

STRATEGIES FOR IMPLEMENTING INTERNATIONALIZATION OF BIOLOGY EDUCATION IN NIGERIAN TERTIARY INSTITUTIONS

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Abstract

Internationalization in biology education represents an important way to guarantee the quality of highly specialized teaching in tertiary institutions. This paper therefore examined the strategies for implementing internationalization of biology education in Nigerian tertiary institutions. The concepts, myths and misconceptions of internationalization were highlighted. The scope of internationalization was discussed thus; considering issues of global citizenship such as sustainable development. Also, strategies for implementing internationalization such as student exchange programmes, research and scholarly collaborations and extra-curricular activities were discussed. Furthermore, the benefits of internationalization were enumerated as producing graduates who are internationally knowledgeable and cross-culturally sensitive; moreover, failure to provide incentives to students pursuing collaborations was one of the challenges highlighted. Recommendations were made which includes provision of additional resources to promote family values and flexibility to researchers that could allow them to integrate personal commitments in their international professional career.

Keywords: Internationalization, Scholarly Collaborations, Tertiary Institutions, Global Citizenship, Sustainable Development

Biology as a science subject is very vital in all aspect of human endeavour including research and education. To achieve the development of a long term strategy for higher education in biology, research and education must be taken into consideration; national and international priorities should be assessed in the general framework, induced by the diversity of biological topics, a solid scientific background for the development of qualified human resource (Sarbu and Vadineanu, 2011). Internationalization in biology represents an important way to guarantee the quality of the highly specialized teaching areas in higher education. Biological studies imply an adequate background in different sciences and the background of different life levels that are expected to be offered in the higher education system.

In order to accomplish the diverse teaching and research activities in internationalization as desirable goals of the education process, there is need to support and promote the necessity to develop and implement an appropriate higher education and infrastructure that is, the college department as the main structure functioning in order to avoid the existent overlaps in our curriculum. In order to achieve the objective of internationalization of the studies of biology education, a less rigid system for students and teaching staff mobility will be promoted. Computerized teaching and distant learning are important ways to assure a high training standard of biology graduates across the globe. The main tool to achieve this objective is the effective international network on an international scale as well as at the Nigerian level.

Higher education has become a “global open market” over the last few decades. It is slowly but becoming common to think that biology research and especially knowledge production are above all internal activities in the 21st century. This image is confirmed by enthusiastic Dutch researchers who appear daily in the media to tell the world about the Higgs particle, stem cells, dark matter, medication to treat cancer and the dangers of antibiotics (KNAW, 2015)

According to Nannes and Hellstem (2005), internationalization can be defined simply as a process of integrating international and intercultural dimensions into the teaching, research and service functions of higher education institutions. It is a process by which higher education is developed in a more international direction. As Ramos (2017) observed, Internationalization may assume different meanings and ways in the diverse higher education systems worldwide, as they face distinct challenges, have different policy perspectives, institutional capacities, and administrative systems. Nonetheless, some practices are widespread

.” Across many countries, it is being increasingly recognized that internationalization is or at least should be an important mainstream element of higher education. It is essential for an institution to pursue collaborations with an international institution, industries, and foundations that could complement their research expertise and initiatives.

The Concept of Internationalization in Biology Education

The term internationalization of higher education is frequently used today not only in universities and colleges but also by governments and international organizations, including United Nations Educational, Scientific and Cultural Organisation (UNESCO), the World Bank and various Non-Government Organizations (NGOs). However, the term is used in a number of different senses in the literature, often without being defined in any precise way. Knight (2008) posits that internationalization is the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of post-secondary education”. Further, within the literature, frequently no clear differentiation in meaning is made between the terms internationalization of higher education and globalization in relation to higher education. There is also often some measure of confusion or overlap in the literature with related terms such as regionalization, nationalization, and de-nationalization.

In practice, internationalization of higher education usually refers to one or a combination of the following activities:

- The international movement of students between countries;
- The international movement of academic staff and researchers;
- Internationalization of higher education curricula in order to achieve better understandings about other people and cultures, and competence in foreign languages;
- International links between nation states through open learning programmes and new technologies;
- Bilateral links between governments and higher education institutions in different countries for collaboration in research, curriculum development, student and staff exchange, and other international activities;
- Multinational collaboration via international organizations or through consortia.
- Export education where education services are offered on a commercial basis in other countries, with students studying either in their home country or in the country of the provider.

Hudzik (2011, 2015) views internationalization as ‘a commitment, confirmed through action’, to infuse international and comparative perspectives throughout the teaching, research and service missions of higher education. Internationalization is also the integration process of international and intercultural dimensions that are the function of teaching, researching, and institutional service delivery. Internationalization has become more complex and comprehensive in recent decades. There is now a broad consensus that internationalization of education encompasses three major areas:

- a) Movement of scholars and students seeking training and research,
- b) Convergence in curricular content
- c) Structural arrangements that provide cross-border technical assistance and educational cooperation programs.

One of the more powerful ways in which internationalization of action arises is through reconceptualization of citizenship. Rather than seeing themselves as citizens of a region, cultural subgroup or nation state, ordinary people are increasingly seeing themselves as entitled to, and ready to participate in, opportunities for interaction, work and consumption on an international scale. Individuals see themselves as citizens of the world, free to move about, trade experiences, seek educational opportunities, and pursue work or entertainment. (Douglas & Nielsen, 2012)

Internationalization of university refers to the process of integrating an international, intercultural and global dimension into the purpose, functions and delivery of education and research of the concerned university (Chan and Dimmock 2008). According to Knight (2014), Internationalization at the institutional levels is defined as the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of postsecondary education; these includes transnational education, borderless education, and cross-border education. Excellent science is not the domain of any single country and many scientific problems involve major instrumentation and facility costs that appear much more affordable when cost-sharing arrangements are in place (National Science Foundation 2008).

Myths and Misconceptions about the Internationalization of Tertiary Institutions

The terms internationalization of higher education and globalization are sometimes used as being synonymous. The term globalization is used to refer to systems and relationships that are practiced beyond the local and national dimensions at continental, regional and world level. These relationships can be technological, cultural, political and economic as well as educational. In a broader sense, globalization simply means becoming more global (Harman, 2005).

Over the years, misconceptions continue to surface persistently that internationalization is synonymous with providing training based on international content or connotation: European studies, international business, or universal music. Within the institutions and schools offering these programs, the prevailing opinion seems to imply that, in this way, internationalization has been properly implemented. Without meaning to ignore the valuable contribution of such programs, again, it is too simplistic to declare regional studies as synonymous with internationalization (De wit, 2011).

Jones (1998) saw globalization:

... as economic integration, achieved in particular through the establishment of a global marketplace marked by free trade and a minimum of regulation. In contrast, internationalism refers to the promotion of global peace and well-being through the development and application of international structures, primarily but not solely of an intergovernmental kind. Despite important conceptual difficulties in formulating the case for internationalism and despite the world's patchy record in

putting its principles into effect, the essentially pro-democratic logic of internationalism stands in sharp contrast to the logic of globalization

Furthermore, Knight (2011:14) writes about “Five Myths about Internationalization”. According to her, these myths are:

- *Foreign students as internationalization agents: “more foreign students on campus will produce more internationalized institutional culture and curriculum”.*

- *International reputation as a proxy for quality: “the more international a university is the better its reputation”.*

- *International institutional agreements: “the greater number of international agreements or network memberships a university has the more prestigious and attractive it is”.*

- *International accreditation: “the more international accreditation stars an institution has, the more internationalized it is and ergo the better it is”.*

- *Global branding: “an international marketing scheme is the equivalent of an internationalization plan”.*

(De Wit, 2011:6) wrote about misconceptions and challenges for higher education, and identified nine misconceptions, two of which are similar to Jane Knight’s myths. These misconceptions are:

- *Internationalization is similar to teaching in English.*

- *Internationalization is similar to studying abroad.*

- *Internationalization is similar to teaching an international subject.*

- *Internationalization means having many international*

- *Internationalization can be implemented successfully with only a few international students in the classroom.*

- *Intercultural and international competencies do not necessarily have to be assessed as such.*

- *The more agreements an institution has, the more international it is*

- *Higher education is international by its very nature.*

- *Internationalization is an objective in itself.*

De wit (2011) opined that, for the internationalization of higher education, it is important to go back to basics and look carefully at the what, why and how of internationalization in the current global knowledge economy.

The Scope of Internationalization of Biology Education in Tertiary Institutions.

Internationalization has been defined as a process of change that increasingly places the understanding and ambition of staff and students in an international context. According to the University of Sheffield (2017:4), the scope of internationalization in the higher education environment is vast and includes a number of areas, such as:

- *Supporting inclusive learning and teaching*

- *Offering international students exchange*

- *Encouraging second language learning*

- *Embedding international perspectives and opportunities for developing intercultural agility*

- *Recruiting international students*

- *Fostering international research collaboration*

- *Welcoming a multicultural staff and student body*

- *Considering issues of global citizenship such as sustainable development*

Ensuring that the curriculum content reflects an international context for teaching and research is increasingly important. From a learning and teaching perspective, internationalization impacts on many other areas which include, curriculum design, assessment, employability and academic support.

The internationalization of higher education mainly embraces mobile faculty and students, educational aids and international cooperation, and curriculum internationalization. In other words, internationalization of higher education includes faculty and student exchange, joint teaching and research programmes as well as curriculum internationalization (Yunlai and Zhehua 2008).

Strategies for implementing Internationalization of Biology Education

Knight (2004) enumerated the various strategies that can be used to implement internationalization which could be applied to biology education in tertiary institutions of learning.

- **Academic programmes:** Student exchange programmes should be introduced, foreign language study should be part of the curriculum and internationalized curricula should be used in Nigerian tertiary institutions. International students should be admitted into Nigerian institutions of learning. The teaching/learning process should include joint/double-degree programmes, cross-cultural training, and faculty/staff mobility programmes. Visiting lecturers and scholars should be accepted in our institutions of learning.

- **Research and scholarly collaboration:** Area and theme centres should be created to aid students, joint research projects should be embarked on with international tertiary educational institutions, international conferences and seminars should be held in Nigerian tertiary institutions to aid participation, articles and papers should be published and international research agreements should be signed, Research exchange programmes should be embarked on. This will aid internationalization.

- **Academic administration and governance:** An expressed commitment by senior leaders and administrative heads of tertiary academic institutions will help to enhance the internationalization of biology education. Active involvement of faculty and staff will contribute immensely to internationalization.

- Articulated rationale and goals for internationalization should be created and enacted upon. This will lead to the recognition of international dimension in institutional mission statements, planning, and policy documents.

- **Operations:** Internationalization should be integrated into institution-wide and department/college-level planning, budgeting, and quality review systems. Appropriate organizational structures and systems (formal and informal) for communication, liaison, and coordination should be created so as to aid international collaborations between institutions. Adequate financial support and resource allocation systems should be efficiently coordinated so as to ensure efficiency and actualization of internationalization goals and objectives.

- **Extracurricular activities:** Students should be encouraged to be part of international Student clubs and associations. International and intercultural campus events and Liaison with community-based cultural and ethnic groups is a major channel in which internationalization can be propagated.

- **Services:** Support from institution-wide service units, i.e., student housing, fundraising, alumni, information technology, Involvement of academic support units, i.e., library, teaching and learning, curriculum development, faculty and staff training, Student support services for incoming and outgoing students, i.e., orientation programmes, counselling, cross-cultural training and visa advice are services that can be rendered to students and staff in institutions of higher education that will aid the internationalization of higher education.

- **Human resources:** Recruitment and selection procedures should recognize international expertise. Reward and promotion policies will help to reinforce faculty and staff contributions. Faculty and staff professional development activities and all-round support for international assignments and Sabbaticals is a major strategy that will aid and enhance the internationalization of biology education in Nigerian tertiary institutions.

Benefits of Internationalization on Biology Education

Williams (2008) stated that internationalization of the curriculum may be an effective means of providing an academic environment that supports the diverse cultural learning need of international students. Leask (2011) earlier suggested that “internationalizing university curricula is a powerful and practical way of bridging the gap between the rhetoric and practice to including and valuing the contribution of international students.”

Internationalization provides a student’s centered learning experience for all students and preparing students to be successful in today’s increasingly interdependent global society (Schuerhoiz-Lehr, 2007). According to Knight (2014), recent national and world wide surveys of university internationalization priorities and rationales show that establishing an international profile or global standing is becoming more important than reaching international standards of excellence.

The benefits of internationalization include:

- Diversifying and enhancing the learning environment for the benefit of domestic students, the University, and the nation;
- Diversifying and enhancing the student population by attracting excellent international undergraduate and graduate students;
- Ensuring that research and scholarship are informed by international, as well as national, provincial and local, considerations and issues;
- Producing graduates who are internationally knowledgeable and cross-culturally sensitive;
- Addressing through scholarship the increasingly interdependent nature of the world, thereby contributing to improved understanding among nations;
- Generating resources to enhance other international activities;
- Helping to maintain the economic, scientific and technological competitiveness of Canada, and promoting the export of Canadian educational products and services abroad; and,
- Raising the international profile of the University.
- Within the context of learning and teaching, learning in an internationalized environment has the potential to impact the student experience in several ways, including socially and intellectually (The University of Sheffield, 2017:5)

- Integration of home and international students, these include the need to be adaptable and responsive with the ability to tolerate uncertainty as well as broad understanding of public health and global health care.

- The international mobility of students and academics as well as collaborative research and education initiatives are being seen as productive ways to develop closer geopolitical ties and economic relationships. The development of strategic alliances through internationalization of postsecondary education is therefore being seen as a way to develop closer cooperation bilaterally or regionally to gain a competitive edge.

- An educated, trained, and knowledgeable citizenry and a workforce able to do research and generate new knowledge are key components of a country's nation-building agenda. Many countries are lacking the physical/human infrastructure and the financial resources to offer postsecondary education opportunities to their citizens. Traditionally, international academic projects that have developed as part of development and technical assistance work have been considered an important contribution to the nation-building efforts of a developing country. International development work based on mutual benefits for all partners continues to be a key aspect of the internationalization of postsecondary education.

Generally, international education engenders the "international characteristics" fostered in students that are desirable in a global economy: international-mindedness and open-mindedness, second language competence, flexibility of thinking, tolerance and respect for others (Chan and Dimmock, 2008).

Challenges of Internationalization of Biology Education in Tertiary Institutions

In spite of the benefits of internationalization in biology education, there are still challenges which include the following (Adapa, 2008).

- a. Student mobility is mostly restricted by financial and curriculum related constraints. Participating institutions most times fail to provide incentives to students and researchers interested in international research and also fail to offer them common supervision and joint degree programmes. Most times, the inability to have faculty collaborations that will lead to student exchanges and joint programmes is one of the major challenges facing Internationalization of Biology education in tertiary institutions.
- b. Failure to provide incentives for young students and researchers who will like to pursue international collaborations and partnerships early in careers.
- c. Family commitments were considered as one of the top factors that affect international collaborations and mobility of students and researchers. In most of the scenarios, a comfortable and balanced family life results in successful international careers.
- d. The complexity, high degree of differentiation, multiplicity of units and standards, autonomy of professors, control and management philosophies and mechanisms, which increasingly do not operate effectively even in business organizations, are likely to be complicating and inhibiting factors vis-à-vis pressures for institutional change, particularly, for internationalization of the university as an identified strategic high priority. Under these circumstances, the culture of the university assumes greater prominence in mediating and regulating the university environment.

Conclusion

Biology as a science subject is very vital in all aspect of human endeavour including research and education. Achieving this purpose, internationalization is one of the important ways to guarantee the quality of highly specialized teaching and research in tertiary institutions. One of the misconceptions is that internationalization is similar to studying abroad. The strategies to effectively implement internationalization involves introduction of student exchange programmes, research and scholarly collaboration and extracurricular activities. However, it is essential to provide incentives to participants and additional resources to promote family values and flexibility to researchers that could allow them to integrate personal commitments in their international and professional career without compromising their research and educational goals. An internationalized curriculum, enveloping a curricular and educational change that recognizes the assorted foundations and learning styles of worldwide educational reforms, will be a nostrum to the challenges confronting internationalization of biology education. However, the foundation of an internationalized educational programme would require a continuous, collaborative, intrigue approach combining the support, knowledge, efforts, and skills of inter-culturally sensitive and internationally experienced faculty, students, and administrators. Such a curricular reform process must be institution-wide in order to best meet the needs of all students in all departments and faculties. Furthermore, institutions need to be mindful of the various components that can restrain the effective improvement and conveyance of an internationalized curriculum in order to address and minimize the effects of these variables on their curricular reform process. The move towards a transformation, which advances basic consciousness of the predisposition and qualities intrinsic in instructive and curricular methodologies, recognizes and acknowledges culturally diverse ways of acquiring knowledge, and values students as active partners in the learning process, is the goal towards which higher educational institutions ought to aspire for the advantage of future generations of domestic and international students.

Recommendations

1. It is crucial to have on-going faculty collaborations that will lead to student exchanges and joint programmes. It is vital to educate undergraduate and graduate students about benefits of having an international experience and instill globalization concepts early in their educational programme (EU/US Research and Education Workshop 2008).
2. . It is important to provide incentives to junior faculty who are not tenured and would like to pursue international collaborations early in their careers. In addition, a faculty could have appointments at two universities (e.g. 50-50%) to allow them flexibility to conduct teaching and research (EU/US Research and Education Workshop 2008).
3. It is essential for an institution to provide additional resources to promote family values and flexibility to researchers that could allow them to integrate personal commitments in their international professional career without compromising their research and educational goals and objectives.
4. An understanding of the university via its culture can facilitate the analysis of managing structure and processes in order to implement strategies for internationalization in an integrated approach at a level broader than the single, specialized unit or sub-unit.
5. Mechanisms should be in place to measure and evaluate the success of international efforts in order to make appropriate changes to further improve the program outcome.

6. It is essential for an institution pursuing internationalization of research and education to identify countries of priorities based on their strategic plans. This could be achieved by understanding current trends and development in science and engineering fields in global scenario.
7. The share of academic research funding compared to total research funding of a country provides valuable information to initiate scientific collaborations

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