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Best Practices of Engineering Education Internationalization in a Russian Top-20 University

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Julia Ziyatdinova graduated from Kazan State Pedagogical University in 1999. Her major areas of study were foreign languages and she finished her University course with honors and qualification of teacher of English and Turkish. She continued her training and obtained PhD in Education degree in 2002. The topic of her PhD study was titled "System of Character Education in the US Schools: Current State and Trends for the Development". She also received additional minor degrees in Management (1998) and Psychology (1999) in Kazan State Technological University.

Julia joined the team of Kazan State Technological University as an instructor at the Department of Foreign Languages and the School of Foreign Languages "Lingua" in 1999 and was rapidly promoted to the position of Associate Professor at the Department of Foreign Languages in 2003. Her teaching career was perfectly balanced by the experience of a translator and an interpreter. She is a well-known person at Kazan international conferences and other events for her high quality consecutive and simultaneous interpreting, such as interpreting for the Academy of Sciences of the Republic of Tatarstan.

The new milestone in Julia's career was the position of the Chair of Department of Foreign Languages for Professional Communication in 2007, when she took over all the responsibilities related to foreign language training at Kazan State Technological University. The teaching and research priorities of her department were then focused on professional and intercultural communication for students in a technical university, professional translation and creation of foreign language environment at a university.

Because of her talents and activities, Julia became one of key figures in university international life. When Kazan State Technological University obtained the new status of a National Research University and joined the list of Top 30 Russian universities, Julia was offered a position of a Head of University International Office. She took over this position in April 2011 and rapidly gathered a strong team of professionals to face the challenges of the new university status and transformed International Office into University International Affairs with two offices covering all the aspects of internationalization.

In addition to her intensive career, Julia is also the Director of Center for Intercultural Communication – a company within the University structure offering excellent language training services for students and adult employees.

Julia is the author and co-author of over 85 publications including monographs, journal articles and study guides.

Dr. Artem Bezrukov

Artem Bezrukov graduated from Kazan National Research Technological University (KNRTU) in 2007. His major program was Chemical Engineering. He has also a minor degree in Translation for Professional Communication. Artem Berukov received his PhD in chemistry at the same university in 2010. His is the head of Protocol Office at International Affairs and an associate professor at the Department of Physical Chemistry at KNRTU. His activity areas include internationalization of higher education, colaboration with universities and research organizations in the USA, Europe, and Asia. Artem Bezrukov is the author and co-author of over 50 publications including papers in peer-reviewed journals, proceeding of international conferences, workbooks and monographs.

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Dr. Sanger is a professor in the School of Engineering Technology in the College of Technology of Purdue University. His focus and passion is real world, industry based, senior capstone experiences both domestically and internationally. He has successfully developed this area at Purdue and at Western Carolina University. Prior to his career in academia, Dr. Sanger had a successful 30 year career working in and with industry managing and participating in broad range technology development and commercialization.

Dr. Petr Osipov

Best Practices of Engineering Education Internationalization in a Russian Top-20 University

Abstract

Top world universities apply complex internationalization strategies to keep a sustainable leadership confirmed by the global rankings such as QS, THE, ARWU, or to improve their position in these rankings. Russian universities are not an exception and the analysis of the websites of Russian Top-20 universities (according to the National Ranking of Russian Universities, 9 universities of this Top-20 list are engineering universities) demonstrates their strong internationalization infrastructure.

Tracking success stories and best practices of such universities using accurate statistics is a useful tool for sharing their internationalization experiences, finding matching points for cooperation and predicting of their competitiveness potential in the global higher education community.

This paper summarizes 5 years of best internationalization practices and statistics of a Russian Engineering University in the national Top-20 list. The statistical data include dynamics of international students by their total number and country of origin; the statistical analysis of international delegations; the data about foreign professors and guest lecturers; international conferences and other events; the statistics of academic exchange and grants. Best practices and internationalization success stories are correlated with this statistical information and are generally analyzed and characterized using these data as the background to become more formalized and easily shared with other universities.

Apparently good results have been achieved through the following practices: step-by-step collaboration plans with selected top universities in the USA, Europe and Asia; focused Federal Government funding for joint projects (research, guest lecturers and joint conferences) with top world scientists in approved development priority areas; success in Asia through personalized activities carried out by the University's Honorary Professors from China, South Korea and other Asia-Pacific countries; training hundreds of University faculty in the top US and European universities; networking with regional, national and global academic and business partners. Another focus is given to the best practices in the global engineering education environment including collaboration with ASEE and IGIP (such as hosting IGIP conferences and success in IGIP International Engineering Educator Program ING PAED IGIP, plenary session at ASEE International Forum).

These 5 years of activities resulted in achieving the Top-150 position in the QS BRICS list (while the University was not listed in any international rankings before), a 3 fold increase in the number of international students, and the infrastructural changes in the university such as creation of new internationalization infrastructure and a multilingual environment to achieve sustainability in internationalization growth.

Background

Top world universities apply complex internationalization strategies[6,7] to keep a sustainable leadership confirmed by the global rankings such as QS, THE, ARWU, or to improve their position in these rankings. Russian universities are not an exception and the analysis of the websites of Russian Top-20 universities (according to the National Ranking of Russian Universities, 9 universities of this Top-20 list are engineering universities) demonstrates their strong internationalization infrastructure.

Tracking success stories and best practices of such universities based on real statistics is a useful tool for sharing their internationalization experience, finding matching points for cooperation and the prediction of their competitiveness potential in the global higher education community.

This paper summarizes 5 years of best internationalization practices and statistics of a Russian Engineering University in the national Top-20 list. The statistical data include:

- dynamics of international students by their total number and country of origin;
- statistical analysis of international delegations;
- data about foreign professors and guest lecturers;
- international conferences and other events.

Best practices and internationalization success stories are correlated with this statistical information and are generally analyzed and characterized using these data as the background to become more formalized and easily shared with other universities.

The selected best internationalization practices of a Russian engineering university are described below. The statistics is provided for the period of 2007 – 2015 (or 2007-2014 as the 2015 data are still under processing). The university obtained its National Research University status in 2010, so the 2007-2009 period is given for reference. The 2010-2015 block of data is the statistics reflecting implementation of its Development Program and practices intended to boost its internationalization.

Description of best practices

Focusing on internationalization while obtaining a national research university status

Following the experience of the U.S., where the universities are the key national centers of research activities, the Russian Government launched an initiative of creating national research universities in 2009. Such universities were thought to become regional centers of world-class fundamental and applied research. To win this status, the applicants were to

submit a Development Program for 2010-2019 with a step-by step strategy of obtaining global competitiveness in research.

The first good decision of the university administration was to add strong internationalization component to its Development Program including the growth of the number of foreign students, attracting funding for international projects, developing international academic programs and training of faculty at top world research centers.

After winning the status of a National Research University in 2010, the university received a USD 300 million grant for the implementation of its development initiatives, including internationalization. It should be noted that internationalization funds are usually provided by academic mobility agencies on a mostly individual basis. For the first time in the university history, it obtained significant funds for internationalization as a part of a huge government grant.

These specific funds provided considerable intensification of the university international activities which can be seen in all the diagrams below.

Step-by-step collaboration plans with selected top universities in the USA, Europe and Asia

The university created a "belt of priority partners" in selected world regions (Fig. 1) and focused on several partners instead of signing dozens of MoUs with all the universities it gets in touch with.

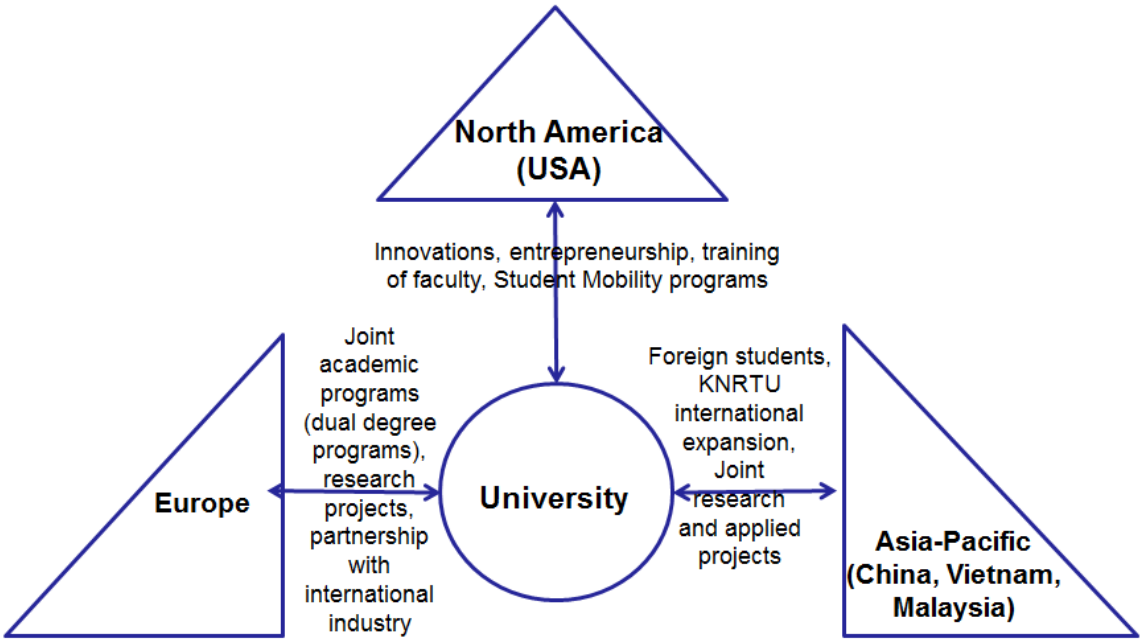

Fig. 1. Priority regions for internationalization.

The USA was selected as the primary country for internationalization with the focus on student mobility programs, training of faculty and innovative research. The university also

selected some primary partners in Europe (mostly in Germany and France) and Asia (mostly in China). The total number of active partners is around 15-20, that is more than sufficient.

Success in Asia through personalized activities carried out by the University's honorary professors

The university invited top scientists from China, South Korea and Malaysia to become its honorary professors. Several years of further partnership with these distinguished people resulted in obtaining "agents of influence" in the Asia-Pacific region providing the university with the access to joint projects with Chinese Academy of Sciences, Federation of Asian Chemical Societies etc.

Another success story with honorary professors is the access to organization of local conferences and symposiums. The university organized specialized plenary sessions at conferences in Malaysia and Vietnam hosted by its honorary professors.

Attracting government funding for training hundreds of University faculty in top US and European universities.

A part of the National Research University Development Program was to intensify academic mobility of its faculty. Fig. 1 demonstrates small intensity of faculty visits to foreign universities in 2007 – 2009. After obtaining the national research university status, the university administration decided to send faculty members to the U.S. and European universities for short-term training and making further connections for internationalization. After 2010, there is a 4-fold growth in faculty academic mobility. In 2010-2012, the majority of travels, however, were first-time visits without further continuation. In 2013-2014, the visits became more dedicated and regular: presentations at conferences, lectures, and regular research visits, while the part of 'inefficient' academic mobility decreased. The university found a number of 'stable partners' to collaborate with[2].

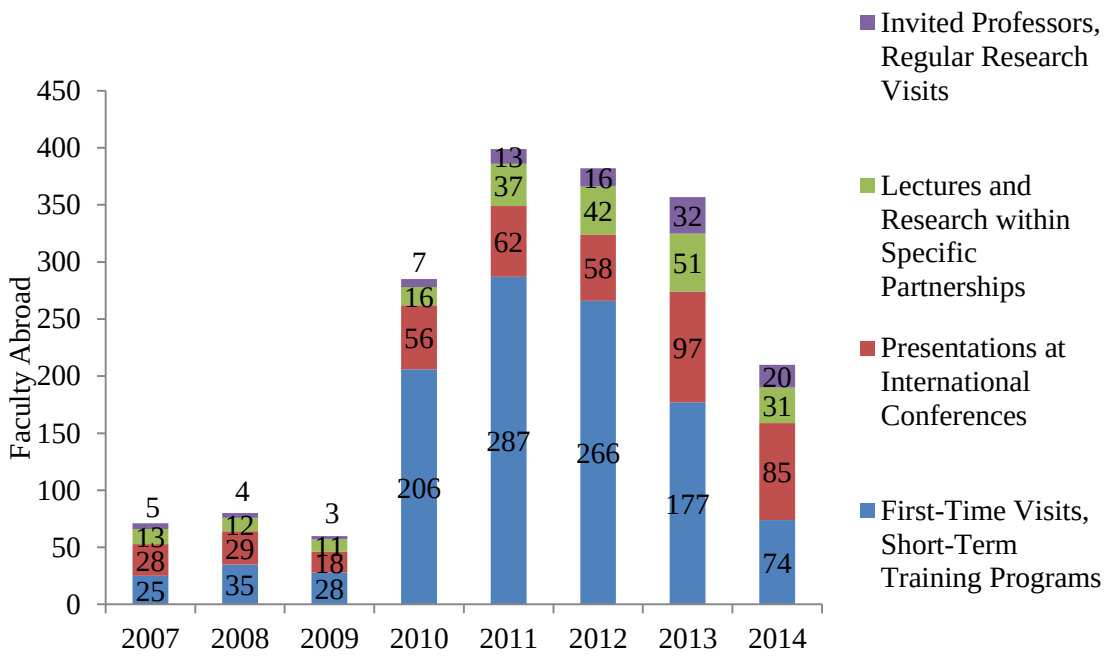

Fig. 2. Academic mobility of the University faculty.

Integration into the global engineering education environment through collaboration with ASEE and IGIP

Another focus was given to the best practices in the global engineering education environment including collaboration with ASEE, AIChE and IGIP (such as organization of IGIP conferences and success in IGIP International Engineering Educator Program ING PAED IGIP. In 2011-2015, the university hosted several events with the contribution of IGIP and participated in ASEE and AIChE annual conferences. While government funds were available for such initiatives in 2011-2013, the University was motivated to attract other funds to continue these activities in 2014-2015, such as international grants etc.

Advertising the National Research University status to attract more international students

Fig. 3 represents the growth in the number of international students. Before 2010, there is definite growth in the number of international students. Growth intensity, however, increased after 2010, when the university obtained its new status. The total number of international students tripled in the 2010-2015 period.

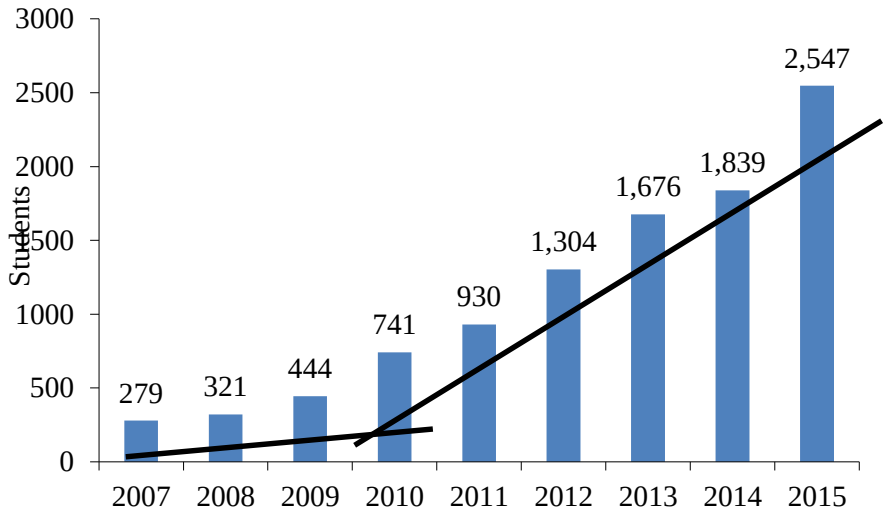

Fig. 3. Dynamics of the number of international students.

The distribution of international students by country (Fig. 4) provides additional clarification. The majority of foreign students is provided by the ex-soviet countries, Africa and Asia. The status of a National Research University resulted in better image of the university in the CIS countries and Asia (for example, Chinese government implements similar initiatives of creating top research universities in the country, so the national research university was considered as a top-level university in Russia). An additional attraction factor is that all the top positions in Russian university rankings are occupied now by national research universities, and prospective students make selection from the top of the list.

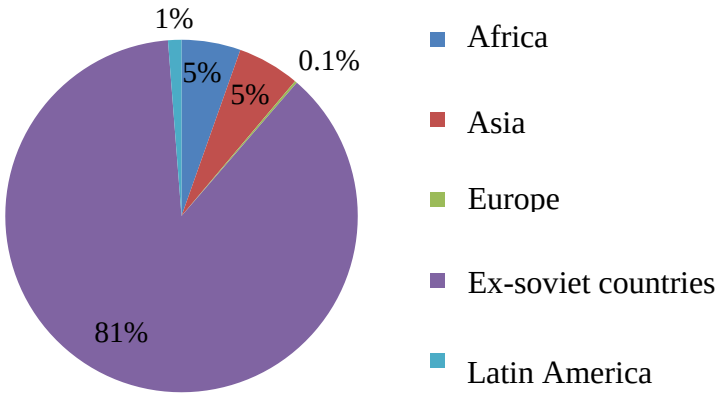

Fig. 4. International students by country of origin in 2015.

Conferences as a tool for massive training of the university faculty

The university succeeded in professional training of its faculty in best U.S. universities in 2010-2012. Another approach was developed in 2012-2015 to share the expertise of top

world scientists with more faculty and students. The university attracted federal and local funding intended for professional training of its faculty to invite scientists from the U.S. and European universities. These scientists participated in the conferences hosted by the university. At the same time, they spent several days with students and faculty as lecturers and workshop supervisors, round table moderators and research experts. Such events were officially titled as “Scientific Schools” and were usually organized as conference satellites. Hundreds of students and faculty who participated in these Scientific Schools” were awarded with short-term professional training certificates and got real experience of communication with global experts.

Fig. 5 summarizes the statistics if university conferences (which were accompanied by scientific schools). The university has been hosting about 15-20 conferences on an annual basis since 2010. Each of such conferences provides short-tern training for 100-200 students and faculty.

The university professors also increased their presence at international conferences (Fig. 5, blue columns) due to intensified personalized connections with their foreign colleagues after training in the U.S. and European universities and meeting foreign scientists at conferences hosted by a university.

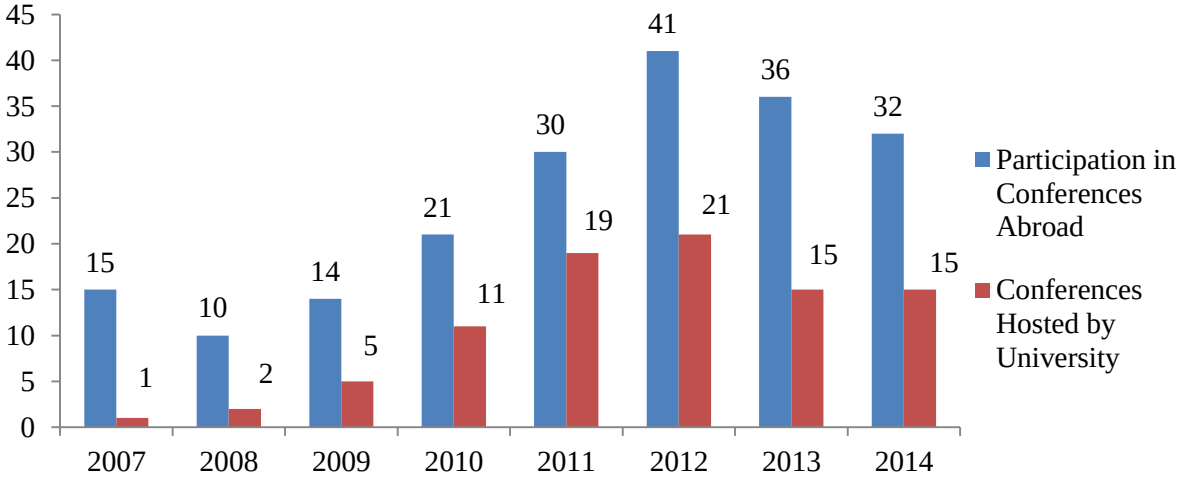

Fig. 5. International conferences at university and abroad.

Results and Conclusions

These 5 years of activities resulted in achieving the Top-150 position of the QS BRICS 2015 list (while the University was only in the Top-200 of the QS BRICS 2014 list and was not listed in any international rankings before), 3 times increase in the number of international students, 2-3 times increase in the intensity of international activities (such as participation in the international conferences, professional training abroad and hosted events with foreign participants).

Another important result is the transformation of these quantitative changes into new quality: infrastructural changes in the university, as the administration faced challenges from the intensification of international activities. New offices have been created, such as Office of Legal Support, which is to overcome administrative bottlenecks in internationalization, Office of Joint International Programs, and Department of Foreign Languages for Professional Communication. This Department implements the Program of Multilingual Environment to achieve sustainability in internationalization growth by overcoming the major barrier: insufficient level of English[1,3,4,5]. This program offers intensive English training for all the university groups: from undergraduate students to deans and administrators to provide professional communication skills.

Thus, addition of the internationalization component to the Development Program of a National Research University allowed achieving new level of internationalization by attracting special funding. Selected practices have been applied to trigger boosting of international activities. It is very important that although the federal funding was over in late 2013-early 2014, these practices continued (Fig. 2-5, years 2014-2015) and were much more intensive than the respective activities before the national research university period (m Fig. 2-5, years 2007-2009). The main reason of this effect is the resulting implementation of a new internationalization infrastructure and changed mindset of faculty and students, who start considering internationalization as a necessary component of their research and academic activities and started seeking additional funding for their overseas partnerships.

These practices may be recommended for other universities in Russia as well as universities in China and India, which apply for similar special government funding programs as well as for the U.S. universities looking for successful approaches to the universities in these countries.

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