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The POSEIDO journal focuses on all aspects of the interconnected clinical and research fields of periodontal sciences, oral and cranio-maxillofacial surgery and medicine, esthetic and restorative dentistry, with a particular interest in implant dentistry, and related research.

Most publications are connected to the dental and maxillofacial field, but some are also from orthopedics, material sciences or other scientific disciplines interconnected with the POSEID research topics (e.g. bone implantable materials, bone regenerative medicine strategies), in order to promote transversal translational research.

POSEIDO is organized as an info journal (international forum), and is therefore publishing a significant quantity of editorial material, as a basis of information, debate and discussion for our community. This editorial material takes particularly the form of **clinical case letters** and **research letters**.

The objective of this strong editorial section is to create links between international research teams, to organize our international research community and to develop a neutral international platform for the publication of debates and consensus conferences in the fast-growing and evolving fields of the POSEID disciplines.

The journal is also publishing a classical content with full-length articles (**original articles and reviews**), following a strict double peer-review process. The journal is particularly interested in original research articles and clinical studies about new techniques, biomaterials and biotechnologies with direct clinical applications in the interconnected fields of periodontology, oral surgery, esthetic and implant dentistry. Review articles are also welcome if they make the clear synthesis of debated topics.

Detailed guidelines for authors can be found on <http://www.poseido.info>



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Special Review: Editorial of the POSEIDO ISAIAS**Developing a global scientific Community through cooperation and partnership: reinventing the intercultural interface, or the ISAIAS Prophecy in Internationalization of Higher Education and Research**

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Abstract

Internationalization of Higher Education and Research is a major evolution of the Academic environment, and it is also impacting in a specific way the dental disciplines. It is originally a concept to promote cooperation and peace between cultures and Nations, through the development of an efficient intercultural Academic interface. This introductory article reviewed the origin, causes and consequences of this process in the global scientific cooperation, and discussed how the current models of internationalization have generated independent blocks around centers of influence. These centers are entering in a scheme of global competition for influence, far from the initial honest concept of cooperation. This article also introduces the paradigm of “intelligent internationalization”, as a flexible and versatile method to create and maintain an interface between institutions, cultures and countries. This model is the basis of the POSEIDO Consortium (Periodontology, Oral Surgery, Esthetic & Implant Dentistry Organization) and is founded on the concept of network of leaders of internationalization. To monitor and strengthen this effort, the POSEIDO Consortium is developing an Academic toolbox termed ISAIAS (Intercultural Sensitivity Academic Index & Advanced Standards), as an initiative to promote deeper cooperation and to develop long-term common efforts in Higher Education and Research.

Keywords. Attitudes, culture, education, international cooperation, international educational exchange, leadership.

1. Internationalization: the Theory and the Practice

The process of internationalization of higher education and research is a natural consequence of the current globalization of the economy and policies, et vice versa [1,2]. Science and knowledge are an important part of this globalized economy, both as a financial resource for Academic institutions and a vector of development and influence. Therefore, this evolution is unavoidable, needed and promoted in most countries in different ways. However, this evolution is also affecting very strongly the functioning and customs of the Academic environment and stakeholders, as all of them – Students, Academic and Administrative staffs – have to face this new globalized reality [3].

It is often considered that Universities are the last Bastions of the Culture. It is an elegant way to recall that even if the Academic environment is not always conservative in its content, it remains for many historical and structural reasons quite conservative in the form, whatever the country. The internationalization of each university raised many specific issues, particularly in the way each institution (and country) wishes to develop its intercultural interface to exchange students, faculty and collaborate on the daily basis in higher education and research programs. Moreover, the national cultural differences of perception and action, and the different organizational cultures of each country and institution [4] are impacting considerably the capacity to build and maintain an efficient international interface for cooperation. All these intrinsic characteristics of the Academic stronghold are often deadly obstacles to long-term trustful and efficient global collaboration.

Despite these difficulties, governments are strongly promoting the development of the international collaboration, mostly through many national programs supported by financial incentives [5]. Education and Research are powerful instruments in the current globalized economical competition, to train efficient professionals and to promote discovery and innovation, as well as a powerful source of financial resources and an instrument of international influence. Therefore, the concept of internationalization of higher education and research is often considered as a priority by the economic and political policymakers [5], also as an important way to become or remain a center of influence.

However, these efforts may be in fact very superficial [6]. When the last Stronghold of Culture goes global, concepts have to evolve and adapt to the national reality to survive. Many universities perceive internationalization as a simplified administrative concept, mostly teaching and communicating in English, bringing more foreign students to study on their campus and finally to send more of their own students abroad. Universities often evaluate the outcome of their efforts only as a simple number of foreign students visiting their campus, and students traveling abroad. The development of an international Faculty is also a promoted method, but it remains very specific to Anglo-Saxon Universities. Actually, the modern paradigm of internationalization of higher education is often perceived as an Anglo-Saxon model, and it may explain why it is not perceived positively and has not been accepted in many countries. It may explain why each culture wants to implement this concept in its own way [5].

In theory, the purpose of internationalization is first of all to create an interface of exchanges between countries and between cultures, and not only to import students or Faculty. It is not a blind verbiage; it is a concept to promote a sincere understanding and long-term peace and cooperation between countries and cultures, even if they decide to have

their own path of development. If the interface does not really develop and function smoothly, and turns unbalanced, the process of internationalization becomes in the best case a simple commercial activity (the trade of education and knowledge), in the worst case a blind effort to fulfill an administrative obligation towards a national policy [5,6]. If the imbalance increases to a critical level, it can become a source of conflicts and distrust, leading to the break of the interface with deep long-term damages.

In Dentistry, internationalization takes a specific form related to the clinical nature of the profession, and the specific need of recognition of the diplomas to practice (registration to a national Board or Order particularly). Schools of Dentistry are therefore quite isolated due to the administrative nature of the diploma they deliver. The undergraduate dental Education remains very strongly national in most cases. In general, internationalization concerns mostly the postgraduate education (i.e. specialization training) and the research levels. The current tendency is to regroup the Universities by countries sharing full or partial agreements on practice diplomas, for example the European countries, the countries of the British Commonwealth, the countries of the former Soviet block, France and other French speaking countries, etc... History and language have created and have been maintaining these cultural blocks of influence. The interface between these blocks is in fact quite limited, and the transmission and penetration of ideas and concepts between these Academic blocks are much slower than what we can imagine and strongly impacted by the national and organizational cultures. A simple example: the use of L-PRF (Leukocyte- and Platelet-Rich Fibrin) has been developing for more than 10 years in Europe and many other countries worldwide as an open-access inexpensive useful method, while it only starts to be introduced recently in the US Academic environment [7].

In Theory, Theory and Practice are the same; in Practice, they are different. Internationalization of Higher Education and Research is an excellent example of this sentence. In theory, internationalization should create bridges between cultures and people at a global scale and should be promoting a delicate and sincere interface. In practice, the national interests and organizational cultures are allowing often only a very superficial interface between nations and cultures, and finally create and consolidate blocks of influence entering frequently in competition. Even the most internationalized universities have difficulties to maintain long-term and stable international partnerships. The cultural interface is often too superficial and temporary. Deep cooperation is often broken by intercultural misunderstandings and conflicts of interest, while superficial cooperation dissolves like a dream after a few primary objectives have been reached. Even with the greatest sincerity between people, the stabilization of the interface is simply difficult in most Academic and cultural environments. The current policy models may have reached their limits.

2. International Scientific Cooperation or Competition of Influences?

When considering international Scientific cooperation in Health Sciences, the U.S. model is an interesting example, as this effort is particularly strong and integrated in a global policy of development by the U.S. government and most of the U.S. universities.

The most organized global initiative in this sense is probably the development of the Fogarty International Center [8], a branch of the U.S. National Institute of Health (NIH, the national medical research agency and a part of the U.S. Department of Health). This Center was established in 1968 to promote and support scientific research and training

internationally to reduce disparities in global health. In its official mission and vision, the Fogarty International Center is “dedicated to advancing the mission of the National Institutes of Health (NIH) by supporting and facilitating global health research conducted by U.S. and international investigators, building partnerships between health research institutions in the U.S. and abroad, and training the next generation of scientists to address global health needs. The Fogarty International Center's vision is a world in which the frontiers of health research extend across the globe and advances in science are implemented to reduce the burden of disease, promote health, and extend longevity for all people.” The Center is based and functioning on generous ideals, but is also an important instrument of political and economic influence. Many countries have developed historically similar initiatives of scientific cooperation to extend their influence (for example France very active in all French speaking countries, Japan very active in the Asia-Pacific area, England in the Commonwealth, Russia in many former soviet satellite countries or even Cuba bringing a significant medical assistance in many developing countries, etc.). Many other countries are now actively supporting and extending worldwide this kind of cooperation for the very same reasons (for example South Korea and China).

The national efforts for scientific cooperation are obviously positive initiatives, even if they can be sometimes perceived as a form of Scientific Imperialism. The main issue with this form of cooperation, it is that it creates and freezes blocks around some national centers of gravity controlling the source and the functioning of cooperation. These blocks of influence often perceive themselves in strong competition, what can sometimes lead to tensions and always to an absence of real sincere cooperation between blocks.

If we take a look at the situation in the fields of Periodontology, Oral Surgery, Esthetic and Implant Dentistry (the POSEID disciplines), this notion of blocks of influence is very strong. If we take only the field of dental implants as example, the U.S. scientific societies such as AO (Academy of Osseointegration), American Academy of Implant Dentistry (AAID) or ICOI (International Congress of Oral Implantologists) are controlling their specific environment and developing a worldwide Community of Affiliates or Chapters, particularly through the powerful lever of their respective indexed journals and research Foundations. The same can be observed for the EAO (European Association for Osseointegration). These powerful groups are all trying to be international and extend their influence worldwide – on the same principles than the national institutions discussed previously.

However, even if they are the most visible groups internationally, these important societies only represent a very minor fraction of the global Community of the field. These societies are operating with specific cultural models and organizational cultures: perceived as a foreign body, they remain isolated from most major national blocks and have often a very weak penetration of the national professional communities worldwide. Paradoxically, the largest societies worldwide may be the national entities with a strong implantation and focus on their national community and culture, such as the Japanese Society of Oral Implantology (the largest society in the world with more than 12,000 members)[9], the German DGI (Deutsche Gesellschaft für Implantologie, the largest dental implant specialist society in Europe with 8,000 members), and many other major national societies such as the Korean KAOMI (Korean Academy of Oral & Maxillofacial Implantology), Brazilian ABROSS (Academia Brasileira de Osseointegração), the Russian RADi (Russian Association of Dental Implantology), the Spanish SEI (Sociedad Española de Implantes), the Italian SICOI (Società Italiana di Chirurgia Orale ed Implantologia), the Chinese SSA (Shanghai Stomatology Association), and so many others. It is a frequent mistake to misperceive the real importance of the national scientific societies. The development of a global Community without the trust

of strong respected local partners may be perceived as a culturally arrogant approach, both counter productive and doomed to failure.

This observation reveals that many scientific societies perceive themselves as competitors and remain firmly independent from others to avoid conflicts between areas of influence. Groups are often hesitating to share or unable to cooperate, perceiving the others as a risk and not as an opportunity. As a consequence, these blocks of national interests and influence remain quite separated. All relations are based on equilibrium of forces between stakeholders. Maintaining this equilibrium requires a real understanding of intercultural cooperation, and how to develop an interface fulfilling the needs of all partners within their own cultural environment without creating tensions between partners. The current Theory of international scientific cooperation finally turned into global rivalry between centers of education and research and their respective areas of influence. It is very visible in the POSEID disciplines, but in fact, it can be observed more widely in most domains of international scientific cooperation.

3. The POSEIDO Consortium, an example of “intelligent Internationalization”

3.1. To cooperate or not to cooperate, that is the question...

If we consider again the many scientific societies creating national or international communities in the POSEID disciplines, it appears obvious that, in theory, many of these partners should be able to cooperate into a common project. Together, they would be more efficient in the development and spreading of knowledge to improve global health – what is actually an important mission of all national medical institutions. A careful analysis of the national situations demonstrates easily that the national and organizational cultures of each scientific society are so specific that these groups are often not competitors in reality [4]. Most societies are working through different models and channels. The local success of a scientific society is mostly related to the way this entity grew in a specific organizational culture. Therefore, they all have interest to cooperate to become global by putting their efforts together [4]. The relations of forces between groups, however, often compromise this ideal objective. Each group is feeling the need to search for guaranties, control and leadership within the global community. The absence of real understanding of intercultural cooperation is a deadly obstacle in this situation also.

This observation is not specific to national scientific societies; it applies also very strongly in the Academic environment. An interesting example can be found in open-access publishing. Many major universities (such as Harvard, Princeton, etc), major funding bodies (such as the Wellcome Trust in the UK, the Howard Hughes Medical Institute and the National Institutes of Health (NIH) in the US, and the National Health and Medical Research Council (NHMRC) in Australia) and national institutions are now promoting open-access publishing – making it even sometimes mandatory for the funded researchers [10]. Open-access publishing can now be considered as a national policy in several Western Countries, particularly Australia, the USA [11], the UK [12] and Europe in general [13]. The concept is always the same: if a research is funded by an institution (particularly a public one), it must be accessible to everyone; the funded researchers shall not give their copyrights to publishing private companies and must make their research works open-access. However, the open-access model is not free [14], and requires the payment of substantial publication fees, creating therefore another financial barrier in publishing, what can be particularly impactful

in clinical disciplines such as implant dentistry, where many breakthroughs are coming from non-funded private practitioners.

The concept of open-access publishing is therefore very attractive and evolving very quickly nowadays. It is an obvious and vital platform for Academic stakeholders. However, we can observe that - outside of POSEIDO - almost no global Consortium of Universities was formed and started to develop and self-manage their own platform, without the control of a private publishing company. Paradoxically, we can find a few indexed dental journals managed directly by a University (and sometimes an Academic Department) through an in-school micro-publisher: many old examples actually exist, very often in unexpected places, for example Croatia (Acta Stomatologica Croatica, operating from Zagreb since 1966 and indexed in Pubmed since the Communist times!), Iran (Trauma Monthly, since 20 years) and many others. This reveals that journals can be created and managed directly in a University when there is a strong local leadership deciding to remain independent from private companies. By contrast, it also highlights the difficulty for Academic Departments to share and collaborate firmly together on a global publication platform, both at the national and international level. There is maybe a lack of trust and wish to share responsibility, the perception that a fair and honest cooperation would be technically impossible between Academic Departments worldwide, that conflicts of influence and financial interests are unavoidably spoiling such projects, and that difficulties of intercultural relations can not be seriously overcome when considering a more global approach. Therefore, academic stakeholders seem to prefer to rely on a neutral private publisher to serve as a common global platform to process their proceedings. This choice is financially heavy and deprives them from a big part of their Academic editorial freedom.

In the previously cited examples, when journals are developed within an Academic Department, they are mostly the fruits of a strong local leadership. The inconvenient of this strategy is that such platform never becomes really global. But these examples highlighted very clearly what can make an international cooperation possible: leaderships, and the gathering of strong national leaderships wishing to work together and to cooperate openly and sincerely despite the cultural differences. This observation served as a founding concept of the POSEIDO Community.

3.2. POSEIDO and the leaders of “intelligent internationalization”

The POSEIDO (Periodontology, Oral Surgery, Esthetic & Implant Dentistry Organization) is an international scientific network of academic departments and scientific societies. It was developed as a consortium of academic entities sharing the responsibilities of the global functioning of the network, through the development of independent partner hubs and editorial offices in each geographic area [15]. The network regroups mostly dental school departments, but it is also a platform for transdisciplinarity and translational research including departments of orthopedic and plastic surgery, cell biology, veterinary sciences, biotechnology and biomaterials. The network has already gathered significant entities in 40 different countries and several major scientific societies such as the previously cited Brazilian ABROSS, the Russian RADI, the Spanish SEI, the Italian SICOI or the Chinese SSA, giving to this cooperative initiative a quite unique global dissemination.

The Consortium functions like a cooperative platform between leaders of internationalization, i.e. experienced colleagues with a national and/or international reputation and serving as global relays and interfaces in their respective countries. The POSEIDO open-access journal is managed by a group of Editors, what will become a board of

several Editors in Chief at the end of the global development. The first POSEIDO journal is not a mass-publication platform, it is mostly a journal focusing on major specific studies and trying to develop a international collaborative work, as it can be observed in the last issues about the characterization of implant surfaces [16,17] or the comparison of various centrifuges for platelet concentrates [18]. The first issues of early 2014 [17,19] were downloaded already more than 15,000 times making this relatively small open-access journal one of the most downloaded (and hopefully read) in the profession.

The POSEIDO Consortium is founded on a flexible and versatile concept of “intelligent internationalization”. The classical approach to internationalization is a centralized policy funded and promoted by national institutions – and therefore considered too often as an instrument of Scientific Imperialism. On the contrary, the approach of “intelligent internationalization” implies that friends and local leaderships gather around a common global project and share its management for their own respective national area. It is the cooperative approach between centers of influence. The traditional process of internationalization is generally centrifuge – what can lead naturally to conflicts between centers of influences and difficulties in sincere global cooperation. “Intelligent internationalization” is more centripetal: partners are gathering around a project, but keep their area of influence. Intelligent internationalization is in fact the natural instrument of the current multipolar world, where no one can claim global leadership alone. It is a different model to offer the possibility of cooperation between centers of influence.

Following this model of “intelligent internationalization”, the members of POSEIDO are not together because they have to follow their respective academic national policies or because they want to gain influence on their international partners. All the partner entities remain completely autonomous. They volunteer to be together simply because they wish to be part of a global experience where they will be treated as equal. Such platform requires to back up the process with considerable intercultural competences and to gather a Community of strong national personalities monitoring the interface: the role of the leaders of internationalization appeared therefore crucial since the beginning of the project. However, despite the efforts of these leaders, it appeared also important to develop a toolbox of academic instruments to monitor and deepen the intercultural interface, and to support the development of global long-term inter-academic projects.

4. The toolbox of the ISAIAS Prophecy

4.1. The ISAIAS forum, a center of international cooperation

The founding concept of the POSEIDO network was to create and develop an international Consortium for Higher Education and Research in the interconnected fields of periodontology, oral surgery, esthetic and implant dentistry, and related sciences. As a global inter-academic experience, POSEIDO is constantly facing the challenges of intercultural cooperation [4]. The process of “intelligent internationalization” through the gathering of experienced national leaders of internationalization allowed to overcome most difficulties of collaboration among the many entities from 40 countries actually participating to this network. This resulted in an intense and smooth collaborative activity, particularly in the field of biomaterial research [17,19]. The experience and personality of the leaders joining the POSEIDO network played a significant role in the first successes of this cooperative platform. However, reinventing a model of intercultural interface between so many members is a difficult task that requires some adequate instruments to fulfill long-term objectives.

One major objective of the POSEIDO network is to develop efficient and stable long-term collaborations between all partners of the Consortium. The platform could allow to build commonly funded research and post-graduate education projects at a world scale, particularly in the field of implant dentistry and biomaterial research. The development of such wide initiatives requires necessarily diplomacy and intercultural competences from all stakeholders [4,20]. With this long-term vision in mind, the POSEIDO Community and Foundation decided to fund a global program of evaluation of internationalization patterns and of development of the intercultural sensitivity and skills of its actual and future community members worldwide: the ISAIAS program (Intercultural Sensitivity Academic Index & Advanced Standards). This project was designed as an evaluation, education and conflict prevention global initiative, to promote smoother and more efficient global cooperation.

The ISAIAS project functions as an international informal working group about the internationalization of higher education and research in general, and its impact in dentistry in particular. This group is developing new concepts, methods and instruments of evaluation of the internationalization of an academic environment (University, campus, laboratory) and its impact on the perceptions and behaviors of all academic stakeholders (particularly students, teachers and researchers). It serves also as a think tank to develop new strategies and standards to maintain the intercultural equilibrium of the Consortium and to promote the development of intercultural competences among members [20]. Practically, it is a general toolbox to highlight the SWOT (Strength, Weakness, Opportunities and Threats) of the members of the network, and to make partners aware of the kind of problems that may appear in the various projects.

Behind the numbers and indexes that can be calculated within this project, the ISAIAS office is first of all a group of colleagues in charge of monitoring our members and Communities, to prevent conflicts and find satisfactory solutions for everyone, based on the respective cultural background of each partner. The first function of this group is to observe and advice, serving as a kind of Intelligence Service for the Consortium. As a second and future objective, the ISAIAS forum was designed to become step by step a decentralized Center of international cooperation.

The ISAIAS logo (**Figure**) is representing 6 smiling faces in different colors, connected on and through the lines of a cloud. There is here a small reference to the Olympic flag; like for the Olympic flag, the colors should not be specifically associated with a population or geographic area. The 6 round faces refer symbolically to the main world geographic areas, even if the number of POSEIDO editorial offices and SIRECs (Scientific International Research and Education Centers) and their exact perimeters are voluntarily kept flexible and adapted to the growth of the Consortium worldwide. The cloud and the smile are referring to an expected Harmony through this partnership. They also illustrate the notion of network, and the decentralized nature of this International Consortium, with all partners equal. Finally, the thin cloud line connection between the faces recalls also the fragility of this intercultural channel between partners, and the need to make efforts to maintain it. The line is fragile, but historically, sincere links between partners are the only interfaces working efficiently. The whole logo represents somehow this vision of “intelligent internationalization” of higher education and research through networking of leaderships, as an equilibrated and harmonious Community. The symbolism of this model of cooperation appears more adapted to our current extremely multipolar world than a superficial process of internationalization.



Figure. The ISAIAS logo is representing 6 smiling faces in different colors, referring symbolically to the main world geographic areas. The cloud slim connection between the faces and their smiles are referring to an expected Harmony through a decentralized networking partnership, with all partners equal. The thin cloud line connection recalls also the fragility of this intercultural channel between partners, and the needed efforts to protect it. The whole logo illustrates quite well the concept of “intelligent internationalization” of higher education and research through networking of leaderships, as an equilibrated and harmonious multipolar Community.

4.2. About the choice of ISAIAS as acronym

The acronym ISAIAS is easy to remember as it recalls the name of an important Prophet of the Bible (using the orthography used in Latin, Spanish and many other languages), who is actually shared between the 3 major monotheist religions. There were obviously no religious considerations in the choice of this acronym, as it would go completely against the good sense rules of neutrality in the development of intercultural cooperation, even if this is perceived as an historical and not conflicting character for most stakeholders.

The idea was first of all to have a general acronym easy to remember for the whole project funded by the POSEIDO Foundation, but the members supporting this project also considered that the name of this historical character was suiting very well the function of this project. Indeed, the Prophet Isaias was important in the religious traditions mostly for the accuracy of his predictions and for his announcement of the coming of a World of Peace among the Nations. In this sense, this acronym reflects the idea that the ISAIAS scores, developed as various indices and standards of internationalization through the development intercultural competences, are a way to predict the level and evolution of a process of internationalization of higher education. It also recalls that efforts in terms of development of intercultural sensitivity within the Academia remain the key for smoother and more efficient interactions and collaborations between researchers, teachers, administrative staff and finally populations, even if they remain culturally very different and with the wish to remain so. Somehow, the instruments that will be developed with the ISAIAS project are expected to promote understanding and cooperation in the respect of cultural diversity within a research and education network, what is the most adequate approach in the current globalized but more and more multipolar World. Culture is the software of the mind [4]; the ISAIAS project

has been funded to develop a software for efficient inter-academic education and research cooperation, particularly within a specialized community like POSEIDO.

5. Perspectives

The development of the POSEIDO global scientific Community through cooperation and partnership is a considerable endeavor that requires to reinvent and to reformulate some concepts of the current paradigm of internationalization of higher education and research. The notion of “intelligent internationalization” through the channel of leaders of internationalization is one of the POSEIDO founding concepts and is well illustrated by the symbolism of the logo of the ISAIAS project and forum. The ISAIAS initiative is serving as an instrument for understanding and developing the POSEIDO intercultural experience, to improve the interfaces in internationalization, and also to offer predictive advices for the protection of the thin and fluctuating intercultural interface. This ISAIAS “Prophecy” recalls us that beyond the institutions and the culture, there are People, and this is this challenging path that we have decided to follow using this flexible and versatile interface.

Disclosure of interests

The authors have no conflict of interest to report.

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References

- [1] Deardorff DK, de Wit H, Heyl JD, Adams T. *The SAGE Handbook of International Higher Education*. SAGE Publications, Inc. ISBN: 9781412999212. 2012.
- [2] Altbach PG, Knight J. *The Internationalization of Higher Education: Motivations and Realities*. *Journal of Studies in International Education*. 2007;11(3-4):290-305.
- [3] Knight J. *Internationalization Remodeled: Definition, Approaches, and Rationales*. *Journal of Studies in International Education*. 2004;8(1):5-31.
- [4] Hofstede G, Hofstede GJ, Minkov M. *Cultures and organizations. Software of the mind. Intercultural Cooperation and Its Importance for Survival*. London. McGraw-Hill. ISBN 978-0-07-1664418-9. 2010.
- [5] Byun K, Kim M. *Shifting Patterns of the Government's Policies for the Internationalization of Korean Higher Education*. *Journal of Studies in International Education*. 2011;15(5):467-86.
- [6] Kim T. *Internationalisation of Higher Education in South Korea: Reality, Rhetoric, and Disparity in Academic Culture and Identities*. *Australian Journal of Education*. 2005;49(1):89-103.
- [7] Dohan Ehrenfest DM, Rasmuson L, Albrektsson T. *Classification of platelet concentrates: from pure platelet-rich plasma (P-PRP) to leucocyte- and platelet-rich fibrin (L-PRF)*. *Trends Biotechnol*. 2009;27(3):158-67.
- [8] Kirby T. *Profile: NIH's Fogarty International Center*. *Lancet*. 2014;384(9938):121.
- [9] Kawazoe T. *Introduction of Japanese Society of Oral Implantology*. *Int J Oral Sci*. 2009;1(1):13-5.
- [10] Wolpert AJ. *For the sake of inquiry and knowledge--the inevitability of open access*. *N Engl J Med*. 2013;368(9):785-7.
- [11] Butler D. *US seeks to make science free for all*. *Nature*. 2010;464(7290):822-3.
- [12] Van Noorden R. *Britain aims for broad open access*. *Nature*. 2012;486(7403):302-3.
- [13] Van Noorden R. *Europe joins UK open-access bid*. *Nature*. 2012;487(7407):285.

- [14] Frank M. *Open but not free--publishing in the 21st century*. **N Engl J Med**. 2013;368(9):787-9.
- [15] Dohan Ehrenfest DM, Sammartino G, Bernard JP. *The Periodontology, Oral Surgery, Esthetic and Implant Dentistry Organization (POSEIDO) and Open Journal: an international academic and scientific community for a new approach of open-access publishing*. **POSEIDO**. 2013;1(1):1-5.
- [16] Dohan Ehrenfest DM, Kang BS, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to implant surfaces and design from the POSEIDO: a standard for surface characterization*. **POSEIDO**. 2013;1(1):7-15.
- [17] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 1: description of the Implant Surface Identification Standard (ISIS) codification system*. **POSEIDO**. 2014;2(1):7-22.
- [18] Pinto NR, Pereda A, Jiménez P, Del Corso M, Kang BS, Wang HL, Quirynen M, Dohan Ehrenfest DM. *The impact of the centrifuge characteristics and centrifugation protocols on the cells, growth factors and fibrin architecture of a Leukocyte- and Platelet-Rich Fibrin (L-PRF) clot and membrane. Part 2: macroscopic, photonic microscopy and Scanning Electron Microscopy analysis of 4 kinds of L-PRF clots and membranes*. **POSEIDO**. 2014;2(2):141-54.
- [19] Sammartino G, Del Corso M, Wisniewska LM, Bielecki T, Andia I, Pinto NR, Zhang CQ, Zou DR, Dohan Ehrenfest DM. *The PACT (Platelet & Advanced Cell Therapies) Forum: fostering translational research, transdisciplinarity and international collaboration in tissue engineering and regenerative medicine*. **POSEIDO**. 2014;2(2):105-15.
- [20] Deardorff DK. *The SAGE Handbook of Intercultural Competence*. **SAGE Publications, Inc. ISBN: 9781412960458**. 2009.

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Research article

The impact of leaders of internationalization in highly specialized academic fields: case study in implant dentistry and biomaterial education and research. Part 1: general comparison of campus strategies in European and Korean universities using the ISAIAS FAST score

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Abstract

Background and objectives. Internationalization is a major evolution in implant dentistry and biomaterial higher education and research. The aim of the present 3-part study was to apply the ISAIAS method (Intercultural Sensitivity Academic Index & Advanced Standards) in this highly specialized dental field, and to evaluate the impact of leaders of internationalization. In this first part, the ISAIAS method was applied to the general campus of 3 universities, to validate the method itself and to assess the internationalization efforts of the participant universities through the development of intercultural competences, particularly in the Asian and European contexts.

Materials and Methods. In each campus, a group of 20 Professors and 100 undergraduate students from 3 different Universities (respectively University of Granada, Spain; Paris-Sorbonne University, France; and Chonnam National University, South Korea) were observed through the ISAIAS FAST (Fast Assessment Screening Test) questionnaire and through intensive field study (mixed methodology, i.e. combination of qualitative and quantitative methods). A final ISAIAS FAST score (mean value) was calculated for each group, including the mean scores in the 4 dimensions of intercultural competences, and scores were integrated with field observation for interpretation.

Results. The scores observed in the 3 universities presented different patterns, but relatively mild scores (always between 2 and 3), what appeared typical from Universities with moderate internationalization policies, i.e. a wish for internationalization which may not be fully fulfilled because of the organizational culture of the institution.

Discussion and conclusions. The scores appeared coherent with the field observations in all aspects. The ISAIAS mixed methodology appeared as an easy and useful method to evaluate the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the internationalization efforts of these universities through the evaluation of the development of intercultural competences of the students and researchers/professors, but it requires to combine the FAST scores with an in-depth field study.

Keywords. Attitudes, culture, education, international cooperation, international educational exchange, leadership, universities.

1. Introduction

The process of internationalization of higher education and research is one of the strongest evolution of the Academic world worldwide of last decades [1], as the consequence of the general process of globalization of the economy of sciences and knowledge [2]. This process is however often complicated due to the very wide cultural differences between the various stakeholders of the Academic environment, teachers, researchers and students [3,4]. These national cultural differences of perception and action, and the different organizational cultures of each country and institution are often very strong barriers for a smooth and efficient international cooperation [5].

The POSEIDO (Periodontology, Oral Surgery, Esthetic & Implant Dentistry Organization) is an international scientific network of Academic Departments and Scientific societies and was developed as a consortium of Academic entities sharing the responsibilities of the global functioning of the network [6]. As a global interacademic experience, POSEIDO could have faced the stress and problems related to intercultural cooperation. However, the intercultural competences and experience of its members allowed to overcome all difficulties up to now among the 40 countries actually participating to this network, resulting in an intense collaborative activity, particularly in the field of biomaterial research [7-13]. It was hypothesized that the specific character of the local leaders of internationalization of the groups joining POSEIDO was at the origin of this smooth cooperation.

The POSEIDO community therefore funded the ISAIAS program (Intercultural Sensitivity Academic Index & Advanced Standards) in order to evaluate the degree of internationalization and intercultural sensitivity of the community members worldwide, and therefore develop new strategies and standards for the development of intercultural competences among members, partners and friends, in order to promote smoother and more efficient global cooperation in the field of implant dentistry and biomaterial research and education [14].

In the last years, many research projects have been developed to assess the intercultural competences in various professional environments [1,15]. In 2004, Deardorff et al. proposed the list of components of the intercultural competences [16], based on the studies of 29 American Universities involved actively in the process of internationalization of higher education. This study still serves today as the reference for the definition of what are the components of intercultural competences [1]. It was developed as a way to evaluate the impact of the internationalization efforts of the universities on the students.

Based on the concepts and key elements pointed out by Deardorff [17], a questionnaire of assessment of the internationalization efforts of a university campus through the development of intercultural competences had been developed, statistically tested and validated between the University of Granada and the Oslo and Akershus University College [18]. This questionnaire was then selected as a first instrument for the ISAIAS project for the screening assessment/evaluation of the internationalization process of a University through the development of intercultural competences among the Academic stakeholders. The questionnaire can be spelled in various parallel forms for students or for Academic professionals (researchers, teachers, professors, administrative staff). Using this questionnaire, the first method of evaluation developed by the ISAIAS global research group was the Fast Assessment Screening Test (FAST) Score.

In this series of articles, the ISAIAS FAST scores were calculated in 4 different Academic environments (France, Italy, Spain, South Korea) involved in **implant dentistry and biomaterial education and research** within the member Academic entities of the POSEIDO network, in order to estimate and understand the internationalization patterns of these universities, dental schools and implant and biomaterial research and education significant groups. This first study in 3 parts has been organized to compare an Asian model (the very specific Korean model in this case) with 3 different versions of the European environment, as the Asian/European interface could be a significant source of intercultural misunderstandings and anxiety in collaborations, and seemed therefore a very good example to develop and refine this method.

In this first article, the ISAIAS FAST method was put to the test at the scale of a whole campus, to evaluate its practical relevance. The questionnaire has been used for the general assessment of 3 different campus (1 Korean and 2 Europeans) with 3 very different cultural and well-identified backgrounds, history and strategy, in order to evaluate if the ISAIAS FAST score corresponds to the typical profile, easily observable and well documented of these 3 universities.

2. Materials and Methods

2.1. General methodology

The ISAIAS FAST questionnaire was proposed to 100 undergraduate and master students and 20 professors or researchers from various disciplines on the general campus of each participant university. The test sample is significant, but cannot be considered as fully representative; the sample of this study case was intentional. Data were collected between 2012 and 2014 on the campus of the University of Granada (Granada, Spain), the Paris Sorbonne (Paris 4) University (Paris, France) and the Chonnam National University (Gwangju, South Korea). In this case study, it was decided to analyze two different old European universities (Granada and Paris), to be able to analyze and compare their different approaches to internationalization of higher education and research in the European context with a traditional Asian campus (Chonnam).

The process of data gathering followed the same procedure in Asian and European campuses (ethnographical case study). Mixed methodology was use, i.e. a combination of qualitative and quantitative methods and methodological and data triangulation. A mixed methods research design implies collecting, analyzing and mixing both quantitative and qualitative data obtained through difference sources and different methodologies. The combination of quantitative and qualitative approaches provides a better understanding of

research problems, is assuring the validity of research and captures different dimensions of the same phenomena. It is mandatory to understand the impact of national and organizational culture on internationalization processes and its impact on development of intercultural competences.

The qualitative methodology was based on field research: non controlled observation and direct, participative observation (participation in campus life, participation in cultural events, conferences), informal interview with academic staff (national and foreign), administrative staff (national and foreign), national students, international students and representative of students union, photographs, diary of the stay, universities websites and on-line forums about study in these universities. Review of the policy, research articles and reports on internationalization of higher education in these universities were also taken into account.

The quantitative methodology was using the ISAIAS FAST questionnaire of assessment of the internationalization efforts of a university campus through the development of intercultural competences. This questionnaire was previously developed, statistically tested and validated between the University of Granada and the Oslo and Akershus University College [18], based on the theory of development of intercultural competences, the concepts and the key parameters proposed by Deardorff. The previously validated questionnaire was slightly adapted to this specific study, and spelled in 2 slightly different forms adapted to students or to Academic professionals (researchers, teachers, professors), but both versions are strictly parallel and comparable. The analysis of the questionnaires allowed to calculate the Fast Assessment Screening Test (FAST) Score of an individual or a group of people. Moreover, many of the responders of the questionnaires had an informal interview with the researcher, what permitted to validate the answers given in the questionnaire.

2.2. Description of the questionnaires

The questionnaires (opinion tool) were built in 2 slightly different forms. One was formulated for teachers and researchers to determine in which measure the participation in international research/educational projects has impacted the development of their intercultural competences. The second one was adapted for students to determine in which measure the internationalization efforts and program offered by their University - during the curriculum (obligatory courses and activities) and through extracurricular activities (all nonobligatory activities related to the campus life, such as conferences, sports, student union activities or informal or personal meetings with foreign colleagues, etc.) - has impacted the development of their intercultural competences.

Each questionnaire was composed of 2 separated parts. The first part was gathering the main data of identification of the person filling this anonymous questionnaire, where the respondent was asked about information such as: sex, age, professional situation (undergraduate student, postgraduate student, technician/administrative staff, Professor/senior lecturer/researcher, other) and a series of general information related to his/her activity.

For teachers and researchers, the extended questions can be summarize as followed:

- How long have you been working with international research/education projects, and what kind of projects,
- Do you participate in international events related to international projects

(workshops, conferences), how many and what kind,

- Have international research/education projects required long stay abroad, how long and where; had you been abroad through university exchanges before starting international projects, how long and where; and would you like to go abroad for academic work, why and where,
- How often do you meet with your foreign partners concerning international research or education projects (presence meeting, online meeting, emails), and from which country are your main partners,
- From where were the foreigners you met on the campus and did the presence of foreign colleagues in the class/laboratory influence the value of the education,
- How do you feel with foreign partners, what is your biggest difficulty in the relationship with foreign partners, and how do you define intercultural competence.

For students, the extended questions can be summarize as:

- How long have you been studying at the University,
- Have you participated in any international events on the campus, and the kind of events (curricular or extracurricular),
- Have you ever been abroad through university exchange, where and how,
- Would you like to go abroad for study or work, why and where,
- From where were the foreigners you met on the campus and did the presence of foreign colleagues in the class influence the value of the education,
- Have the curricular and extracurricular activities offered on the campus given you the ability/skills to do your profession in culturally diverse environment,
- How do you feel with foreign colleagues, and what is your biggest difficulty in the relationship with foreign colleagues.

The questionnaire finally offered some free space to add reflections and comments of the person, in order to complete the experience.

The second part was the statistical part of the questionnaire with a series of 30 very accurate statements the reader had to agree or disagree, in order to evaluate accurately the profile of the person and to calculate his/her ISAIAS FAST score. For each question, the person filling the questionnaire had to choose the option which best fitted his opinion between 4 options, each option being associated to a score between 1 and 4: Strongly disagree (1), Disagree (2), Agree (3), Strongly agree (4). This is a classical multiple-choice format using an unipolar Likert scale from 1 to 4. The final analysis and synthesis of these scores allowed to calculate the score of each person and finally, after integration of all data, the ISAIAS FAST score of the whole group under evaluation. The items based on the development theory of Deardorff and proposed for the ISAIAS FAST score were:

1. My participation in international research/education project (or: the program proposed by the university (curricular and extracurricular activities)) has given me the opportunity to understand better other's (foreigners) world views.

2. It has helped me to develop cultural self-awareness (to understand the way in which my culture has influenced my identity and my worldview).
3. It has improved my capacity for cultural self-assessment.
4. My participation in international research/education project (or: the program proposed by the university (curricular and extracurricular activities)) has improved my capacity for adaptation to culturally different and new environments.
5. It has increased my interest in people from other cultures.
6. It has increased my interest in intercultural learning (for example learning how to negotiate with people from different cultures).
7. It has improved my capacity to listen people from other cultures.
8. It has improved my capacity to observe people from other cultures.
9. It has improved my capacity to collect information (to listen and to observe) in an intercultural environment.
10. It has improved my ability to adapt to different forms of intercultural communication and different learning styles.
11. My participation in international research/education project (or: the program proposed by the university (curricular and extracurricular activities)) has helped me to become more flexible with people from other culture.
12. It has helped me to improve my abilities to analyze, interpret and relate information brought in different cultural contexts (process information).
13. It has helped me to improve my abilities to analyze information related to different cultures.
14. It has helped me to improve my abilities to interpret information related to different cultures.
15. It has helped me to improve my abilities to relate information related to different cultures.
16. My participation in international research/education project (or: the program proposed by the university (curricular and extracurricular activities)) has helped me to take part of an intercultural group where I had opportunity to respect ways of expressions of each member, becoming more tolerant.
17. It has helped me to understand better my own culture.
18. It has improved my understanding of culture of others'
19. It has increased my respect for other cultures.
20. My participation in international research/education project (or: the program proposed by the university (curricular and extracurricular activities)) has increased my cultural empathy - The capacity to identify with the feelings, thoughts and behavior of individuals from different cultural backgrounds.
21. It has helped me to understand the impact of culture on the social and historical contexts.
22. It has helped me to become more flexible with analysis of matters looking at them from different cultural perspectives (emic- from my cultural perspective and etic- from others cultural perspectives).
23. It has improved my sociolinguistic competences (awareness of relation between language and meaning in social context).

24. It has helped me to understand better the value of cultural diversity (mindfulness toward cultural diversity).
25. It has influenced prejudices and stereotypes.
26. It allowed discovery and increased my curiosity toward cultural diversity.
27. It has changed my point of view about the cultural community where I belong.
28. It has helped me to learn through interaction with foreigners.
29. My participation in international research/education project (or: the program proposed by the university (curricular and extracurricular activities)) has helped me to know more and understand more culture and traditions of foreign colleagues.
30. Intercultural competences are needed in my work.

Finally, the questionnaires were translated in the language of the population to analyze (in Korean for the Chonnam campus, French for the Sorbonne campus and Spanish for the Granada campus), but a few questionnaires were also used in English when students or teachers/researchers were foreigners not perfectly comfortable with the local language.

2.3. Treatment of data and calculation of the ISAIAS FAST score

The theoretical framework for the analysis of the data collected on the campus was built taking into consideration the Hofstede's theory of intercultural dimensions [19], the Handy's theory of organizational culture [1], the Confucius's philosophy concepts (considering Asian campus particularly)[5,20], the theory of the development of intercultural competences [16,17], and the theories of internationalization of Knight and de Wit [1,3]. This theoretical background was needed, in order to synthesize for each campus a general situation of the internationalization efforts and of the impact of national and organizational culture, evaluated through the development of intercultural competences. Afterwards, the SWOT analysis was prepared in order to synthesize the Strengths, Weaknesses, Opportunities and Threats of the internationalization efforts on each campus. The results obtained from the questionnaire and the associated analyses finally served as a base of comparison between the different universities and their respective methods of implementation of the paradigm of internationalization of higher education and research.

The questions of the questionnaire were deeply interconnected and built following a network of reasoning that allowed to detect anomalies in the answers. They were regrouped in 4 groups, termed the 4 dimensions of the questionnaire (following and adapting the general components of intercultural competences proposed by Deardorff [16]):

- 1/ The first dimension was termed "Attitudes" and was composed of 7 items: 5, 6, 19, 24, 25, 26 and 30.
- 2/ The second dimension was termed "Knowledge and Comprehension" and was composed of 7 items: 1, 2, 17, 18, 21, 23 and 29.
- 3/ The third dimension was termed "Skills" and was composed of 8 items: 3, 7, 8, 9, 12, 13, 14 and 15.
- 4/ The fourth dimension was termed "Desire internal outcomes" and was composed of 8 items: 4, 10, 11, 16, 20, 22, 27, and 28.

The score of each dimension gave an important information on the development of each specific component of intercultural competences, and therefore in combination with first part of the questionnaire allowed to draw a specific profile of each individual (or group of people), independently from its global FAST score.

When considering each questionnaire separately, in order to calculate the scores of each dimension, the scores of all answers composing a dimension were added, and the total was then divided by the number of items of the dimension. To calculate the ISAIAS FAST score of each individual, the scores of all questions were added and the total was divided by 30 (total number of questions). The score of each dimension and the total FAST score were therefore always between 1 and 4.

In this study, all data were integrated through Statistical Package for the Social Sciences (SPSS, IBM, Armonk, NY, USA) program, in order to get a mean value of the scores of each dimension and of the final ISAIAS FAST score, of each group of people evaluated on each campus.

3. Results

Following the previously described mixed methodology, data have been collected on the campus. The answers for the questionnaires have been integrated in order to calculate for each participant university, the mean value of the global ISAIAS FAST score and of the scores of each dimension of intercultural competences. Results of the Professors and Researchers are presented in the **Table 1**, and results of the Students are presented in the **Table 2**.

The scores observed in the 3 universities presented different patterns, but relatively mild scores (always between 2 and 3), what appeared typical for Universities with moderate internationalization policies, i.e. a wish for internationalization which may not be fully fulfilled because of the organizational culture of the institution.

The scores observed in the University of Granada are the highest for students among the 3 universities, and the second highest for the Professors, highlighting the very strong policy and openness for internationalization of this University.

The scores observed in the Paris-Sorbonne University are the lowest in both groups between these 3 universities, highlighting the very traditional approach to globalization challenges of higher education and research.

The scores observed in the Chonnam National University are the highest among the Professors in these 3 universities, highlighting the general policy of the University and the frequent need for the Professors to get some diploma or research leave abroad during their career (mostly in the US). However, the score of the students on the general campus are much lower, illustrating the difficulties to internationalize this campus, particularly because of the cultural and language barrier.

The scores appeared coherent with the field observations in all aspects. Scores and field studies have been integrated in details in the discussion section.

Scores of Professors/Researchers on the general campus					
University Campus	Dimension (D) scores				Total FAST score
	1D. Attitudes	2D. Knowledge and Comprehension	3D. Skills	4D. Desire internal outcomes	
University of Granada (Spain)	2.55	2.75	2.74	2.68	2.682
Paris-Sorbonne University (France)	2.50	2.48	2.50	2.53	2.503
Chonnam National University (South Korea)	2.75	2.6	2.7	2.7	2.688

Table 1. Intercultural dimensions and total ISAIAS FAST scores of a group of Professors and Researchers from 3 different general campus.

Scores of Students on the general campus					
University Campus	Dimension (D) scores				Total FAST score
	1D. Attitudes	2D. Knowledge and Comprehension	3D. Skills	4D. Desire internal outcomes	
University of Granada (Spain)	2.7	2.55	2.58	2.6	2.606
Paris-Sorbonne University (France)	2.28	2.30	2.35	2.25	2.295
Chonnam National University (South Korea)	2.42	2.32	2.45	2.21	2.348

Table 2. Intercultural dimensions and total ISAIAS FAST scores of a group of Students from 3 different general campus.

4. Discussion

4.1. General Hypotheses and objectives of the ISAIAS project

The basic hypotheses of the ISAIAS project are that the national and organizational cultures have an impact on the development of intercultural competences, that the internationalization of education and research implies the development of intercultural competences, and that we can point out differences in internationalization of higher education and research in the various universities (particularly in European and Asian context in this case study). From these hypotheses, it is expected to develop instruments to evaluate the level of internationalization through the development of intercultural competences and define new standards for a smooth and efficient international collaboration, particularly within a specialized consortium such as POSEIDO.

The general objectives of the ISAIAS project are multiple, and the fast screening assessment proposed by the FAST score is only a preliminary approach of evaluation. The FAST score allows first to observe which components of intercultural competences (based on the Deardorff's theory) participants of the internationalization of education and research process are developing in the various universities. In combination with qualitative evaluation in the mixed methodology, the second objective of this work is to observe how the national and organizational cultures of the campus (including the teaching-learning methodology) and indirectly the profile of each individual (particularly the gender) influence the development of intercultural competences. The impact of recent research on internationalization of higher education on the current strategies of development of intercultural competences in the various tested universities shall also be evaluated and integrated in the global analysis. Finally, the SWOT analysis is required to find out the Strengths, Weaknesses, Opportunities and Threats of the internationalization efforts, and the differences and similarities in internationalization of higher education and research, in the various universities. The answers to all these questions can be synthesized through the general analysis of the collected data during the screening assessment of the campus following our methodology.

As a first result of this case study in European and Asian contexts, the FAST score of each entity was corresponding quite well with the qualitative evaluation of each campus, and therefore the instrument appeared suitable for a screening assessment of various academic environments through the POSEIDO network. All these aspects were discussed in details in the following chapters.

4.2. Internationalization endeavors in Europe and Asia

In the age of globalization, the internationalization of higher education and research is listed as one of the principal objectives of all academic institutions in the World [1,3]. The European universities started to be involved strongly in since 1998 with the Bologna and Lisbon processes and Copenhagen frameworks, working in common Hellenic-Roman civilization background. At the same time, Asian campuses started to introduce the western paradigm of internationalization of higher education, and they contextualized it into their own environment. The Asian countries have been internationalizing their universities, using Asian's meetings of collaboration, and within the background of Confucian civilization.

Since 2008, in order to strengthen collaboration between Asia and Europe, numbers of Conferences in the framework of the Asia - Europe Meetings (ASEM officially established in 1996) were held yearly. Nowadays the ASEM meetings include 48 members: South East

Asian countries, European Commission, ASEAN Secretariat, Australia, New Zealand and Russia. The Meetings focus on further interactions in the Educational, Professional, Cultural and Social Pillar, through common work on “Quality Assurance and Recognition”, “Engaging Business and Industry in Education”, “Balanced Mobility” and “Lifelong Learning including Technical and Vocational Education and Training”.

Use of English language on the big scale (especially in Asian environment) became one of the most visible changes in higher education landscape. The significant, quick increase of number of international students in European and in Asian contest has been taking place. Formation of new global leaders is the principal objective of the Asian university. These initiatives are strengthen by the “Atlantic Trust” (2009) - collaboration between the American, British universities and Asian universities for development of a global civil society, which will bind universities and countries together through common values and principals, and through English language.

However, the linguistic skills and many international students on the campus are not enough to build fruitful collaboration. Intercultural competences (ICC) have widely been recognized as an essential for peaceful coexistence in a diverse world. Numerous policy papers and recommendations of international organizations, such as The White Paper on Intercultural Dialogue (Council of Europe, 2008) have also expressed this need very clearly. In order to educate intercultural competent professionals, universities choose different approaches to internationalization, different rationales and strategies [1,3]. Various elements of internationalization of higher education were developed, for example: internationalization of curriculum, academic mobility of students and staff, international research/educational projects, etc. However, it is difficult to mention any innovation in this matter. Some countries like the United States, Canada, Australia, Norway (between others) focus on more active approaches to internationalization called “internationalization at home” [1,20] in order to give intercultural development also to 90% of the student population which does not have possibility to study abroad.

Huge resources are involved in internationalization efforts. How to evaluate its results? The statistics related with mobility and international conventions are not enough. Looking at the ICC development among campus population, as a result of internationalization effort is perceived as an adequate approach [1].

4.3. Understanding the dimensions of intercultural competences

In this study, the definition of intercultural competences proposed by Deardorff was used, as an ability to communicate effectively and appropriately in intercultural situations based on one’s intercultural attitudes, knowledge, skills and reflection abilities. The 4 dimensions of intercultural competences can be defined as followed:

- **Attitudes.** Deardorff considers the positive attitude toward intercultural situations as a basis for intercultural competence. Valuing cultural diversity, tolerating ambiguities, general openness are key elements of this dimension.
- **Knowledge and comprehension.** Intercultural knowledge (about our own culture and culture of others) permits us to acquire specific skills to be able to enter into conversation and interaction. Understanding of others worldview, understanding of the impact the culture has on behavior and communication are key elements of this dimension.

- **Skills.** The ability to listen, to observe and to interpret, to relate cultural elements, to evaluate are the key points of this dimension.
- **Desire Internal Outcomes.** It is understood as a reflection on intercultural interactions. The results of the development of attitudes, knowledge and skills related to different cultures impact strongly the ability to change perspective and to take a relative position toward of own cultural references. It leads to flexibility and adaptation to new intercultural situations.

4.4. About the University of Granada: score and observations

The University of Granada (Universidad de Granada, UGR) was founded in 1531 by Charles I, King of Spain. It is one of the biggest (third position considering number of students) national autonomous Spanish universities (80,000 students). As the only university of the city, the UGR brings huge trans-disciplinarity organized in Faculties and Schools. According to the last Shanghai Ranking, the UGR is in the range between 300 and 400, and its position among Spanish Universities is the 7th. The UGR is the most popular European destination of Erasmus students (the UGR was awarded Erasmus Gold Star in 2007 for his long time active involvement in this program), Maghreb and South American citizens.

The strategy of internationalization is one of the most important objectives of the UGR and it has been strongly developing since many years. Mission and vision of the university as well as many of the policy papers of the different entities promote international dimension at each level of the institution. Social media (Facebook, Twitter, etc.) are strongly used in international marketing. The internationalization efforts are managed by the Vice-Rector's Office for International Relations and Development Co-operation at all levels of the campus through annual strategic plans, which try to support economically all kinds of initiatives of internationalization which had not been covered by European and national funding. These efforts put the UGR in the Europe's top-ranking international universities. Every year, the UGR has in mobility over 4000 students, what makes it the first destination of Erasmus in Europe. Other programs are also very active (LLP/Erasmus, UGR Exchange Program and Erasmus Mundus, Tempus, Alfa, PCI, PEACE, etc) among students, academic and administrative staff. Most of the subjects at the UGR are taught in Spanish, and the UGR is logically very active in priority in Spanish speaking countries.

To improve its prestige and international visibility, the UGR is very present and active in numerous international networks and associations. In 2010, the UGR took over the presidency of two important networks: the European Coimbra Group of Universities and the South-American Association for Postgraduate Studies (AUIP), which is a UNESCO-recognized non-governmental international organization, whose aim is to promote postgraduate and doctoral studies in Latin-America. In fact, the UGR is one of the European institutions that receive the most external financing for the mobility and exchange of students, teaching staff and administration and services staff with non-European countries.

All these characteristics have been observed during the collection of data and were highlighted by the components of the ISAIAS FAST score. Students at UGR have developed the most positive attitudes to internationalization and the highest scores in all dimensions of intercultural competences among the 3 participant universities, as a logical result of the general positive ambiance to internationalization promoted by the policy of the University and the large number of international students on the campus and mobilities. The scores of the Professors were a little bit higher, despite the frequent difficulties to interact in English,

as they have been encouraged to the participation in international research projects. Moreover, research and educational collaborations have been very active with South-American countries, which often share the same language. Despite these positive results, the scores also revealed that the process remained still moderate, as the scores were far under the threshold of 3. This marked also the practical limits in the internationalization of the campus, related to the organizational culture of the university and national dimensions, despite the real and perceptible enthusiasm [2].

4.5. About the University Paris Sorbonne: score and observations

The University of Paris (historically known as Sorbonne) has a very long history starting in the 12th century, and is now organized in 13 public universities with a specific number (between I to XIII) and name. Each university is characterized by a specific range of schools and specialties. There is often a thematic line in each university. For example, Paris 4 (Paris-Sorbonne) is specialized in Human Sciences, Literature, Language and Arts. Paris 5 (Descartes) is more scientific and medical, including particularly a School of Medicine, a School of Dentistry and a School of Pharmaceutical Sciences. In order to be more competitive in the current education and research globalized world, these universities have been regrouping in the last years. The process was triggered to optimize management and the use of resources, to improve trans-disciplinarity and to increase world visibility. Each new grouping of universities is supposed to form a kind of multidisciplinary collegiate university.

The strategy of internationalization is different between the various Paris universities, and is still under permanent evolution at this time. However, it remains in general quite traditional. Traditionally, education in the French university is only done in French and is therefore attracting in priority students from the French speaking countries. Even with this practical limitation of language, Paris Sorbonne University is very attractive for foreigners, due to its historical reputation of excellence in many fields and the attraction of Paris as a major western city. A large part of the internationalization efforts is placed in program of exchanges such as Erasmus, and almost all professors and teachers are French nationals, the national regulations of concours and recruitment of the faculty members being still very restricted. It is also considered that all foreign students have to adapt to the local mentality and patterns, and many aspects of the Anglo-Saxon approach of internationalization of higher education and research are not perceived positively or even conceptualized. International collaboration in the research dimension takes place mostly on the basis of personal relations between academics or at the level of faculty, and its level of institutionalization is different in each Parisian University. The multi-disciplinarity is strongly encouraged and the internationalization is expected to play a stimulating effect in this process. At this moment of the development of its international policy, the reciprocity has been chosen as a main approach to internationalization of higher education and research.

All these characteristics were very clearly observed during the collection of data and were clearly highlighted by the components of the ISAIAS FAST score. Both Professors and Students groups showed the lowest scores among the 3 universities, reflecting a lower enthusiasm for the internationalization process. This illustrated some traditional approach towards internationalization and the very French-centered aspects of the Paris-Sorbonne University described previously. The French strongly traditional organizational culture of this university was perceived as its heritage and strengths.

4.6. About the Chonnam National University: score and observations

Chonnam National University (CNU) was founded in 1952 in Honam region in Gwangju city (South Korea). The university emerged from the ashes of the Korean War, regrouping a few preexisting colleges, with the support of local citizens who wished to develop competent, qualified people. Gwangju (means “province of light”) has been always a very agricultural and cultural place. In the social perception, the CNU reminds as a place where democratic movements in 1980 started, as one of the best and the oldest university in the province, and as the 5th in the national ranking. It is also a quite large multidisciplinary university with more than 35,000 students enrolled each year.

Theoretically, the policy of the CNU is following the national educational policy framework where decentralization, innovation and internationalization of education and research have a very important role. The CNU’s mission is officially to promote a community producing creative knowledge and leading future generations, and to become a first-class university with global competence. Its vision and mission clearly refer to a regional as well as international dimension (“CNU to Asia, CNU to the World”). However, it is important to highlight, that these elements of western paradigm of education related with globalization, are submerged in a strong, traditional environment of Korean Academia.

The policy of internationalization of higher education and research in CNU had been following all steps encountered in general in the Korean Academia. It started in the 1950th - 1960th with the government initiatives of sending the Koreans to take advanced education in developed countries (many of the CNU’s professors did their PhD in the US). This idea of studying abroad remains strong in Korea, but in the last years the Korean government promoted the western concepts of internationalization in order to make the Korean Universities attractive for foreign students. The process of Internationalization of CNU is therefore first of all a political answer for the Korean Ministry requirements and to support the economical needs of the university (need to increase the incomes). Following Korean very hierarchic organizational culture, internationalization at CNU takes mostly the form of a global program strategy. The CNU’s Office of International Affairs is responsible for the management of most of the actions related to the internationalization efforts. Majority of them are focused on mobility of students and researchers and maintenance of international partnership with sister universities and partners.

The internationalization of curricula is very limited. Almost of the classes are done in Korean language (even in English Education). However, the university urges faculty members to have their classes in English. Each department has to meet their English class quota. The large majority of foreign students is of Asian origin, and just a very few of them are African (with Korean government scholarships) and Europeans on short period exchanges. The number of foreign professors is about 57, but almost all of them are with Korean origin. Therefore there is a strong wish to follow modern Anglo-Saxon patterns of internationalization, but this strategy remains still on the conceptual level and quite far from the daily cultural reality.

All these characteristics were very clearly observed during the collection of data and were clearly highlighted by the components of the ISAIAS FAST score. The scores observed in the CNU were the highest among the Professors in these 3 universities, highlighting the general policy of the University (the wish to produce “global leaders”, as it was repeated frequently) and the frequent need for the Professors to get some diploma or research leave abroad during their career (mostly in the US). However, the field study also revealed that the relative enthusiasm for internationalization appeared more as a consequence of the policy

and expectations of the University and Ministry (which are expected to be obeyed in this very collectivist and hierarchic Confucian Society) [21] than a real practical endeavor [5]. The score of the students on the general campus were much lower, illustrating the difficulties to internationalize this campus, even if the enthusiasm was perceptible and the University was doing efforts to promote internationalization at home by inviting foreign students and scholars [20]. The number of foreign students remained limited (mostly from Asian neighbor countries) and cultural and language barriers remained very strong.

5. Conclusion

In this first article, the results of the ISAIAS FAST scores were calculated in the general campus of 3 universities (University of Granada, Paris-Sorbonne University and Chonnam National University) and corresponded to the qualitative data gathered on the campuses, and to the general profiles of internationalization of these institutions. The next step is the evaluation of the FAST scores of more specialized groups of stakeholders in the dental and biomaterial research and education groups, in order to evaluate and understand how the local leaderships are impacting the level of internationalization of education and research in this specialized fields.

Disclosure of interests

The authors have no conflict of interest to report.

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Author Contributions

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References

- [1] Deardorff DK, de Wit H, Heyl JD, Adams T. *The SAGE Handbook of International Higher Education*. SAGE Publications, Inc. ISBN: 9781412999212. 2012.
- [2] Altbach PG, Knight J. *The Internationalization of Higher Education: Motivations and Realities*. *Journal of Studies in International Education*. 2007;11(3-4):290-305.
- [3] Knight J. *Internationalization Remodeled: Definition, Approaches, and Rationales*. *Journal of Studies in International Education*. 2004;8(1):5-31.
- [4] Olson CL, Kroeger KR. *Global Competency and Intercultural Sensitivity*. *Journal of Studies in International Education*. 2001;5(2):116-37.
- [5] Kim T. *Internationalisation of Higher Education in South Korea: Reality, Rhetoric, and Disparity in Academic Culture and Identities*. *Australian Journal of Education*. 2005;49(1):89-103.

- [6] Dohan Ehrenfest DM, Sammartino G, Bernard JP. *The Periodontology, Oral Surgery, Esthetic and Implant Dentistry Organization (POSEIDO) and Open Journal: an international academic and scientific community for a new approach of open-access publishing*. **POSEIDO**. 2013;1(1):1-5.
- [7] Dohan Ehrenfest DM, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to platelet concentrates (Platelet-Rich Plasma - PRP, or Platelet-Rich Fibrin - PRF): the international classification of the POSEIDO*. **POSEIDO**. 2013;1(1):17-27.
- [8] Dohan Ehrenfest DM, Kang BS, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to implant surfaces and design from the POSEIDO: a standard for surface characterization*. **POSEIDO**. 2013;1(1):7-15.
- [9] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 1: description of the Implant Surface Identification Standard (ISIS) codification system*. **POSEIDO**. 2014;2(1):7-22.
- [10] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 2: anodized and Titanium Plasma-Sprayed (TPS) surfaces (Group 1, metallurgy modification)*. **POSEIDO**. 2014;2(1):23-35.
- [11] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 3: sand-blasted/acid-etched (SLA type) and related surfaces (Group 2A, main subtractive process)*. **POSEIDO**. 2014;2(1):37-55.
- [12] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 4: Resorbable Blasting Media (RBM), Dual Acid-Etched (DAE), Subtractive Impregnated Micro/Nanotextured (SIMN) and related surfaces (Group 2B, other subtractive process)*. **POSEIDO**. 2014;2(1):57-79.
- [13] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 5: chemically coated surfaces (Group 3, coating) and implant collar surfaces (Group 4, collar)*. **POSEIDO**. 2014;2(1):81-104.
- [14] Koehn PH, Deardorff DK, Bolognese KD. *Enhancing International Research and Development-Project Activity on University Campuses: Insights From U.S. Senior International Officers*. **Journal of Studies in International Education**. 2011;15(4):332-50.
- [15] Knight J. *Monitoring the Quality and Progress of Internationalization*. **Journal of Studies in International Education**. 2001;5(3):228-43.
- [16] Deardorff DK. *Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization*. **Journal of Studies in International Education**. 2006;10(3):241-66.
- [17] Deardorff DK. *The SAGE Handbook of Intercultural Competence*. **SAGE Publications, Inc. ISBN: 9781412960458**. 2009.
- [18] Wisniewska LM. *Research on professional practice: internationalization of university campuses and its formative impact on the development of intercultural competences among professionals*. **Høgskolen i Akershus, Erasmus Mundus**. 2011.
- [19] Hofstede G, Hofstede GJ, Minkov M. *Cultures and organizations. Software of the mind. Intercultural Cooperation and Its Importance for Survival*. **London. McGraw-Hill. ISBN 978-0-07-1664418-9**. 2010.
- [20] Jon JE. *Realizing Internationalization at Home in Korean Higher Education: Promoting Domestic Students' Interaction with International Students and Intercultural Competence*. **Journal of Studies in International Education**. 2013;17(4):455-70.
- [21] Byun K, Kim M. *Shifting Patterns of the Government's Policies for the Internationalization of Korean Higher Education*. **Journal of Studies in International Education**. 2011;15(5):467-86.

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Research article

The impact of leaders of internationalization in highly specialized academic fields: case study in implant dentistry and biomaterial education and research. Part 2: comparison of dental school strategies in French, Italian, Spanish and Korean universities using the ISAIAS FAST score

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Abstract

Background and objectives. Internationalization is a major evolution in implant dentistry and biomaterial higher education and research. The aim of the present 3-part study was to apply the ISAIAS method (Intercultural Sensitivity Academic Index & Advanced Standards) in this highly specialized dental field, and to evaluate the impact of leaders of internationalization. In this second part, the ISAIAS method was applied globally to the dental schools of 4 participant universities, to highlight the impact of their internationalization efforts in this specialized education environment in these Asian and European contexts.

Materials and Methods. In each campus, a group of 60 undergraduate dental students from 4 different dental schools (from respectively University of Granada, Spain; University Federico 2 of Naples, Italy; Paris University, France; and Chonnam National University, South Korea) were observed through the ISAIAS FAST (Fast Assessment Screening Test) questionnaire and through intensive field study (mixed methodology, i.e. combination of qualitative and quantitative methods). A final ISAIAS FAST score (mean value) was calculated for each group, including the mean scores in the 4 dimensions of intercultural

competences, and scores were integrated with field observation for interpretation and validation. Results were correlated with previous results, which had been obtained on the general campus of the participant universities.

Results. The scores observed in the 4 dental schools presented different patterns, but relatively mild scores (always between 2 and 3), what appeared typical from schools with moderate internationalization policies, i.e. a wish for internationalization which may not be fully fulfilled because of the local organizational culture.

Discussion and conclusions. In the second step of this 3-part study, the ISAIAS FAST mixed methodology has been applied to a very specialized academic environment, the dental schools, and allowed highlighting the similarities and the major specificities (Strengths, Weaknesses, Opportunities and Threats) of the internationalization efforts of these specialized dental entities in the more general environment of the University. The final step of this 3-part study requires the evaluation of the FAST scores of more specialized groups of stakeholders in the dental implant and biomaterial research and education groups, in order to evaluate and understand how the local leaderships are impacting the level of internationalization of education and research in this specialized fields.

Keywords. Attitudes, culture, dental school, education, international cooperation, international educational exchange, leadership.

1. Introduction

The massive internationalization of higher education and research is a relatively recent major evolution and need of the Academic world [1], as a natural consequence of the globalization of the economy of sciences and knowledge [2]. In the field of dental education and research, the internationalization process has followed a very specific path related to the nature of the dental profession itself. Dental schools are indeed mostly designed to produce future dental clinicians, and this profession is traditionally quite protected in most countries. Like most medical specialties, the recognition of diploma is often limited between countries, and there is a strong limitation for clinical exercise for clinicians moving between countries. This frequent situation limited in many countries and during many years the development of international education in this specialized field, and the schools of dentistry were often outside of this general movement of internationalization of campuses. This situation evolved only recently and very slowly with the development of diploma recognition in European countries and through specific international agreements (for example France and Quebec). In fact, in most cases, the major part of the internationalization of the dental schools can be found in the post-graduate programs and in the research activities. Therefore the dental schools are interesting indirect markers of the internationalization of a University and of the general mentalities, as they may reflect the general evolution of a campus and of researchers, more than the evolution of the Graduate School itself.

The POSEIDO (Periodontology, Oral Surgery, Esthetic & Implant Dentistry Organization) is an international scientific Consortium of Academic Departments and Scientific societies [3]. The Consortium is mostly gathering dental schools, and is oriented to dental sciences, biomaterials and implant dentistry education and research, even if it also offers a trans-disciplinary approach in many topics (biomaterials, orthopedics, cancer, etc) [4-6]. As a global inter-academic experience, the POSEIDO community is facing permanently the wide cultural differences between the various stakeholders of the Academic environment. The POSEIDO community therefore funded the ISAIAS program (Intercultural Sensitivity Academic Index & Advanced Standards), in order to evaluate the degree of

internationalization and intercultural sensitivity of the community members worldwide, and to develop new strategies and standards to promote smoother and more efficient global collaborations in the field of implant dentistry and biomaterial research and education [7,8].

As it was shown in the first article of this series, the first project of the ISAIAS program was the development of a simple tool of evaluation of the level of internationalization of a university, school or department through the assessment of the intercultural competences of its academic stakeholders [9]. It was termed the ISAIAS Fast Assessment Screening Test (FAST) Score. This score is calculated through the use of a questionnaire of assessment of the internationalization efforts of a university campus through the development of intercultural competences, based on the concepts and key parameters isolated by Deardorff [1,10,11]. This questionnaire was previously developed, statistically tested and validated between the University of Granada and the Oslo and Akershus University College [12].

In this series of articles, the ISAIAS FAST scores were calculated in 4 different Academic environments (France, Italy, Korea, Spain) involved in implant dentistry and biomaterial education and research within the member Academic entities of the POSEIDO network, to evaluate and understand the internationalization patterns of these Universities, dental schools and implant and biomaterial research and education significant groups. The Universities serving as examples in this first study were selected to highlight the differences between a specific Asian model (the Korean model in this case)[13] with 3 different versions of the European environment. In the first article of this series, the ISAIAS FAST methodology of assessment of intercultural competences at the scale of a campus was described, following the concepts and list of components of the intercultural competences developed by Deardorff [10].

In this second article, the ISAIAS FAST method was used for the first time in a limited specialized environment, at the scale of the dental schools participating to this study. The first objectives were to evaluate the level of development of the intercultural competences of the dental students during their dental studies, and how the local strategies of internationalization of higher education and research may have influenced this result. The questionnaire was used for the assessment of 4 different dental schools (1 Korean, 3 Europeans) with 4 different cultural and well-identified backgrounds, history and strategy. Therefore, a secondary objective was to check if in this specialized dental environment, the ISAIAS FAST score corresponds to the typical profile, easily observable and well documented of these 4 universities.

2. Materials and Methods

2.1. General methodology

The ISAIAS FAST questionnaire was proposed to 60 undergraduate and master students in the dental school of each university. The test sample is significant, but cannot be considered as fully representative; the sample of this study case was intentional. Data were collected between 2012 and 2014 at the School of Dentistry, University of Granada (UGR, Granada, Spain), the Faculty of Odontology, University Paris 5 Descartes (P5, Paris, France), the School of Dentistry, Chonnam National University (CNU, Gwangju, South Korea) and the Department of Oral Surgery, Faculty of Medicine, University Federico II of Naples (Unina, Naples, Italy). Dental students were always in the last years of their studies, and were therefore almost dental professionals already. In this case study, it was decided to analyze

three very different European universities (Granada, Naples and Paris), to be able to compare 3 different approaches of the European implementation of internationalization of higher education and research with a very typical Asian campus (Chonnam).

It is important to point out that “undergraduate” has always to be understood (in this study) as dental students under formation to become a general dentist. In Korea, the new dental students have already finished their bachelor degree prior to apply and to enter in a dental school, and are therefore considered as postgraduate students following the local terminology. In France, Italy and Spain, dental students without their dentist diploma are considered as undergraduate students, and postgraduate students are only those working for a specialization diploma. This specificity of terminology has however almost no practical impact.

The methodology used in this study was the same as the one described in the first article of this series (see article 1 for details), using a mixed methodology, i.e. a combination of qualitative and quantitative methods and methodological and data triangulation. The quantitative methodology was using the ISAIAS FAST questionnaire of assessment of the internationalization efforts of a university campus through the development of intercultural competences. The analysis of the questionnaires allowed to calculate the Fast Assessment Screening Test (FAST) Score of an individual or a group of people.

2.2. Description of the questionnaires

The exact description of the questionnaires can be found in the first part of this series of 3 articles, as they were exactly the same (see article 1 for details). The key points were recalled below.

The questionnaire was formulated for students to determine in which measure the internationalization efforts and program offered by their University - during the curriculum (obligatory courses and activities) and through extracurricular activities (all nonobligatory activities related to the campus life, such as conferences, sports, student union activities or informal or personal meetings with foreign colleagues, etc.) - had impacted the development of their intercultural competences.

The first part of each questionnaire was gathering the main data of identification of the person filling this anonymous questionnaire, to place the answers in an adequate perspective. The second part was the statistical part with a series of 30 very accurate statements the reader had to agree or disagree, in order to evaluate accurately the profile of the person and to calculate his/her ISAIAS FAST score. For each question, the person filling the questionnaire had to choose the option which best fitted his opinion between 4 options, each option being associated to a score between 1 and 4: Strongly disagree (1), Disagree (2), Agree (3), Strongly agree (4). This is a classical multiple-choice format using an unipolar Likert scale from 1 to 4. The final analysis and synthesis of these scores allowed to calculate the score of each person and finally, after integration of all data, the ISAIAS FAST score of the whole group under observation.

Finally, the questionnaires were translated in the language of the population to analyze (in Korean for the Chonnam campus, French for the Paris campus and Spanish for the Granada campus), except in Italy where the students were able to answer the questionnaires directly in English. In Korea, Spain and France, a few questionnaires were also used in English when students were foreigners not perfectly comfortable with the local language.

2.3. Treatment of data and calculation of the ISAIAS FAST score

The treatment of data used in this study was the same as the one described in the first part of this series of 3 articles (see article 1 for details). The key points were recalled below.

The questions of the questionnaire were deeply interconnected and built following a network of reasoning that allowed to detect anomalies in the answers. They were regrouped in 4 groups, termed the 4 dimensions (D) of the questionnaire (following and adapting the general components of intercultural competences proposed by Deardorff): “Attitudes” (D1), “Knowledge and Comprehension” (D2), “Skills” (D3) and “Desire internal outcomes” (D4).

The score of each dimension gave important information on the development of each specific component of intercultural competences, and therefore allowed to draw a specific profile of each individual (or group of people), independently from its global FAST score.

When considering each questionnaire separately, in order to calculate the scores of each dimension, the scores of all questions composing a dimension were added and the total was then divided by the number of questions of the dimension. To calculate the ISAIAS FAST score of each individual, the scores of all questions were added and the total was divided by 30 (total number of questions). The score of each dimension and the total FAST score were therefore always between 1 and 4.

In this study, all data were integrated through Statistical Package for the Social Sciences (SPSS, IBM, Armonk, NY, USA) program, in order to get a mean value of the scores of each dimension and of the final ISAIAS FAST score, of each group of students evaluated in each dental school.

Finally, these statistical results were completed, analyzed and compared using the qualitative data gathered during the investigation. It was voluntarily avoided to draw a direct statistical comparison between the tested groups, as it would be meaningless. The scores have to be compared while taking especially into consideration the national and organizational culture and other qualitative data that influence the understanding and interpretation of each score.

3. Results

Following the previously described mixed methodology, data have been collected in the dental schools. The answers to the questionnaires were integrated in order to calculate for each participant school, the mean value of the global ISAIAS FAST score and of the scores of each dimension of intercultural competences. Results obtained in the groups of the undergraduate students are presented in the **Table**.

The scores observed in the 3 universities presented different patterns, but relatively mild scores (always between 2 and 3), what appeared typical from dental schools with moderate internationalization policies, i.e. a wish for internationalization which may not be fully fulfilled because of the local organizational culture.

The scores observed for the students in the School of Dentistry at the University of Granada were a little bit higher than on the general campus, and among the 2 highest scores (with CNU) in the 4 participant dental schools. It appeared as a marker of the particularly strong policy and enthusiasm for internationalization of this university.

The scores observed for the students in the Faculty of Odontology at the University of Paris were significantly lower than on the general campus of Paris-Sorbonne, and also the lowest among the participating dental schools, highlighting a significant isolation of this

group of future dental professionals from the internationalization efforts, particularly in comparison with students from the general campus.

The scores observed for the students in the Department of Oral Surgery at University Federico II of Naples were a little bit lower than in the UGR and CNU, but still in the same range, and reflected this intermediate situation of relative enthusiasm for internationalization within the limitations of the local organizational culture. The score of the general campus could not be evaluated extensively in this work.

The scores observed for the students in the School of Dentistry at Chonnam National University were much higher than on the general campus and were among the 2 highest scores (with UGR) in the 4 participant dental schools. This result was often associated with the social status of the future dental professionals in Korea, which were often a bit older and more interested in international experiences than the other categories of students.

The scores appeared coherent with the field observations in all aspects. Scores and field studies were integrated in details in the discussion section.

Scores of Undergraduate Dental Students in the Dental School					
University (Dental School)	Dimension (D) scores				Total FAST score
	1D. Attitudes	2D. Knowledge and Comprehension	3D. Skills	4D. Desire internal outcomes	
University of Granada (Spain)	2.76	2.48	2.65	2.56	2.612
Paris University (France)	2.27	2.088	2.187	2.03	2.141
University Federico 2 of Naples (Italy)	2.6	2.4	2.4	2.5	2.473
Chonnam National University (South Korea)	2.8	2.6	2.75	2.35	2.62

Table. Intercultural dimensions and total ISAIAS FAST scores of a group of dental students from 4 different Dental Schools.

4. Discussion

4.1. General specificities of the dental community

In this study, all dental students from the 4 participant universities shared a very strong common point: all of them were studying dentistry. The methods of teaching, the practical perceptions and the clinical sensibility (in terms of esthetic and functional considerations for example) may be different between countries, but all dentists have a lot in common: most techniques and materials, daily life problems of a practice, relationships with pain and patient complaints for example. There is a joke about dentists that we found in most countries: it is better to not have several dentists in a family, because when they meet, they cannot impeach themselves to speak only about teeth. This is a population which appears, at first look, easier to internationalize, as the professional similarities are very strong worldwide, even if the social environment of the profession is not the same everywhere. Finally, dentists are in general a highly educated population, as there is often many selective examinations to enter in the dental schools, leading to a quite high socio-economic population able (and wishing) to travel more and therefore to meet other cultures.

Therefore, even if dental schools may not appear very internationalized, due to the limited recognition of the clinical diplomas between countries, the population of dental students is in general more curious, opened and connected to the international community than other categories of students on the campus. This could be observed in 2 universities that were analyzed in the first part of this series of 3 articles (Granada and Chonnam), where the scores of dentists were higher than the scores of the other general students on the campus. However, surprisingly, the contrary situation was observed in Paris University. As a quite homogeneous profession and profile, whatever the nationality, we could expect that all dental students taken into consideration in this study could have the same kind of high scores. However, we observed very different patterns depending on the school, and it can be interpreted as the impact of the national and organizational culture of each country and university on the dental students [14,15]. The exact profile of the groups of students of each school must be investigated and understood in the context of their respective university and country.

4.2. About the School of Dentistry at the University of Granada

The history and policies of the University of Granada general campus were already investigated and described in the first part of this series of 3 articles, and were taken into consideration when analyzing the functioning and results of the school of dentistry.

Dentistry is a relative new independent discipline in Spain. The oldest dental schools in Spain were founded recently, in 1986, as a consequence of the integration of Spain in the European Community. Previously, dental curriculum was supported in Schools of Stomatology, where MD degree was demanded to apply in. University of Granada implemented Dentistry curriculum as the first School of Dentistry in Spain, simultaneously to University Complutense in Madrid and University of Barcelona. The number of students selected per year is inferior to 80. The selection of students is very restricted, and limited through “numerus clausus” procedure, selecting traditionally one of the best groups of students, because it is quite demanded by them. Research activity is intense in this Dental School, occupying the first position in the National ranking in the last 5 years. The dental studies in Spain are a minimum of 5 years. In Spanish public Universities, the fees are not expensive (some minor administrative fees) and based on a strong entrance concourse

selection only. The first two years are dedicated mainly to Basic Sciences related to Medicine and Health. The 3rd, 4th and 5th years are specific dedicated to Dentistry, mostly dedicated to clinical work.

School of Dentistry at the University of Granada, offers a limited number of positions to foreign pre-graduate students, approximately 5 % of the total applications. These positions are restricted and only can be applied for international students. These students traditionally proceed from North Africa or South America. The dental curriculum is offered exclusively in Spanish, although professors can choose to develop it in English. However in the most advances years, mainly 3rd, 4th and 5th, an intense program of exchange is offered to the students. Considering undergraduate students, besides to the Erasmus program (with prestigious European Universities), special programs are running with some countries from East Europe, Balkan countries, Mexico, South America, and others are under development with North American Universities. Regarding postgraduate students, the School has established strong relationships with foreign Universities, mainly with Spanish speaking countries, to receive students from these countries, to develop research collaboration and to exchange postgraduate students for clinical or PhD programs.

In spite of the language limitation, professors are quite demanded to establish new collaborations with foreign Universities, and some of these professors begin to develop sabbatical years in foreign contexts, something new in the strategic demanded policies of the University of Granada. In addition, the number of Granadian students leaving Spain to develop international postgraduate studies, are increasing spectacularly in the last years, mainly to North American Universities. The School of Dentistry is therefore trying to follow the strong internationalization policy of the UGR in all aspects, and this appears to promote the development of a new generation of leaders of internationalization.

All these characteristics were observed during the collection of data and were highlighted by the components of the ISALIAS FAST score. The scores observed for the dental students were among the highest scores observed in the participant dental schools, and the field observation confirmed the significant enthusiasm for international relations developed in the UGR through the many programs of exchanges. Besides this very positive attitude and policy, the national and organizational culture may explained why the scores remained far below 3 [2], and that student exchange (limited in dentistry) appeared to not be enough to promote a deeper intensive development of intercultural competences.

4.3. About the Faculty of Odontology at the University of Paris

The history and policies of the University of Paris general campus were already investigated and described in the first part of this series of 3 articles, and were taken into consideration when analyzing the functioning and results of the school of dentistry.

The 2 Paris Dental schools were historically the 2 largest dental schools in France, recruiting a total of more than 200 students per undergraduate year. The dental studies in France are a minimum of 6 years. They are free (except some minor administrative fees) and based on a strong entrance concourse selection only. The first year is a national very selective medical concourse with a strict “*numerus clausus*”. The second and third years are specific to dentistry, but without clinical activity. The 4th and 5th years are mostly dedicated to clinical work. The 6th year is dedicated to clinical work, clinical experience outside of the school and preparation of the thesis for the Doctorate in Dental Surgery (DDS). The 2 Paris dental schools are affiliated to 2 different universities: the Faculty of Odontology of Paris 5 René Descartes University, and the Faculty of Odontology of Paris 7 Denis Diderot University. The

2 universities have very similar curriculum and management, and many efforts have been done in the last years to merge them; following the movement of groupings in Paris Universities, the final merging of the 2 schools within one major Paris Dental School is now just a question of time.

The French national diploma of Doctor in Dental Surgery is very selective and restricted (national concourse with a *numerus clausus*). Moreover, as the education in the French university is almost only done in French, it is therefore attracting in priority students from the French speaking countries. Therefore, the recruitment of foreign students - including Europeans - that may be interested to join these dental schools is very limited (mostly those living in France since a significant time), even if the University and city themselves are very attractive. Non-European foreign students who want to work in the European Union in general try to get a European diploma through schools in countries with more open regulations. Moreover, the national regulations of concourses and recruitment of the faculty members being still very restricted, almost all professors and teachers are French nationals, and a majority followed all their curriculum in the school where they are teaching now.

Most of the internationalization efforts are placed in program of exchanges such as Erasmus. French students are going in priority in other North countries (North America or Nordic countries), and foreigners coming are mostly Europeans. The number of exchanges remains however very limited in comparison to the wide number of nationalities that can be found in a US campus for example. It is also considered that all foreign students have to adapt to the local mentality and patterns, and many aspects of the Anglo-Saxon approach of internationalization of higher education and research are not even considered.

All these characteristics were clearly observed during the collection of data and were highlighted by the components of the ISAIAS FAST score. The scores in the Paris dental school were clearly the lowest among the 4 participant dental schools. The scores were also clearly lower than in the general campus of Paris-Sorbonne University. It appeared as an anomaly, as dental students finishing their studies in France are supposed to be future professionals with a relatively high socio-economic level, as it was observed in the dental schools in other countries. This result could be explained by the characteristics of the Sorbonne general campus, oriented to Humanities (particularly the teaching of languages), presenting a more important population of international students, and therefore showing higher scores of intercultural development. The collection of the questionnaires in the School of Dentistry at Paris University was clearly the most difficult from all the groups. The concept of intercultural competences was sometimes not understood. This result mostly highlighted the significant isolation of this group of future dental professionals from the international communities. This homogeneous score confirmed the field observations.

4.4. About the Department of Oral Surgery at University Federico II of Naples

The University of Naples “Federico II” was established in 1224 by Frederick II Hohenstaufen, King of Sicily and Holy Roman Emperor. It is the first publicly funded university in Europe. Nowadays the University offers courses and research in most academic disciplines and enroll a considerable number of students (more than 96,000) per year. The University, formerly organised in Faculties, has revised its organizational structure in order to address the complexity of the interdisciplinary relationships of the academic disciplines. The *Ateneo* is currently composed of 4 huge Schools/Faculties, each of which operates as

semi-independent body for the teaching and research management. The Department of Oral Surgery is therefore a Dental Section of the Faculty of Medicine. Internationalization is one of the important lines of development in the policy of the Federico II University, as this University wants to be recognized as a global institution. To improve its visibility, reputation and attractiveness for international students and other international and national stakeholders, the University is mostly developing international cooperation by promoting and supporting interactions with other universities and research centres throughout the world (through partnerships and conventions). Moreover, the Bologna process supporting international mobilities has been fully implemented, and Unina is exchanging significant numbers of students each year (through Erasmus program as well as other academic exchange programs).

The dental studies in Italy are a minimum of 6 years. They are free and based on a strong entrance concourse selection only. The course consists of the preparation with basic knowledge in the disciplines of biology and general medicine as well as general education, in the first 2 years. The 3th and 4th years are specific to dentistry with some clinical activity; the 5th and the 6th years are dedicated to clinical work. At the end of the course students can subscribe to specialization schools such as Orthodontics or Oral Surgery, or Master and Postgraduate Courses to deepen the preparation in all areas of dentistry.

The Italian national diploma of Doctor in Dentistry is very selective and requires to pass the national concourse of the first dental year. Each year there are some reserved seats for non european students, in order to assure a limited number of foreigners students. Traditionally, Italian universities courses are Italian language based only and is therefore mainly attracting Italian speaking students. Moreover, the national regulations of concourses and recruitment of the faculty members being still very restricting, almost all professors and teachers are Italian-born citizens and the majority of them followed their curriculum in the school where they currently teach. Most of the internationalization efforts are placed in programs of exchanges such as Erasmus. The internationalization is essentially the result of the capacities/contacts of each individual and group, and is therefore very dependent on the presence of strong personalities serving as leaders of internationalization. Only few departments support actively this opportunity after postgraduate activity with the development of international meetings. In the Dental School of “Federico II”, the access to many international journals is provided, but it is important to notice that there is no global and massive strategy of internationalization as developed in Anglo-Saxon Universities.

All these characteristics were clearly observed during the collection of data and were highlighted by the components of the ISAIAS FAST score. With an intermediate score, this group of students appeared quite motivated for internationalization, with an easy-going attitude and a wish to travel and exchange. But the group appeared also understanding very well the limitation of their environment in this process of internationalization. This very homogeneous and mild score confirmed the field observations.

4.5. About the School of Dentistry at Chonnam National University

The history and policies of the Chonnam National University general campus were already investigated and described in the first part of this series of 3 articles, and were taken into consideration when analyzing the functioning and results of the school of dentistry.

The CNU School of Dentistry is one of the 11 dental schools in Korea, recruiting 70 students every year. The school is perceived as the best in Honam area of Korea, and most of local general practitioners refer patients to the CNU dental hospital. As CNU dental school is

a graduate school, students have various academic backgrounds and practical abilities before entering the school. Students are tested by a national exam for dental school admission. The dental studies in the CNU Dental School are paid and are a minimum of 4 years. Students study basic dental sciences during the first year. From the second year, students study clinical knowledge with clinical training. In the last year of study, students actively experience clinical practice in the CNU dental hospital. In the Korean environment, CNU School of Dentistry is well known and appreciated to offer students one of the best environments to experience clinical work including orthodontic and surgical cases before they graduate.

Foreign students are very rare in the dental school, as there is a national admission exam for dental school in Korean and all classes of these studies are done in Korean. However, the CNU dental school is trying to promote its internationalization through various centralized strategies, particularly at the post-graduate and research level. There are some basic research graduate students from abroad (mostly from the Asian area), who are not dental students. Some graduated foreign dentists come also to this school for clinical training. CNU Professors make efforts to have lectures and voluntary service in other countries (particularly in some Asian countries), in order to give a positive publicity to the CNU dental school. Also, an international symposium is periodically held in the school so that professors and students have interaction with some renowned foreign Scholars. Moreover, there used to be a foreign professor (not ethnically Korean) in CNU dental school, what was never seen in any other Korean dental schools. Finally, each year, students are sent in foreign universities for field study, and in rare cases, PhD students are sent abroad to prepare a double degree. Therefore, from a Korean customs standpoint, CNU could be considered as an active dental school to promote internationalization, to fulfill the requirements of internationalization promoted by the Korean Ministry. However, the cultural and language barriers remain major obstacles for the development of more initiatives. Despite these efforts, CNU remains completely centered on a strict collectivist and hierarchic Confucian Korean organizational culture, what blocks the development of personal initiative of real autonomous leaders of internationalization.

All these characteristics have been clearly observed during the collection of data and were clearly highlighted by the components of the ISAIAS FAST score. This group of students showed the highest total score among the participant universities, as a natural consequence of the general hierarchic policy of CNU and the Korean Ministry towards internationalization [13,16]. This group also showed higher scores than other students on the general campus, what appeared as a marker of the socio-economic status of the future dental professionals. In Korean society, the possibility to travel abroad and to be connected to foreigners is perceived very positively in a social hierarchy, and therefore dental students have even more reasons and opportunities to develop their intercultural competences, even if the dental school itself does not offer so many opportunities. Even with this relatively positive result, the field observations confirmed the significant difficulties of communication of the students. The national and organizational culture of CNU (hierarchic Confucian culture, very marked in Korea) can explain why the scores remained far below 3, despite the positive attitude of the dental students [13,17]. More efforts and new strategies will be needed to promote a deeper and more efficient development of intercultural competences.

5. Conclusion

In this second article, the ISAIAS FAST mixed methodology has been applied to a very specialized academic environment, the dental schools. The FAST scores were calculated in groups of dental students of these 4 universities, correlated with field observations, and the results corresponded to the general profiles of internationalization of these institutions. This second step of the study allowed highlighting the similarities and the major specificities of these specialized dental entities in the more general environment of the University. The final step of this 3-part study was the evaluation of the FAST scores of more specialized groups of stakeholders in the dental implant and biomaterial research and education groups, in order to evaluate and understand how the local leaderships are impacting the level of internationalization of education and research in this specialized fields, and how to improve the interactions of these entities with international partners.

Disclosure of interests

The authors have no conflict of interest to report.

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Author Contributions

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References

- [1] Deardorff DK, de Wit H, Heyl JD, Adams T. *The SAGE Handbook of International Higher Education*. SAGE Publications, Inc. ISBN: 9781412999212. 2012.
- [2] Altbach PG, Knight J. *The Internationalization of Higher Education: Motivations and Realities*. *Journal of Studies in International Education*. 2007;11(3-4):290-305.
- [3] Dohan Ehrenfest DM, Sammartino G, Bernard JP. *The Periodontology, Oral Surgery, Esthetic and Implant Dentistry Organization (POSEIDO) and Open Journal: an international academic and scientific community for a new approach of open-access publishing*. *POSEIDO*. 2013;1(1):1-5.
- [4] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 1: description of the Implant Surface Identification Standard (ISIS) codification system*. *POSEIDO*. 2014;2(1):7-22.
- [5] Dohan Ehrenfest DM, Kang BS, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to implant surfaces and design from the POSEIDO: a standard for surface characterization*. *POSEIDO*. 2013;1(1):7-15.
- [6] Dohan Ehrenfest DM, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to platelet concentrates (Platelet-Rich Plasma - PRP, or Platelet-Rich Fibrin - PRF): the international classification of the POSEIDO*. *POSEIDO*. 2013;1(1):17-27.

- [7] Koehn PH, Deardorff DK, Bolognese KD. *Enhancing International Research and Development-Project Activity on University Campuses: Insights From U.S. Senior International Officers*. **Journal of Studies in International Education**. 2011;15(4):332-50.
- [8] Olson CL, Kroeger KR. *Global Competency and Intercultural Sensitivity*. **Journal of Studies in International Education**. 2001;5(2):116-37.
- [9] Knight J. *Monitoring the Quality and Progress of Internationalization*. **Journal of Studies in International Education**. 2001;5(3):228-43.
- [10] Deardorff DK. *Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization*. **Journal of Studies in International Education**. 2006;10(3):241-66.
- [11] Deardorff DK. *The SAGE Handbook of Intercultural Competence*. **SAGE Publications, Inc. ISBN: 9781412960458**. 2009.
- [12] Wisniewska LM. *Research on professional practice: internationalization of university campuses and its formative impact on the development of intercultural competences among professionals*. **Høgskolen i Akershus, Erasmus Mundus**. 2011.
- [13] Kim T. *Internationalisation of Higher Education in South Korea: Reality, Rhetoric, and Disparity in Academic Culture and Identities*. **Australian Journal of Education**. 2005;49(1):89-103.
- [14] Hofstede G, Hofstede GJ, Minkov M. *Cultures and organizations. Software of the mind. Intercultural Cooperation and Its Importance for Survival*. **London. McGraw-Hill. ISBN 978-0-07-1664418-9**. 2010.
- [15] Knight J. *Internationalization Remodeled: Definition, Approaches, and Rationales*. **Journal of Studies in International Education**. 2004;8(1):5-31.
- [16] Byun K, Kim M. *Shifting Patterns of the Government's Policies for the Internationalization of Korean Higher Education*. **Journal of Studies in International Education**. 2011;15(5):467-86.
- [17] Jon JE. *Realizing Internationalization at Home in Korean Higher Education: Promoting Domestic Students' Interaction with International Students and Intercultural Competence*. **Journal of Studies in International Education**. 2013;17(4):455-70.

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Research article

The impact of leaders of internationalization in highly specialized academic fields: case study in implant dentistry and biomaterial education and research. Part 3: comparison of dental implant group strategies in French, Italian, Spanish and Korean universities using the ISAIAS FAST score

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Abstract

Background and objectives. Internationalization is a major evolution in implant dentistry and biomaterial education and research. The aim of the present 3-part study was to apply the ISAIAS method (Intercultural Sensitivity Academic Index & Advanced Standards) in this highly specialized dental field, and to evaluate the impact of leaders of internationalization. In this third part, the ISAIAS method was applied to the dental implant and biomaterial groups of 4 participant universities, to highlight the impact of their internationalization efforts and leaders in these Asian and European contexts.

Materials and Methods. A group of 20 teachers/researchers and 20 postgraduate students related to the dental implant and biomaterial research and education groups of 4 different dental schools (from respectively University of Granada, Spain; University Federico 2 of Naples, Italy; Paris University, France; and Chonnam National University, South Korea) were observed through the ISAIAS FAST (Fast Assessment Screening Test) questionnaire and through intensive field study (mixed methodology, i.e. combination of qualitative and quantitative methods). A final ISAIAS FAST score (mean value) was calculated for each group, including the mean scores in the 4 dimensions of intercultural competences, and

scores were integrated with field observation for interpretation. Results were correlated with previous results obtained on the general campus and dental schools of the participant universities, and to the profiles of the local leaders of internationalization in the field.

Results. The scores observed in the 4 academic environments were very different between the groups, and revealing very different patterns. Scores in Granada University were the highest from all groups for the teachers/researchers group, but revealed the wish for more development of international dimension at the post-graduate level. Scores in Paris University and Naples University were intermediate and revealed a neat positive impact of local leadership when available. The scores observed in South Korea appeared quite high, revealing a wish for internationalization.

Discussion and conclusions. The presence of leaders of internationalization is clearly an important factor of improvement of the intercultural competences of teachers/researchers and postgraduate students in the field of implant dentistry and biomaterial education and research. The impact of these motivated individuals and its intensity are, however, different depending on the academic environment. The ISAIAS mixed methodology is a very useful method to evaluate the Strengths, Weaknesses, Opportunities and Threats of the internationalization efforts of a group or school, but it requires to combine the FAST scores with an in-depth field study, in order to determine the exact situations and how to improve the performance of the entities and their interactions with international partners in the field of implant dentistry and biomaterial education and research.

Keywords. Attitudes, culture, dental implants, education, international cooperation, international educational exchange, leadership.

1. Introduction

The strong internationalization of higher education and research is a major evolution and need of the Academic world [1], as a natural consequence of the globalization of the economy of sciences and knowledge [2]. As it was discussed in the previous parts of this series of articles, in the field of dental education and research, the internationalization process has followed a very specific path related to the nature of the dental profession itself, which is very regulated in most countries. However, even if the undergraduate programs remain very national in many countries, the process of internationalization is impacting dental schools more and more, particularly through international postgraduate programs and through research collaborations [3]. Like in all other specialties, the process of globalized interactions is often complicated by the significant cultural differences of perception and action and the different organizational cultures of each country and institution [4,5].

The POSEIDO (Periodontology, Oral Surgery, Esthetic & Implant Dentistry Organization) was developed as a consortium of Academic entities and an international scientific network of Academic Departments and Scientific Societies [6]. The organization regroups a majority of dental school departments, but it is also including Departments of orthopedics, immunology, plastic surgery, veterinary sciences, biotechnology and biomaterials, in order to promote trans-disciplinarity through various forums of discussion and debates [7,8]. This network is an interesting example of globalized inter-academic cooperation in the dental education and research world. Even if it could have faced the traditional problems of intercultural cooperation, the collaboration between entities remained smooth and efficient [9]. It was advocated that the intercultural competences and experience of the POSEIDO key members allowed to overcome most intercultural difficulties up to now [5]. The hypothesis is that the specific experience and personality of the local

leaders of internationalization of the groups joining POSEIDO were at the origin of this smooth cooperation [10], with the development of an efficient collaborative activity, particularly in the field of biomaterial research.

The next steps of the POSEIDO project are to develop deeper links between all partners of the consortium, particularly building commonly funded research and post-graduate education large projects at a world scale, particularly in the field of implant dentistry and biomaterial research [3]. This will necessarily require even more diplomacy and intercultural competences from all stakeholders [2], and the POSEIDO community and Foundation decided to fund a global program of evaluation and development of the intercultural skills of its actual and future members [11], in order to avoid any major critical situations in the future steps of the project development. The ISAIAS program (Intercultural Sensitivity Academic Index & Advanced Standards) was designed as an evaluation, education and conflict prevention global initiative, to promote smoother and more efficient global cooperation, particularly in the field of implant dentistry and biomaterial research and education [1].

The ISAIAS Fast Assessment Screening Test (FAST) Score was developed as a simple tool of evaluation of the level of internationalization of a university, school or department. This score is calculated through the use of a questionnaire of assessment of the internationalization efforts of a university campus through the development of intercultural competences of the academic stakeholders, based on the concepts and key parameters isolated by Deardorff [12,13]. In this series of articles, the ISAIAS FAST scores were calculated in 4 different Academic environments (France, Italy, Korea, Spain) involved in implant dentistry and biomaterial education and research within the member Academic entities of the POSEIDO network, to evaluate and understand the internationalization patterns of these Universities, dental schools and implant and biomaterial research and education significant groups.

In the first and second articles of this series, the ISAIAS FAST methodology of assessment of intercultural competences at the scale of a campus was described, following the concepts and list of components of the intercultural competences proposed by Deardorff [12], and then evaluated in the specialized environment of the respective dental school of the participant universities.

In this third article, the ISAIAS FAST method was used specifically on the groups of teachers, researchers and students that could be considered as a core of implant and biomaterial research and education in these 4 different dental schools, including some individuals with international reputation that could be considered as leaders of internationalization in their respective context. The first objectives were to evaluate, how local strategies of internationalization of higher education and research may have influenced the development of the intercultural competences of the postgraduate students and teachers/researchers of these specific groups. The final objective of this work was to integrate these data with the scores and observations of the general campus and dental schools, in order to highlight the impact of leaders of internationalization in the highly specialized academic fields of implant dentistry and biomaterial education and research.

2. Materials and Methods

2.1. General methodology

In the dental school of each participant university, the ISAIAS FAST questionnaire was proposed to 20 postgraduate students and 20 professors/teachers or researchers of these 4 different dental schools, including some individuals with international reputation that could be considered as leaders of internationalization in their respective environment. The test sample was significant, but cannot be considered as fully representative; the sample of this study case was intentional. Data were collected between 2012 and 2014 at the School of Dentistry, University of Granada (UGR, Granada, Spain), the Faculty of Odontology, University Paris 5 & Paris 7 (Paris, France), the School of Dentistry, Chonnam National University (CNU, Gwangju, South Korea) and the Department of Oral Surgery, Faculty of Medicine, University Federico II of Naples (Unina, Naples, Italy). In each School, there was at least a significant implant and biomaterials research and education group with some leaders involved in the international POSEIDO network. In this case study, it was decided to analyze three very different European universities (Granada, Naples and Paris), to be able to compare 3 different approaches of the European implementation of internationalization of higher education and research with a very typical Asian campus (Chonnam).

It is important to point out that “postgraduate” has always to be understood (in this study) as general dentists following a supplementary specialization diploma, what placed them in direct contact with active leaders in implant dentistry and biomaterial education and research. In Korea, the new dental students have already finished their bachelor degree prior to apply and to enter in a dental school, and are therefore considered as postgraduate students following the local terminology. In France, Italy and Spain, dental students without their dentist diploma are considered as undergraduate students, and postgraduate students are only those working for a specialization diploma. This specificity of terminology has however almost no practical impact.

The methodology used in this study was the same as the one described in the first article of this series (see article 1 for details), using a mixed methodology, i.e. a combination of qualitative and quantitative methods and methodological and data triangulation. The quantitative methodology was using the ISAIAS FAST questionnaire of assessment of the internationalization efforts of a university campus through the development of intercultural competences. The analysis of the questionnaires allowed to calculate the Fast Assessment Screening Test (FAST) Score of an individual or a group of people.

2.2. Description of the questionnaires

The exact description of the questionnaires can be found in the first part of this series of 3 articles, as they were exactly the same (see article 1 for details). The key points were recalled below.

The questionnaires were built in 2 slightly different forms. One was formulated for teachers and researchers to determine in which measure the participation in international research/educational projects has impacted the development of their intercultural competences. The second was formulated for students to determine in which measure the internationalization efforts and program offered by their University - during the curriculum (obligatory courses and activities) and through extracurricular activities (all nonobligatory activities related to the campus life, such as conferences, sports, student union activities or

informal or personal meetings with foreign colleagues, etc.) - has impacted the development of their intercultural competences.

The first part of each questionnaire was gathering the main data of identification of the person filling this anonymous questionnaire, to place the answers in an adequate perspective. The second part of the questionnaire was the statistical part with a series of 30 very accurate statements the reader had to agree or disagree, in order to evaluate accurately the profile of the person and to calculate his/her ISAIAS FAST score. For each question, the person filling the questionnaire had to choose the option which best fitted his opinion between 4 options, each option being associated to a score between 1 and 4: Strongly disagree (1), Disagree (2), Agree (3), Strongly agree (4). This is a classical multiple-choice format using an unipolar Likert scale from 1 to 4. The final analysis and synthesis of these scores allowed to calculate the score of each person and finally, after integration of all data, the ISAIAS FAST score of the whole group under observation.

Finally, the questionnaires were translated in the language of the population to analyze (in Korean for the Chonnam campus, French for the Sorbonne campus and Spanish for the Granada campus), except in Italy where the students were able to answer the questionnaires directly in English. In Korea, Spain and France, a few questionnaires were also used in English when students or teachers/researchers were foreigners not perfectly comfortable with the local language.

2.3. Treatment of data and calculation of the ISAIAS FAST score

The treatment of data used in this study was the same as the one described in the first part of this series of 3 articles (see article 1 for details). The key points were recalled below.

The questions of the questionnaire were deeply interconnected and built following a network of reasoning that allowed to detect anomalies in the answers. They were regrouped in 4 groups, termed the 4 dimensions (D) of the questionnaire (following and adapting the general components of intercultural competences proposed by Deardorff): “Attitudes” (D1), “Knowledge and Comprehension” (D2), “Skills” (D3) and “Desire internal outcomes” (D4).

The score of each dimension gave important information on the development of each specific component of intercultural competences, and therefore allowed to draw a specific profile of each individual (or group of people), independently from its global FAST score. Furthermore, many informal interviews with the responders have been done.

When considering each questionnaire separately, in order to calculate the scores of each dimension, the scores of all questions composing a dimension were added, and the total was then divided by the number of questions of the dimension. To calculate the ISAIAS FAST score of each individual, the scores of all questions were added and the total was divided by 30 (total number of questions). The score of each dimension and the total FAST score were therefore always between 1 and 4.

In this study, all data were integrated through Statistical Package for the Social Sciences (SPSS, IBM, Armonk, NY, USA) program, in order to get a mean value of the scores of each dimension and of the final ISAIAS FAST score, of each group of students and professors/researchers evaluated in each dental school.

Finally, these statistical results were completed, analyzed and compared using the qualitative data gathered during the investigation. It was voluntarily avoided to draw a direct statistical comparison between the tested groups, as it would be meaningless. The scores have to be compared while taking especially into consideration the national and

organizational culture and other qualitative data that influence the understanding and interpretation of each score.

3. Results

Following the previously described mixed methodology, data have been collected in the dental schools. The answers to the questionnaires were integrated in order to calculate for each tested group, the mean value of the global ISAIAS FAST score and of the scores of each dimension of intercultural competences. Results of the Professors/teachers and researchers were presented in the **Table 1**, and results of the postgraduate students were presented in the **Table 2**.

In each group, some strong personalities serving as leaders of internationalization have been identified and selected to serve as reference points of the dental implant groups. All of them were confirmed with the highest FAST scores (above 3.8) and therefore could serve as leaders of the groups of postgraduate students and reference points for the index of teachers/researchers.

The scores observed in School of Dentistry at the University of Granada were very high for the group of teachers/researchers, the highest among all the groups tested in this 3-part study. On the contrary, the scores of the post-graduate students - even if still quite high - were the lowest observed in the University of Granada in this 3-part study, marking a form of frustration and many unfulfilled expectations.

The scores observed in the Faculty of Odontology at the University of Paris were globally quite low for the group of teachers/researchers (below 2). On the other hand, the scores of the post-graduate students were the highest found in all Paris groups tested in this 3-part study, highlighting clearly the impact of local leaders of internationalization.

The scores observed in the Department of Oral Surgery at University Federico II of Naples were globally almost the same between the group of teachers/researchers and the group of postgraduate students, and a bit higher than the scores observed with undergraduate students, showing the impact of local leaders of internationalization, within the limits of their context.

The scores observed in the School of Dentistry at Chonnam National University were globally quite high, higher than all other groups observed in CNU, reflecting the effects of local leaders of internationalization. Teachers/researchers of CNU had the second highest scores after those of UGR, and post-graduate students had the highest scores among all post-graduate groups observed in this study. The field study highlighted that this positive result did not follow the reality of the situation, and reflected more the wish and enthusiasm for internationalization than the real local activity.

Scores and field studies were integrated in details in the discussion section.

Scores of Professors/Researchers in the Dental School					
University (Dental School)	Dimension (D) scores				Total FAST score
	1D. Attitudes	2D. Knowledge and Comprehension	3D. Skills	4D. Desire internal outcomes	
University of Granada (Spain)	2.97	3.07	3.25	3.02	3.086
Paris University (France)	2.08	1.84	1.99	1.85	1.938
University Federico 2 of Naples (Italy)	2.85	2.16	2.60	2.70	2.582
Chonnam National University (South Korea)	2.9	2.7	2.8	2.7	2.773

Table 1. Intercultural dimensions and total ISAIAS FAST scores of a group of Professors and Researchers from 4 different Dental Schools.

Scores of Postgraduate Students in the Dental School					
University (Dental School)	Dimension (D) scores				Total FAST score
	1D. Attitudes	2D. Knowledge and Comprehension	3D. Skills	4D. Desire internal outcomes	
University of Granada (Spain)	2.464	2.16	2.45	2.53	2.406
Paris University (France)	2.77	2.25	2.81	2.53	2.595
University Federico 2 of Naples (Italy)	2.70	2.30	2.60	2.50	2.526
Chonnam National University (South Korea)	2.80	2.60	2.78	2.62	2.7

Table 2. Intercultural dimensions and total ISAIAS FAST scores of a group of Postgraduate Students connected to some implant and biomaterials leaders of internationalization in 4 different Dental Schools.

4. Discussion

4.1. General observations

The FAST scores and field observations in the 4 universities revealed very different situations and problematic. Even if the scores themselves appeared quite logical for the researchers, they shall not be considered without a deep observation and description of each national and academic environment. The FAST questionnaire was in many situations a support to evaluate deeper the reality of a situation that could only be understood by the campus field study. The combination of the scores of the questionnaires (quantitative analysis) and of the field study (qualitative analysis) has been sufficient to illustrate clearly the Strengths, Weaknesses, Opportunities and Threats of the internationalization efforts, and the differences and similarities in internationalization of higher education and research, in the tested dental implant/biomaterial groups from these 4 universities. The detailed analysis was done by school and described in its global perspective in the following chapters.

4.2. About the Implant/biomaterial Group at the University of Granada

Official programs in Implant Dentistry and Biomaterial at Spanish Universities are quite limited. Even if Implant Dentistry is the theme of the most important international meetings worldwide, it remains taught in Spanish Dental Schools in Surgery, Periodontics or Prosthodontics Programs, and not in specific programs based exclusively about implants. There is no official postgraduate program in Implant Dentistry, although there is a large proposal of unofficial programs offered by private entities, with a tremendous deregulation about teaching and research in Implantology and its associated techniques and procedures, as well as in biomaterial usage.

Traditionally, Dental schools have had a very limited activity in implant dentistry and biomaterials in the last 30 years, and it started to develop only in the last years. There are few active groups in Spain with some reputation in this field, normally associated to Periodontics or Oral Surgery Departments. They are focused mainly in clinical approaches and scarce clinical research, although there is currently a trend to basic research related to biomaterials and cell biology. The number of indexed international publications from Spanish authors has been also increasing in Implant Dentistry, and the visibility of some Spanish researchers in the key international meetings on the topic is increasing slowly.

Spanish dental implant groups are not following a pre-established strategy of internationalization, as the major institutions in North Europe and USA do. Traditionally the potency of the Spanish language has been a hidden enemy for this internationalization. Few professors in the middle age are able to speak fluently English, due to the educational policies followed in the 70s and 80s, what became an important limitation. University Complutense of Madrid leads the international visibility of Spanish Periodontics and Implant Dentistry abroad Spain. Other young Academic groups (like at the University of Granada) are developing different strategies based on the formation of their new elements in prestigious Programs in American Universities, promoting legal agreements between programs and their leaders, and generating a fruitful didactic and research collaboration between Institutions. However, only a small number of foreign students come to Spain to receive specific formation in Implant Dentistry, and the international relationship used to happen by emigration of young and capable pearls. Mechanisms to promote the return of these young specialists have to be developed in order to reverse the trend of the internationalization in Spain, related to Implant Dentistry and Biomaterials.

The results observed in this study somehow highlighted the problematic of the situation in Granada. The group of teachers/researchers showed a very high FAST score and high values in all dimensions of intercultural competences (the highest among all groups from this 3-part study). This revealed the effect of the strong policies of the University of Granada to promote internationalization as a main vector for its development and international visibility. Even if this group of professors experienced difficulties to communicate in English, the very strong ties and development of the dental school with other Latin countries (particularly in South America), may explain a part of this very high score. The recent efforts of the new generation of teachers/researchers towards North American Universities also explain a part of this positive result, as a form of significant enthusiasm promoted at the scale of the dental implant groups themselves.

However, the scores felt down significantly in the postgraduate group tested in this study (this was a lowest score of all the groups tested in the University of Granada). This result was clearly associated with unfulfilled expectations, with a frustration to not have more openings and more internationalization opportunities during their postgraduate studies. This group perceived the language as a much bigger difficulty than the group of teachers/researchers (young postgraduate students wished and expected to communicate in English, while teachers/researchers appeared satisfied to communicate in Spanish). As this group of postgraduate students was at the Frontier between the promoting internationalization policies of the University of Granada and the practical difficulties to fulfill concretely this internationalization, their answers to this test appeared more negative. This study therefore confirmed the paradox of the internationalization in Granada University observable in the field [14], between strong policies and practical limitations, and the need to develop more concrete opportunities to be able to compete with the North American model of massive internationalization of Higher Education.

4.3. About the Implant/biomaterial Group at Chonnam National University

In local clinics in Korea, the demand for dental implant grew intensively from the 90s. However, education in dental implants only started around 10 years ago for dental school students. Most general practitioners learnt dental implant surgery through seminars. Many dentists also went abroad for learning implant dentistry. The situation evolved very quickly in the last 10 years, simultaneously to the growth of the implant dentistry and biomaterial industry in Korea, and large quantities of seminars or courses for teaching implant dentistry are now organized in the country, becoming one of the most active center on the topic in Asia. Actually, Korea is in the top countries by number of implants per inhabitant, close to the statistics of Switzerland.

As dental implant is now a general treatment option in Korea, dental schools are trying to teach implant treatment to students as well as general practitioners. In CNU dental hospital, a special clinic for dental implant patients exists, and periodontics, maxillofacial and oral surgery, and prosthodontics groups are actively treating these patients in this special clinic. All these groups are involved in some way in dental implant and biomaterial education in the school. In the third year of CNU dental school, the subjects named “dental implantology”, “dental implant materials”, and “implant surgery” are listed on the curriculum, and students experience implant surgery and prosthodontics on the models. CNU Dental School was among the first schools to prepare such curriculum in Korea.

In Korea, a specialist system in dentistry started about 10 years ago, but no specialist in dental implant exists: periodontists or oral surgeons do most dental implant surgeries. To pass this specialist board, a certain number of cases must be done during the training in the dental hospital. These postgraduate students and their leaders constitute therefore the main dental implant and biomaterial groups and activities for education of the school. For implant and biomaterial research, CNU received several major national grants, such as the Brain Korea 21 (BK21), the NRF (National Research Foundation of Korea) Medical Research Center (MRC) for Biomineralization disorders and others, to promote this activity in the school. The development of bone regenerative biomaterials and strategies to improve peri-implant tissues has been an important objective of these groups (as a complement to the development of the dental implant industry), promoted at the level of the Ministry. However, the results of these efforts remain quite embryonic at this time. CNU implant and biomaterial groups have a good reputation in South Korea, but are not so visible internationally. As it is frequent in Korean universities, the cultural and language limitations seemed to impact significantly this endeavor.

International interaction is welcome at CNU dental school, as it is in the general policies of the university to promote internationalization of higher education and research to create “global leaders” [15]. Practically speaking, the actual internationalization is not so much animated and there is no real global strategy. The reason of this situation is that the CNU dental implant groups have a lot of patients, cases, materials and well-organized implant surgery procedures to manage, and an efficient internationalization strategy is not perceived as an immediate significant need. This is the paradox of Korean society where there is a wish for internationalization pushed by the authorities (which are expected to be obeyed, as it is a very collectivist Confucianist and pragmatic society with strong power distance)[4], in a very hierarchic and closed Academic environment that refrains this endeavor [15]. The CNU dental groups like to develop links with foreign schools to have global reputation, and the School even recruited a famous foreign professor for research and publication activity. Periodically they open a symposium to promote global relationships. It is also common to see dentists from China and Mongolia coming to CNU to learn dental implant surgery. As Korea has one of the most advanced implant dentistry industry in Asia, many Asian dentists are interested to have experience in Korea, and CNU dental school participates to this effort. Because of the specific cultural environment, this interaction remains, however, very limited in comparison to what could be developed (observations of foreigners), and the development of internationalization of these groups remains much lower than what can be observed in North American Universities.

The results observed in this study highlighted the problematic of the situation in CNU. The FAST scores of the teachers/researchers and post-graduate students were quite high (the postgraduate group had the highest score among the 4 dental schools), proving a real wish to internationalization, engraved in their thinking by the strong hierarchic pressure of the University and Ministry policy (the need to create “global leaders”). Moreover, many Professors/researchers in CNU have spent some years abroad (often in the US) for their PhD or research leave, and were therefore quite opened to the concept of internationalization. On the other hand, the field study highlighted the relative weakness of this internationalization, mostly due to the practical organizational culture of the university and the limitations imposed by the hierarchic organization of the school [16,17]. This kind of discrepancy between the wish to internationalization and the concrete result can be found in the Asian countries with a strong collectivist Confucianist organization [4]. The FAST score of CNU revealed therefore the real potential of the dental implant group, more than its current

practical reality, and is an invitation to push for a more efficient organization in order to improve the international impact of the CNU dental implant groups.

4.4. About the Implant/biomaterial Group at the University of Paris

Even if the field of biomaterials and implantable material research is now a major center of interest worldwide, it is difficult to point out in Paris University a real strategy or a strong well-identified group of research and teaching in this field with a worldwide fame and recognition. Some research groups have a good reputation in some aspects of dental materials (composites, ceramics particularly) and oral biology, but the research in implantable biomaterials and implant dentistry remains limited in both Paris dental schools.

In France, due to historical reasons and the administrative organizational culture, the concept of post-graduate diploma and specialization in periodontology and implant dentistry (as it is found in Anglo-Saxon countries for example) does not exist. However many diplomas have been developed to teach the basic clinical techniques and knowledge in periodontology and/or implant dentistry, mostly in the form of University Diplomas (DU) or as a part of the new Diploma of Specialization in Oral Surgery. In all cases, independently from these major diplomas, most dentists learn implant dentistry through companionship, private courses and their own experience. Dental schools can also deliver various kinds of certificates or attestations. Paris 7 Diderot dental school has a significant tradition of clinical teachings in implant dentistry and related applied biomaterial research, and it is probably the most active dental school in France on this topic; for the Academic year 2014-2015, 5 active clinical University Diplomas covering different aspects of periodontology and implant dentistry can be observed.

Dental Implant Groups at Paris University do not have a global and coherent strategy of internationalization, in the way it is defined in major Anglo-Saxon Universities. These groups are developing links with foreign schools, mostly in the French speaking area (particularly in Africa and the Middle-East), and the university diplomas are in theory opened to all foreigners (with the obligation to speak and understand French). These university diplomas can only receive a very small number of participants (4 to 10 for example) and therefore the quantity of foreigners is very small. Moreover, these groups have limited research and publication activity in English (while they are much more active in French publications and meetings), what is also reducing the opportunities of internationalization. On the other hand, the few students following some leaders of the dental implant groups of Paris University have the opportunity to develop their intercultural skills through the international experience (contacts, international meetings, access to international journal and motivation to read them) associated to their leaders.

The results observed in this study highlighted the problematic of the situation in Paris University. The mean scores of the teachers/researchers were the lowest from the 4 universities, below the medium level (2). However, 2 very different patterns of responders could be observed (through the questionnaire and field research). Some Professors had very opened attitude toward international activities in Academia and these mostly reflected positive outcomes of international collaboration in the questionnaire (higher FAST score), while others (particularly the youngest responders) appeared refractory to internationalization basic understanding and concepts. This result confirmed the field observations gathered during the study and the knowledge about the dimensions of the French national culture (high power distance, high individualism and high uncertainty

avoidance)[4], where many young teachers/researchers, paradoxically, were very French-centered, what did not correspond to the attitudes of the more experienced professors.

On the other hand, the group of postgraduate students showed a much higher FAST score (second, just a bit lower than the Korean one), with a very positive attitude, even with the difficulties in knowledge and comprehension. The score of this group was the highest from all French groups tested in this 3-part study, and it can be directly connected to the leadership of a few strong personalities in the dental implant/biomaterial groups promoting this positive behavior. Therefore, Paris dental schools are good examples of closed systems that are able to open considerably as soon as an adequate leader of internationalization is activated.

4.5. About the Implant/biomaterial Group at University Federico II of Naples

The University of Naples “Federico II” has a significant tradition of clinical teaching in implant dentistry and related applied biomaterial research; there are several research groups on this topic that have significant reputation recognized nationally and internationally. The activity in implant dentistry started about 30 years ago and the results have been presented initially at national congress and private courses. The first international articles were published about 10 years ago. The barrier of the language has been being clearly a significant limitation, even if the situation has been improving slowly in the recent years.

In Italy, Universities can deliver various kinds of certificates or attestations in implant dentistry, but only the post-graduate Diploma of Specialization in Oral Surgery (which is a more general specialization) has a significant legal value. Followers can occasionally attend lectures on specific subject given by foreign teachers invited by the academic director of the diploma. However, the University does not support other significant post-graduate activities and the economical resources remain scarce, as they come only from the very limited subscription fees of the followers. The circumstances described above may explain how, in this highly competitive scientific field, no strong or large group of research has been developed. Professors organizing these diplomas have a key role in the internationalization of the Napolitan University in the field of implant dentistry and related applied biomaterials, but they have often to develop everything by themselves.

Dental Implant Groups at Naples University do not have a global coherent strategy of internationalization as it is defined in major Anglo-Saxon Universities. In recent time, Conventions have been set up with other Mediterranean Universities to promote cultural exchanges. The university diploma, even though opened to foreign students, is not a real vector of internationalization, as the proposed postgraduate activities remain very Italian-centered in the actual globalized and competitive post-graduate education offer. Only few students following some leaders of the dental implant groups of Naples University have the opportunity to develop their intercultural skills through the international experience (contacts, international meetings, access to international journal and motivation to read them) associated to their leaders.

The results observed in this study highlighted the problematic of the situation in the University of Naples. The FAST scores of both teachers/researchers and postgraduate students were positive and very similar. Correlated to the field study, the results showed a visible wish for internationalization within the practical limitations related to the organizational culture of the school. Teachers/researchers and postgraduate students showed higher scores in development of different aspects of intercultural competences in comparison

to the undergraduate students of this dental school. This positive result was mostly related to the impact of active leaders of internationalization in their close environment. However, this impact appeared limited by the practice: very limited mobility, rare foreign colleagues, etc. The absence of global strategy and difficulties of investment from the dental school to promote a more global activity and leadership for the specialized dental implant groups could be seen among reasons. Italy is a society with a high individualism, quite high uncertainty avoidance level and middle pragmatism [4], what can explain easily this very stable attitude, positive but limited. It is a model that needs a better organization of the school to promote a stronger leadership in the field (opinions).

5. Conclusion

Dental Implant/Biomaterial Groups had different ISAIAS FAST scores between the different universities, however, there was a convergence towards higher scores at the postgraduate level and between teachers/researchers. The groups in direct contact with the main identified leaders of internationalization of each dental implant group had in general the highest possibility for development of intercultural competences. However, field studies clearly showed that the Academic environment (organizational culture) and the absence of global strategy was often a limitation for the efforts of these leaders of internationalization.

This convergence may explain why the cooperation within the POSEIDO network is going smoothly, as all key members are active leaders of international academic collaborations with strong intercultural sensitivity. Those are major characteristics for the development of international, interdisciplinary projects in education and research and for the general improvement of the internationalization process of a campus in specialized fields such as implant dentistry and biomaterial research.

As a final conclusion for this series of articles, the ISAIAS FAST questionnaire and the score are interesting instruments of observation, but it should be never forgotten, that the calculation of a score value is not the real objective. First of all because this questionnaire allowed to go in direct contact and discussion with the groups of academic stakeholders and to perform elegantly a field evaluation of internationalization, where concrete information can be obtained. If the final scores and the field observation appeared to be well connected in this study, it is the sign that the questionnaire was well thought and the field study properly managed, but the score alone does not mean anything without a deep evaluation and understanding of the context in which it was calculated. It is a methodology proposed to see closer the dimensions of internationalization of a campus, overcoming limitations of evaluation through mobility statistics. The ISAIAS protocol is first of all a bridge of intercultural communication, and a first step to understand and improve the interfaces between groups of Academic entities.

Disclosure of interests

The authors have no conflict of interest to report.

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Author Contributions

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References

- [1] Deardorff DK, de Wit H, Heyl JD, Adams T. *The SAGE Handbook of International Higher Education*. SAGE Publications, Inc. ISBN: 9781412999212. 2012.
- [2] Knight J. *Internationalization Remodeled: Definition, Approaches, and Rationales*. **Journal of Studies in International Education**. 2004;8(1):5-31.
- [3] Koehn PH, Deardorff DK, Bolognese KD. *Enhancing International Research and Development-Project Activity on University Campuses: Insights From U.S. Senior International Officers*. **Journal of Studies in International Education**. 2011;15(4):332-50.
- [4] Hofstede G, Hofstede GJ, Minkov M. *Cultures and organizations. Software of the mind. Intercultural Cooperation and Its Importance for Survival*. London. McGraw-Hill. ISBN 978-0-07-1664418-9. 2010.
- [5] Olson CL, Kroeger KR. *Global Competency and Intercultural Sensitivity*. **Journal of Studies in International Education**. 2001;5(2):116-37.
- [6] Dohan Ehrenfest DM, Sammartino G, Bernard JP. *The Periodontology, Oral Surgery, Esthetic and Implant Dentistry Organization (POSEIDO) and Open Journal: an international academic and scientific community for a new approach of open-access publishing*. **POSEIDO**. 2013;1(1):1-5.
- [7] Dohan Ehrenfest DM, Kang BS, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to implant surfaces and design from the POSEIDO: a standard for surface characterization*. **POSEIDO**. 2013;1(1):7-15.
- [8] Dohan Ehrenfest DM, Sammartino G, Shibli JA, Wang HL, Zou DR, Bernard JP. *Guidelines for the publication of articles related to platelet concentrates (Platelet-Rich Plasma - PRP, or Platelet-Rich Fibrin - PRF): the international classification of the POSEIDO*. **POSEIDO**. 2013;1(1):17-27.
- [9] Dohan Ehrenfest DM, Del Corso M, Kang BS, Leclercq P, Mazor Z, Horowitz RA, Russe P, Oh HK, Zou DR, Shibli JA, Wang HL, Bernard JP, Sammartino G. *Identification card and codification of the chemical and morphological characteristics of 62 dental implant surfaces. Part 1: description of the Implant Surface Identification Standard (ISIS) codification system*. **POSEIDO**. 2014;2(1):7-22.
- [10] Deardorff DK. *The SAGE Handbook of Intercultural Competence*. SAGE Publications, Inc. ISBN: 9781412960458. 2009.
- [11] Knight J. *Monitoring the Quality and Progress of Internationalization*. **Journal of Studies in International Education**. 2001;5(3):228-43.
- [12] Deardorff DK. *Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization*. **Journal of Studies in International Education**. 2006;10(3):241-66.
- [13] Wisniewska LM. *Research on professional practice: internationalization of university campuses and its formative impact on the development of intercultural competences among professionals*. **Høgskolen i Akershus, Erasmus Mundus**. 2011.
- [14] Altbach PG, Knight J. *The Internationalization of Higher Education: Motivations and Realities*. **Journal of Studies in International Education**. 2007;11(3-4):290-305.
- [15] Kim T. *Internationalisation of Higher Education in South Korea: Reality, Rhetoric, and Disparity in Academic Culture and Identities*. **Australian Journal of Education**. 2005;49(1):89-103.
- [16] Byun K, Kim M. *Shifting Patterns of the Government's Policies for the Internationalization of Korean Higher Education*. **Journal of Studies in International Education**. 2011;15(5):467-86.
- [17] Jon JE. *Realizing Internationalization at Home in Korean Higher Education: Promoting Domestic Students' Interaction with International Students and Intercultural Competence*. **Journal of Studies in International Education**. 2013;17(4):455-70.

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