the other (for example between a university in a developing country and one in the developed world).

The term ‘collaboration’ is the action of working together with other people to produce or create something. It is used, in the context of universities, mostly on the level of research. Roschelle and Teasley [1] see collaborative work as the mutual engagement of participants in a coordinated effort to solve the problem together [4].

Research collaborations can take many forms. There is a continuum ranging from the classic partnership between researchers in the same laboratory or academic department to the partnership between researchers in the same institution, to even partnership between researchers in different countries. Sometimes, two or more researchers at different institutions work separately and yet collaborate on a project. This can occur, for example, when working on different aspects of the same project, exchanging data, compiling data for the entire project, and subsequently conducting joint data analysis, reporting, and publication. Collaborations between or among researchers are particularly complicated when the researchers work at institutions in different countries. Not only can distance affect communication and project oversight, but cultural differences may further complicate communication and the project’s overall conduct.

Cooperate/cooperation has been in vogue for many years, while collaborate/collaboration is a more recent addition to selection criteria terminology. How do these terms differ? Basically, they are synonyms and both words are used interchangeably, but they represent fundamentally different ways of contributing to a group and each brings with it its own dynamics and power structures that shape groups in different ways.

In other words, cooperation can be achieved if all participants do their assigned parts separately and bring their results to the table, while collaboration implies direct interaction among individuals to produce a product and involves negotiations, discussions, and accommodating others’ perspectives. The key difference between these approaches to group work is that cooperation is more focused on working together to create an end product, while successful collaboration requires participants to share in the process of knowledge creation [1, 5].

Collaboration takes on particular importance on more complex projects involving multiple sections, teams, or agencies. Cooperation is more suitable for projects or agreements in which each participant is responsible to perform a certain segment of the complete task, as is the case in joint research projects. Someone might need to cooperate and collaborate with his/her team colleagues. Therefore, depending on the task, and the manner in which it is distributed and performed among the participants, the group work will either be spoken of in terms of cooperation or collaboration. The group work described in the chapter will be generally expressed in terms of cooperation.

The opposite of cooperation or collaboration is ‘competition’. A small amount of competition between social agents makes for a healthy social system. It prevents it from degrading and becoming inefficient. However, excessive levels of competition have inevitable negative consequences. Many of the top universities see their colleagues as “competitors”; in part cooperating, in part collaborating in research and joint degrees, and in part in competition for the brightest and best students and staff.

3 International and University Cooperation

International cooperation and collaboration of universities are forms of working together to attain the best results in student learning and research. International university cooperation is part of the much wider arena of international cooperation that has evolved since the end of the Cold War.

The topic of international university cooperation has long been on the agendas of governmental and institutional bodies, but it was not until a few years ago that it began to be considered an important aspect of the processes of education and research [6]. It has been prominent in recent times and has become a significant and important university activity.

In recent years, universities have managed to include international cooperation and international relations as integral to their missions and functions by assuming the responsibility of cooperating with other institutions. However, the development of international cooperation in university life has often been a laborious process and cooperation policy has developed into a set of organizational strategies [6]. International cooperation among universities is one of many in the range of university activities which does not have a readily recognizable, directly visible profile in terms of quality improvement.

Unfortunately, the expected benefits from international cooperation in universities are as yet unclear to the majority. It is sometimes considered as an unnecessary expense, an obligation, or as an activity undertaken purely for reasons of prestige. Despite these rather negative viewpoints, university cooperation has been recently successfully incorporated into the institutional structure of an increasing number of universities. Most universities currently have an office or administration in charge of international university cooperation, with a definite strategy and

an action plan, and carry out a series of international activities [7]. However, it is important not to confuse the mere fact of undertaking international activities with having an actual, plausible, effective, and beneficial policy of development cooperation. It must be understood that simply having a significant number of foreign students or some courses on international topics does not necessarily imply or mean that the concerned institution actually implements and practices real tangible international development cooperation.

In recent years, rising expectations have been generated with regard to the need to adopt new perspectives in actions of international university cooperation directed toward less-developed countries. However, universities need to attain a more secure and prominent situation in the arena of international development cooperation than many NGOs have apparently been able to manage in recent years. Therefore, university authorities should overcome budgetary constraints and other impediments in order to pursue the necessary efforts to enhance the incorporation of international cooperation in their institutions.

Technical international cooperation is one form of international university cooperation. Back in the nineteenth century, Alfred Nobel stated: "To spread knowledge is to spread well-being". Technical cooperation could be said to have its origins in this premise and has certainly developed to its present state in accordance with this view. The Organization for Economic Cooperation and Development (OECD) defines technical cooperation as "the activities whose primary aim is to increase the level of knowledge, technologies, practical know-how or productive attitudes of the population of developing countries, that is to say, to increase their reserve of human intellectual capital or their ability to use their current resources with greater efficiency" [3, 7]. As technical cooperation is the key issue of this chapter, a more comprehensive definition follows.

Technical cooperation can be defined as the branch of development cooperation that uses the provision of know-how in the form of personnel, training, research, and associated costs of development. It includes contributions to development primarily through the medium of education and training to increase the level of knowledge, skills, technical know-how, or productive aptitudes of the population of developing countries, which in turn increases their stock of human intellectual capital, or their capacity for more effective use of their existing factor endowment [3, 7].

The basic aim of technical cooperation is to support the ability of people and organizations in creating, adapting, strengthening, and sustaining their capacity to set their own objectives. Its aims are that countries or institutions with a more advanced level of development in certain areas contribute to the solution of specific problems of less-developed countries or institutions through the transference and interchange of scientific and technological capacity and of human and material resources.

This cooperation mode considers education as the engine driving the transformation of expanding economies. Technical cooperation between developed and less-developed countries can take several forms such as expert services, scholarships, transference of equipment and supplies, sending of bibliographical material,

and interchange of information and experience. Mobility is the area in which universities have incorporated international cooperation into their activities par excellence. Today's technical cooperation remains one of cooperation's most visible aspects.

Technical cooperation is often associated with actions intended to strengthen individual and organizational capacity through offering wide-ranging technical opportunities to its beneficiaries. Technical cooperation can be specified as:

- Education cooperation—student, expert, and teacher exchange, language learning, joint degrees, and curricula developments;
- Research cooperation—carrying out joint research activities;
- Training cooperation—developing training programs and supplying training equipment and materials;
- Cultural cooperation—development-oriented social and cultural programs; and
- Scholarships.

With increasing globalization, countries' economic and social development is increasingly determined by their scientific and technological capacity, knowledge production, and volume of information flow. Universities cannot excuse themselves from the discussion of these development issues. Universities have become fundamental actors in international cooperation, especially as far as technical cooperation is concerned.

4 Multicultural Experiences Gained by Studying Abroad and Creativity

The main forms of international technical cooperation in universities are student, expert, teacher, volunteer, administrative, and academic exchanges; traineeship; carrying out joint research activities with recipient countries or institutions; development-oriented social and cultural programs; and scholarships. All these forms of international technical cooperation require living and studying abroad and the attainment of multicultural experience. Multicultural experiences gained from studying and residence abroad differ significantly to experiences acquired as a result of travel or short visits, which by their nature and duration provide merely superficial introduction to new cultures.

4.1 Studying Abroad and the Data

Developing students' awareness and understanding of different world outlooks, perspectives, and cultures is of prime significance in properly equipping and preparing them with the knowledge and skills required to meet today's globally connected world demands [8, 9]. Studying abroad is one area which promotes

the development of students' cultural awareness. Study abroad programs can be defined as "all educational programs that occur in a foreign country outside the country of origin or citizenship, that offering students the opportunity to earn knowledge through academic credits or degrees through international experience" [8, 10].

Studying abroad allows students to expand their knowledge of other cultures, languages, and lifestyles to better equip themselves to face the needs, demands, and opportunities of an increasingly globalized labor market, and to increase their capacity for self-reflection, self-reliance, and self-confidence. Furthermore, it benefits students by providing an increasingly mature and objective perception of their home and of foreign countries, and equips them with intercultural communication skills. However, many of these positive outcomes of study abroad programs have overly relied on students' self-reported affective benefits such as primarily and overly subjective perceptions of personal well-being, feelings toward foreign countries, and increased levels of intercultural awareness. Some countries, particularly in the European Union, have established policies and schemes that actively seek to promote such mobility to encourage intercultural contacts and help create social networks.

In 2009, almost 3.7 million students studied in countries other than their country of citizenship or origin, representing an increase of more than 6 % over the previous year. The average student age in this group was 25 and they attended universities, colleges, technical training institutes, community colleges, nursing schools, research laboratories, centers of excellence, and distance learning centers [11]. The largest numbers of students studying abroad were from China, South Korea, India, and Saudi Arabia. Asians accounted for 52 % of all students studying abroad worldwide. More than 1.3 million students studied English abroad in 2011 [11].

The 32 OECD countries attract the majority of students studying worldwide in countries other than their country of citizenship or origin; just slightly less than four out of five, (32 %) of them are from other OECD countries. Asia is generally the largest source area of foreign students, contributing 51 % of the total in OECD countries. They have a particularly strong presence in Australia, Japan, and South Korea, where they account for more than 75 % of foreign students. Europeans form the second largest group, accounting for 24.4 % of foreign students, followed by Africa with 10 %, Latin America and the Caribbean with 6 %, and North America with 3.7 % [11].

The United States hosts more of the world's 4.5 million foreign students than any other country, with almost double the number hosted by the United Kingdom, the second leading host country [12]. According to the 2014 'Open Doors Report on International Educational Exchange', released on November 17, 2014, and issued by the Institute of International Education in partnership with the US Department of State's Bureau of Educational and Cultural Affairs, 886,052 foreign students joined American higher education institutions during the academic year 2013/14 [12]. The number of foreign students in the U.S. witnessed its eighth consecutive annual increase during that year, where the total number of foreign

students increased in 2013/14 by 8 % to a record high of 66,408 more foreign students enrolled in US higher education compared to the previous year. Students from China and Saudi Arabia together accounted for 73 % of the growth, while India, Brazil, Iran, and Kuwait together accounted for 18 % of the growth.

The growth was largely driven by Chinese undergraduate student numbers. Their enrollments increased by 17 % in total to more than 274,000, and by 18 % at the undergraduate level. Currently 31 % of all foreign students in the U.S. are from China. In 2013/2014 numbers of students from India increased by 6 %, to 102,673, following three consecutive years of decline. The increase was driven by graduate level enrollment.

The fastest growing student populations in the U.S. in 2013/14 were from countries whose governments are investing heavily in scholarships for international studies, such as Brazil, Saudi Arabia, and Kuwait. There was a 22 % increase in students from Brazil, to a total of more than 13,000. This increase was due to the volume of undergraduate students going to the U.S. on scholarships from the Brazilian Government's Brazil Scientific Mobility Program. There was a 21 % increase in the number of students from Saudi Arabia raising their number to 6 % of the total number of foreign students in the U.S. There were nearly 54,000 Saudi students in the U.S., largely funded by the Saudi government scholarship program, which was then approaching its 11th year. On a smaller scale, the continued expansion of Kuwaiti government scholarship programs led to 43 % more students coming from Kuwait. There were more than 7300 Kuwaiti students in the U.S. in 2013/14 [12].

In 2013/2014 the overall number of foreign students in the U.S. had increased by 72 % since 2000. Compared to the numbers as had been reported in Open Doors 2000, there were five times as many Chinese students on U.S. campuses, almost two and a half times as many Indian students, seven and a half times as many Vietnamese students, and more than 10 times as many Saudis.

On the other hand, there are large variations between countries in the percentage of foreign students enrolled in their tertiary student body. In Australia, foreign students represent 21.6 % of tertiary students. They represent 15.3 % of tertiary students in the United Kingdom, 15.1 % in Austria, 14.9 % in Switzerland, and 14.6 % in New Zealand. In contrast, the proportion in Chile, Estonia, Poland, and Slovenia is less than 2 % [8].

According to the 2014 "Open Doors Report on International Educational Exchange", 289,408 American students studied abroad for academic credit from their U.S. colleges and universities. Although the 2 % increase represents a slightly slower rate of growth than the previous year, the number of U.S. students studying abroad has more than doubled in the last 15 years [12].

2013 statistics from the Saudi Ministry of Education indicate that the total number of Saudi students studying abroad was 149,742, of whom 69,235 were studying in the U.S., which was a higher number than reported in the "Open Doors" reports [13]. The number of Saudi students in the Arab countries amounted to 16,364 students. The statistics show that Britain came in third place with 14,459 Saudi students, followed by 13,801 in Canada, 8,789 in Australia, 2,049 in New

Zealand, 1,143 in China, and 1,105 on scholarship in Malaysia. The statistical tables indicate that of the Saudi students 50.2 % are undergraduates, 21.2 % are master's students, 5.6 % are doctoral students, and 2.0 % are fellowship students, while the rest are doing English studies in preparation for getting accepted into a degree program. The tables show that the female proportion of the total scholarships amounted to 25.4 %, while the proportion of males is 74.6 % [13].

Nearly 32,000 non-Saudi students representing more than 155 countries are currently studying in Saudi universities on KSA Government fellowships. The majority of these fellowship recipients are from the Arab and Islamic countries, including Yemen, Syria, Egypt, Sudan, Jordan, Libya, Tunisia, Algeria, Morocco, Mauritania, Pakistan, and Indonesia.

4.2 Creativity

The rise in creativity research is often attributed to Guildford's presidential address to the American Psychological Association, in which he acted as an advocate for the scientific research of topics related to creativity [14, 15]. Psychological research in creativity has been ongoing for over six decades and has been applied across a wide range of disciplines.

Creativity is a phenomenon whereby something new, practical, and in some way valuable is created (such as an idea, a literary work, painting, musical composition, a solution, an invention, etc.) However, the manner in which the term creativity has been applied varies widely from study to study. Moreover, creativity is a multidimensional construct for which many different definitions have been applied [16–18]. For instance, the published definitions of creativity document a wide range of standards including uniqueness, usefulness, artistic quality, and accessibility [19].

In addition, research in creativity is multidisciplinary, including developmental studies, education, business sectors, and clinical psychology [19]. Researchers have explored various aspects of creativity including, but not limited to, cognition, motivation, personality, and environment. Therefore, creativity research can broadly be organized into four themes. They are the creative person (personality characteristics, cognition, and motivational states), the creative process (creative thinking and production), the creative product (criteria for creative products), and the creative press (environmental influences).

Creative thinking requires the abilities to generate and apply novel ideas, to divergent processing and open-ended problem solving [20–23]. In today's age of technology and global competition, creative thinking is an increasingly important skill for students to develop.

The link between studying abroad and enhanced creativity was first made by Maddux and Galinsky [24]. They found that students who spent time overseas were more likely to come up with innovative insights. However, the authors could not establish causality nor say for certain that the experience was transformative

and admitted it was possible that people who choose to study outside their home country are more creative to begin with.

A newer published research [20] provides the best evidence yet that studying in foreign countries boosts and enhances student creativity. The research demonstrated that a semester abroad leads to higher creativity scores on two different tests.

4.3 Multicultural Experiences and Creative Thinking

Multicultural experiences gained from studying abroad are different experiences both quantitatively and qualitatively than the experiences resulting from traveling or short visits, which provide only a superficial or shallow introduction to a new culture. Multicultural experience depends on living abroad, and the extensive interactions with members of foreign cultures [25].

Research investigating the relationship between multicultural experience gained from studying abroad and creativity shows that individuals who studied abroad demonstrate increased interest in travel, art, foreign languages, history, and architecture which increases their assessment of esthetics, which is a frequently cited characteristic of creative individuals [26–28].

Research examining the outcomes of study abroad programs shows that studying abroad leads to several positive affective gains such as promoting students' cultural and personal development by providing experiences that facilitate international awareness, cross-cultural communication skills, and self-confidence [8, 10, 29], all of which significantly relate to greater creative performance, including the extension and combination of conceptual boundaries and flexibility in recruiting and synthesizing information [30–32].

Lee et al. [20] presented an experimental study that highlights the value of multicultural experiences for both culture specific and domain general creative thinking and concluded that studying abroad benefits creative thinking. They assembled three groups of undergraduate students from a large university in the American south. Each group consisted of 45 students, i.e., 45 students who had studied abroad, 45 who were planning to study abroad, and 45 who had no interest in studying abroad. All students in the three groups completed two creativity tests: the Cultural Creativity Test (CCT) and the Abbreviated Torrance Test for Adults (ATTA).

On both tests, the students who had studied abroad significantly outperformed the other two groups. On the Cultural Creativity Test, students who had studied abroad were deemed to have recruited and combined intellectual resources from various cultural frameworks to generate ideas and solutions that were richer in description, detail, and humor than those generated by students in the other groups, including the group planning to study abroad. Multicultural experiences involve the accumulation and integration of learned routines and conventional

knowledge from a new culture, as well as practice switching mentally between different cultural worldviews [30, 31, 33].

The results demonstrated that students who had studied abroad generated more original ideas on both a culture specific and a domain general creativity test compared with students who had not studied abroad. There were no significant differences between students who had studied abroad and those who had not studied abroad on traditional indicators of academic achievement. However, Lee's study indicated that the actual immersion in a foreign culture is related to superior creative thinking, while this is not demonstrably the case when there is mere interest in foreign cultures without the actual immersion and its accompanying cultural experience.

In contrast to expectations, these results indicate that increased creative thinking gained from studying abroad is not limited to culture specific activities, but also transfers to performance on culturally neutral activities. The positive relationship between studying abroad and general creative thinking has important ramifications for the impact of cultural experiences on individuals' overall cognitive capacities and their approaches to creative problems.

Based on their findings, the researchers suggested that cultural experiences gained from living abroad have wide-ranging beneficial impact on students' creativity, including the facilitation of complex cognitive processes involved in developing innovative solutions and promoting creative thinking. These findings combined with the results that demonstrate superior creative thinking among students who had studied abroad support the claim that the actual immersion in a foreign culture by studying abroad enhances creative thinking. Their findings suggest that studying abroad provides a means of gaining creative thinking skills and abilities.

5 Best Practice

Three examples of best practices are presented: International cooperation in higher education in Saudi Arabia in general and in King Abdulaziz University (KAU) in particular, the policy of international university cooperation and its application in one of the top-ranking world-class universities: the Copenhagen University in Denmark, and one of the world's most prestigious programs for international technical cooperation: the 'Fulbright' scholarship program.

5.1 International Cooperation in Saudi Higher Education

International cooperation in higher education in Saudi Arabia is a crucial strategic goal of the Ministry of Education that aims to develop, improve, enhance, and raise the level of higher education in Saudi Arabia in cooperation with

distinguished Arab, regional and international higher educational organizations and institutions. It seeks to achieve this through the signing of international agreements and alliances, and the building of international partnerships and consolidation in the areas of culture, science, academia, and research [34].

The ministry established the “General Administration for International Cooperation” within its administrative structure, and provided it with ample human and material resources. This was established in line with the ministry’s strongly held conviction that international cooperation is an important mechanism and an intrinsically valuable development, when carefully implemented through higher educational policies. It also endeavors to ensure the development and documentation of cognitive and cultural relations with various internationally prestigious highly developed universities and organizations under the aegis of formal agreements, alliances, and memorandums of understanding, in line with the Kingdom’s public policies and chosen strategic direction.

The general objective of the General Administration of International Cooperation is to ensure effective mutually beneficial coordination with government and private universities and higher education and academic research agencies outside the Kingdom.

The administration has an important role in building bridges of knowledge between Saudi universities and internationally prestigious and distinguished higher educational universities. It seeks to promote knowledge and cultural exchange through expansion of scholarships and exchanges. It coordinates training programs, seminars, conferences, congresses, and international exhibitions, and raises the level of performance and development of international cooperation in the various fields of knowledge. The administration is entrusted with drafting rules and regulations that govern the establishment and practicalities of relations with international higher educational establishments, bodies, and organizations. The administration is always eager to contribute to, highlight, and reinforce Saudi Arabia’s general development especially in the field of higher education, which has witnessed unparalleled quantitative and qualitative expansion in all areas of the Kingdom in recent years.

The General Administration of International Cooperation has three departments: the International Cooperation Department, the Agreements and Joint Committees Department, and the Department of Exhibitions.

The ministry and the Saudi universities have signed a number of memorandums of cooperation and service contracts with ministries and prestigious international universities on different continents. They have participated in joint committees and established effective ongoing channels of communication with numerous worldwide scientific institutions.

Each Saudi university has a special administration or center for international cooperation or relations. The main responsibility of such bodies is the development, monitoring, and guidance of international partnerships, programs, and activities, and the promotion of such bodies and activities in order to facilitate international student and staff exchanges and international recruitment. They also aim to create a wider range of study opportunities for students, professors,

and staff and to enable increasing international benchmarking of university programs. They also offer program advice and provide various training and educational opportunities. Their services are geared toward mobile student/professor exchange, promotion of international exchange research projects, international funding, and the university staff tasked with designing and developing new projects.

5.1.1 KAU Administration of International Agreements

KAU has established its “Administration of International Agreements” to organize, follow up, and develop international agreements between the university and international universities, research centers, and scientific institutions. The aim of such efforts is to accelerate the university’s anticipated scientific progress and expedite technology transfer from the world’s most prestigious universities and scientific institutes to KAU. The administration also prepares a fully automated management system of international agreements and service contracts, and ensures adequate budgetary provisions are in place for effective task design and implementation.

The structure of the administration is illustrated in Fig. 1. The administration consists of five units under the management of the general supervisor of the administration who is under the supervision of the Director (President) of the University. These units are as follows:

- Research Agreements Unit
- Educational Agreements Unit
- Creative and Innovative Agreements Unit

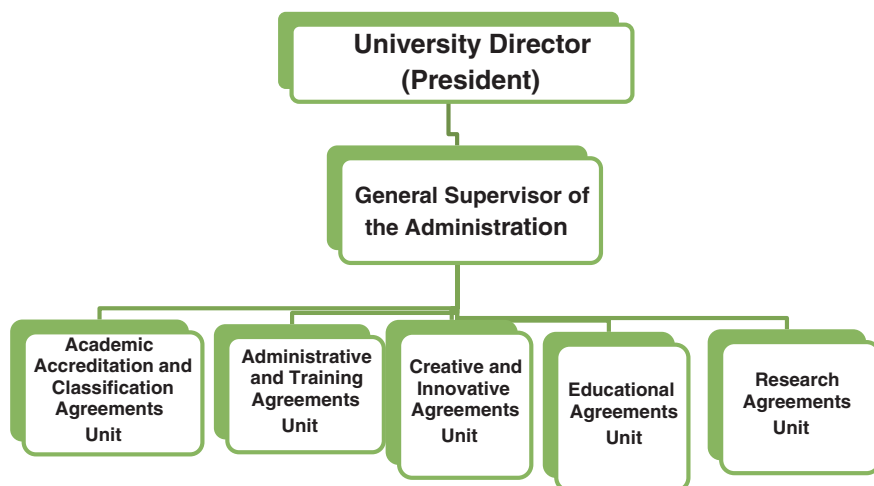


Fig. 1 The structure of the administration

- Administrative and Training Agreements Unit
- Academic Accreditation and Classification Agreements Unit.

To ensure administrative effectiveness, the University Vice-Presidents are tasked with the following responsibilities concerning international agreements:

- The Vice-President for Graduate Studies and Scientific Research supervises agreements concerning graduate studies and scientific research.
- The Vice-President for Academic Affairs supervises agreements concerning educational services.
- The Vice-President for Business and Knowledge Creativity supervises agreements concerning creativity, innovation services, and inventions.
- The University Vice-President supervises agreements concerning administrative services and training.
- The Vice-President for Development supervises agreements concerning cultural, quality, and academic accreditation and concerning classification and ranking of the university.

King Abdulaziz University has established joint international cooperation agreements and service contracts with many of the world's distinguished universities and educational institutions. There are currently more than 75 operational service contracts and several other agreements and memorandums of understanding between KAU and universities, scientific institutions, and specialized companies in 23 countries ranging from the United States of America, Canada, and Argentina in the Americas to Great Britain, France, Spain, Germany, Finland, Switzerland, and Turkey in Europe to China, Korea, and Japan in Asia to Australia and New Zealand. These agreements and service contracts specialize in the implementation of joint research projects and patents; the exchange of students, staff, faculty members, and scientific expertise; the establishment of joint graduate programs; curriculum development; development of distance education; training programs and rehabilitation of medical graduate students; and training faculty members. Figures 2, 3, 4, 5 and 6 show the signing ceremonies of some recent agreements and service contracts.

The service contract signed with Tokai University in Japan in February 2012 is an example of a joint cooperation and service contract signed by the university and of its beneficial consequences. It was entered into in order to facilitate transfer of expertise in designing, manufacturing, and testing solar-powered drones (airplanes without pilots) used for civilian purposes. The contract was initially for three years. Seven KAU faculty members, 10 KAU students, seven Tokai University faculty members, and 11 Tokai University students all jointly participated in the project. The drone was designed and manufactured with a wingspan of 3.75 m and was capable of flying for 8 h continuously in daylight at a maximum speed of 50 km/h. It was named "Solar Falcon-1" and was successfully tested. Several scientific research papers have been based on this innovative project and published. Figure 7 shows the 'Solar Falcon-1' drone.



Fig. 2 Signing the extension of the Service Contract with Tokai University

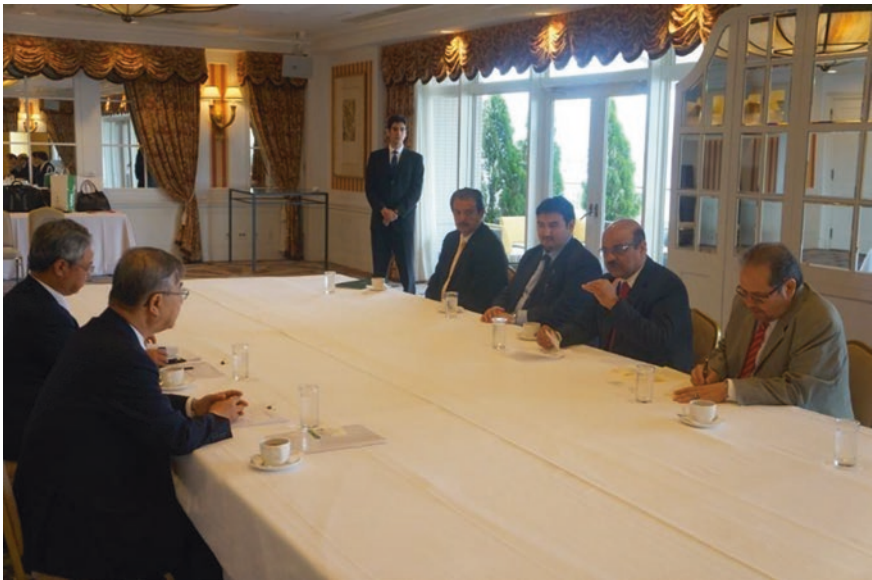


Fig. 3 Negotiating the Service Contract with Sumitomo Chemical Co., Japan



Fig. 4 Signing the memorandum of understanding with Osaka University, Japan



Fig. 5 Signing the memorandum of understanding with Kyoto University, Japan



Fig. 6 Signing the momentum of understanding with Seoul National University, Korea

Due to the success achieved in the first phase, which culminated in the successful manufacture and testing of the drone, and in order to further benefit from the Japanese experience, it was agreed to extend the project's second phase so as to design, manufacture, and test the prototype drone's successor "Solar Falcon-2". This drone has a 7 m wingspan and is capable of flying in daylight and at night for five days consecutively at a maximum speed of 40 km/h. In view of this success, an extension of the service contract has been signed for a fourth year.

5.2 International Cooperation at the University of Copenhagen

The University of Copenhagen (UCPH) was founded in 1479 and is the oldest and second largest university and research institution in Denmark. It is known as Scandinavia's Harvard University. It became a center of Roman Catholic theological studies but also had faculties for the study of law, medicine, and philosophy [35]. UCPH has an annual budget of approximately one billion euros. It aims to prepare students for a broad range of employment opportunities in the private and public sectors.

The university has in excess of 43,800 enrolled students, including 23,500 undergraduate students, more than 17,000 graduate students, and more than 2,900 doctoral students. The student body also includes more than 5,700 international



Fig. 7 shows the ‘Solar Falcon-1’ drone. **a** ‘Solar Falcon-1’ on the ground. **b** ‘Solar Falcon-1’ in flight above the university buildings

students including exchange students, guest students, and full-degree students. It has more than 4,800 academic staff and more than 9,600 full-time employees, more than 4,300 of whom are employed in technical and administrative capacities. The university has four campuses located in and around Copenhagen, with its headquarters located in the city center. It has six faculties and approximately 100 departments and research centers. The majority of courses are taught in Danish while many courses are also offered in English and a few are offered in German.

The 2014 Academic Ranking of World Universities, published by Shanghai Jiao Tong University, ranks UCPH as the best university in Denmark and

Scandinavia, the 8th best university in Europe, and 39th in the Top 500 World Universities ranking [36]. It is ranked 45th in the 2014 QS World University Rankings and 13th in Europe [37–39]. However, in the Times Higher Education World University Rankings for 2014, UCPH is ranked 160th overall in the world [40]. In 2013, according to the University Ranking by Academic Performance, UCPH is the best university in Denmark and the 25th best university in the world [41]. The university has had eight alumni become Nobel Prize winners and has produced one Turing Award recipient [35, 42].

5.2.1 International Cooperation: Policy and Application

The international strategic policy of UCPH is to attract top talent from around the world. The university strenuously works to develop its position as a world-class university by providing researchers and students with excellent opportunities for cooperation and exchange with other national and international universities [35]. The university cooperates with universities worldwide.

Based on the university's scientific foundation and its continuing endeavors to strengthen research excellence, the strategy covers three selected focus areas: improving education, strengthening external collaboration worldwide, and strengthening internal collaboration and shared identity.

UCPH has established an international graduate talent program with grants for international graduate students and faculty. It offers more than 50 master's programs taught in English, more than 150 exchange agreements worldwide, and 800 Erasmus agreements [35].

The university has several thousand foreign students, of whom about half come from Nordic countries. In excess of 1,000 UCPH students study abroad at its international partner universities. The university offers a wide range of graduate degrees in English and numerous courses in English for exchange and guest students.

UCPH participates in a range of international networks and alliances to cooperate with partner institutions, share knowledge, and gain influence on education and research policies. It also participates in several international education programs. It is a member of the prestigious International Alliance of Research Universities (IARU) which also has members from other leading research universities in the world. UCPH is also represented at a number of institutes and centers worldwide.

UNICA Network

The "Institutional Network of the Universities from the Capitals of Europe" (UNICA), founded in 1990, is among the five leading institutional academic university networks in Europe. UNICA consists of 46 universities from 35 European capitals and has over 150,000 employees and 1,800,000 students.

UNICA provides a forum in which universities can reflect on the demands of strategic change in university research, education, and administration. It

endeavors to promote academic knowledge and excellence as well as integration and cooperation between the member universities. It also seeks to be a driving force in the development of the Bologna process and to facilitate the integration of Eastern and Central European universities into the European Higher Education Area [33, 43]. It also provides universities with information on European initiatives and programs, and supports them in cooperative projects.

UNICA holds a student conference once every two years focusing on European educational issues and policies. The conference provides European students with the opportunity to exchange views and experiences.

UNICA has a number of working groups such as Equal Opportunities, Science Park and Incubators, Urban Issues, Disability, and groups dedicated to special needs students. It also organizes a number of annual seminars regarding relevant and current issues for the pooling of experiences concerning EU fund-raising for research.

IARU Alliance

The University of Copenhagen is a member of the prestigious “International Alliance of Research Universities” (IARU), established in 2007, along with University of California, Berkeley, University of Cambridge, University of Oxford, University of Tokyo, Yale University, the Australian National University, ETH Zürich, the National University of Singapore, and the University of Beijing [39, 44]. These top ten world’s leading research-intensive universities share similar visions and are all internationally recognized as being world-class universities, which is reflected in the nature and scope of their shared research project topics.

The alliance’s main objective is to provide graduate students and researchers at member universities with the opportunity to participate in international research and research-based teaching with a global outlook. Its activities and venues in pursuit of this objective include research projects, graduate student conferences, summer programs, workshops, conferences, and congresses.

IARU members’ students have the opportunity to engage critically as global citizens in an increasingly interconnected world through the Global Summer Program, and by means of fellowships and internships. Besides enriching students, the alliance also brings considerable diversity in the promotion of institutional collaborative working among its members, inter-university networking, and staff development. Members participate in the alliance’s various activities in accordance with their own particular needs and objectives [45].

5.2.2 Research Collaboration and University Partners

The diversity of academic environments and scientific approaches is UCPH’s distinguishing feature and strength. Partnerships between the university and its national and international research partners enhance the quality of its research and study programs.

The university maintains a substantial number of partnerships with universities worldwide. More than 140 bilateral partnerships, numerous institute partnerships, and hundreds of Erasmus agreements are designed to increase students' mobility, offering them opportunities to augment their academic training abroad with the accompanying beneficial intercultural experiences. The partner universities include 46 in the US, 17 in Australia, 12 in Canada, 10 in Japan, seven in New Zealand, five in Germany, and one in each of Argentina, Cuba, Peru, Poland, Sweden, Syria, and Jordan. The university also exchanges students and staff with a large number of partner institutions through the Erasmus and Nordplus programs and by means of state bilateral agreements.

UCPH generally prefers to establish university-wide agreements when a number of faculties express such interest. University-wide agreements are intended as umbrella agreements and it is acceptable to maintain or establish department, faculty, or institutional agreements within and under the aegis of the university agreement. These partnerships are the framework for foreign students and researchers to study or conduct research at the university. Fruitful partnerships are established in a variety of ways such as:

- Student exchange
- Faculty exchange
- Joint degrees
- Joint research collaboration
- Staff exchange
- Erasmus staff training
- Erasmus teacher training
- Strategic partnerships

5.2.3 The University of Copenhagen's Research and Innovation Council

UCPH's Research and Innovation (R&I) Council is responsible for identifying and pursuing the university's strategic development within research, innovation, and business collaboration, and for prioritizing how the university shall publicize its activities externally [46]. The council works in accordance with UCPH's strategic goals.

The objective of the council is to determine how strategic development is best supported by the organization, to secure increased external funding, and to initiate an increasing number of collaborative relationships with private and public entities globally. The council prompts general initiatives within research and innovation that complement the faculties' own initiatives. It also coordinates research and innovation (R&I) work conducted at the faculties by R&I faculty representatives and makes recommendations and suggestions aimed at improving the university's researcher-oriented service.