# LOOKING INTO THE RESEARCH-TEACHING NEXUS IN HIGHER EDUCATION

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**Abstract-** There is no doubt that higher education institutions (HEIs) all over the world are currently at a highly dynamic state. Clear signs of massification and increased emphasis on research productivity have all together influenced policy makers towards reforms in funding and promotion systems across the globe. In Taiwan, similar events are also happening. To make things worsts, Taiwan is currently facing a huge decline of incoming freshmen students. In reality, this dilemma can be thought of as an opportunity to revisit the core functions of the university and make effective use of the oversupply of academic resources. If done correctly, this should be able to uplift the quality of both faculty research and teaching. Most important of all, provide the opportunity to promote the well-being of the academic profession. In sum, as for the goal of Taiwan HEIs is to surpass the current dilemma and become a competitive provider of quality education. Academic productivity should therefore include a balanced between research and teaching; hence, a research-teaching nexus (R-T-N) is inevitable.

**Index Terms-** higher education, teaching profession, education policy,

## I. INTRODUCTION

Higher education institutions (HEIs) governance all over the world are currently at a highly dynamic state [1-3]. This change is said to be highly attributed to the massification of HEIs; an inevitable phenomenon noted by Trow [4] as early as forty years ago. This process of expansion from elite to mass, and eventually to universal higher education is said to be one of the major driving force for increased competitions among HEIs [5]. More important, the competition amongst HEIs was worsen with the release of the HEI rankings in 2003 [6]. Higher education competition is now not only a national issue, but instead a global one. In effect, HEIs all over are scrambling to become world-class education provider and at the same time highlighting the need for research productivity. Such increased emphasis on research productivity has all together influenced policy makers towards reforms in funding and promotion systems across the globe [1, 7-9], which in fact has also greatly affected Taiwan's higher education [10-13].

In Taiwan, higher education governance mostly mirrors global trends [14-16]. To make things worsts, Taiwan is currently facing a huge decline of incoming freshmen students. The Ministry of Education (MOE) statistics shows that there will be a significant drop of around 30,000 university students during the 2016/17 school year [17].

In effect, some of the low performing HEIs are predicted either to close down or merge together, causing imminent problems for many school administrators and faculty [16, 18]. In reality, this dilemma can be thought of as an opportunity to revisit the core functions of the university and make effective use of the oversupply of academic resources. If done correctly, this should be able to uplift the quality of both faculty research and teaching. Most important of all, provide the opportunity to promote the well-being of the academic profession. In sum, as for the goal of Taiwan HEIs is to surpass the current dilemma and become a competitive provider of quality education. Academic productivity should therefore include a well-balanced research and teaching activities; hence, a research-teaching nexus (R-T-N) is inevitable.

## II. DISCUSSIONS

### A. Contemporary perspectives on teaching and research

The current challenges in higher education are actively caused by various interacting forces such as technological advancement, globalization, massification and expansion [3], just to name a few. Such challenges have continuously opened up numerous policy changes that affect the different layers of higher education. One very important issue is the transformation of teaching and research within higher education [19]. To better understand such transformation, a look into the inner workings of the contemporary modern universities is quite important.

Early HEI models that emphasizes on research were vastly driven by the need to solve practical problems and challenges during their time, such as crops and agriculture, motor vehicles, and many others [20]. This increasing relevance of academic research would later lead to what Ben-David [21] argues as the English and German institutional models. Wherein the English model is assumed to be teaching oriented, as compared to the research oriented German model. More important, these two models each have their own strengths and weaknesses. An obvious one is that with the German model fostering basic research, while the United States (US) model focusing more on applied research [20]. These differences actually form more or less the backbone on the composition of current academic departments and faculty [22].

As with the growing international recognition on the importance of knowledge in terms of scholarly

products; such as the prestige in winning the Nobel Prize and publications in prestigious academic journals, a natural tendency for HEIs is to dominate in certain areas or discipline [23]. Some have described this phenomenon as the stratification of higher education [24, 25]. This global stratification of higher education systems can be best described in terms of research productivity [20]. Arimoto and Ehara [26] proposed a more evolved three-tier classification of research and teaching orientations, such as: 1) a German type with strong inclination for research; 2) an Anglo Saxon type with a typical balanced outlook on research and teaching; and 3) a Latin American type wherein a strong teaching emphasis is found. To some this can also be classified as the core, semi-periphery, and periphery educational systems [19, 27].

As Ben-David [21] suggests that core systems are countries such as France, Germany, United Kingdom, and the US. While, later advancements has also included countries such as, Japan, Russia, and Spain [28]. These core systems are the countries wherein the semi-periphery and periphery countries pattern from or their goal of catching up to in terms of research productivity. While the semi-periphery or semi-core systems are the countries wherein they have almost caught up with the core systems. These countries includes Australia, Canada, Finland, Hong Kong, Italy, Korea, the Netherlands, Norway, and Portugal [27]. Lastly, the periphery systems are developing higher education systems which are largely influenced by the core and semi-periphery countries [20]. These countries includes Argentina, Brazil, China, Malaysia, Mexico, and South Africa [27].

Interestingly, results of the recent Changing Academic Profession (CAP) [27] study shows that although core systems are leading research oriented countries their average research hours per week are lower than the semi-periphery countries. In addition, even though core systems have the highest ratio of PhD degree holders, their research output in terms of academic publications and international conference presentations are lower than the semi-periphery countries [20]. These results actually denotes one key fact that core system countries have a more balanced R-T-N as compared to the semi-periphery countries, which stresses research productivity in order to catch up with the core countries. Lastly, periphery countries are those who are still focused on teaching and low on research productivity. In sum, the question now is to determine which level Taiwan is categorized. Would Taiwan still be in the developing periphery stage or an even more research oriented semi-periphery level.

Besides the global stratification of higher education, the expansion of higher education has also led to the diversification of institutional missions. These diversification can be readily seen within the Carnegie classification of institutions of higher education [29] and later reflected within the United Nations' classification of education [30]. These classifications of HEIs are based on institutional missions; whether teaching or research orientation, are accomplished in order to provide better educational services for students with different study goals. Similarly in Taiwan, a rise in number of HEIs was also observed for the past few decades [31]. Studies have found that HEI classifications in Taiwan are varied from both perspectives of the MOE, university presidents, and faculty [32]. This actually adds to the need for a better understanding of the current changing academic profession in Taiwan.

### B. The research-teaching nexus (R-T-N)

Early literatures has confirm that the research-teaching nexus (R-T-N) is the result of the dynamic changes that is happening within higher education [33, 34]. Continuing the discussions from the above-mentioned literature, the necessity of the R-T-N was also more or less caused by the ambiguous lines between the university and society. Within the modern university, major functions are incorporated within the discovery, dissemination, service, and administration based on knowledge before society, however, this has shifted from an information- based society to a knowledge society [35]. In some ways, the university then can be noted as a knowledge society 1, while the latter as the knowledge society 2 [26, 35].

To make it simple to understand, Gibbons et al. [36] explains that knowledge in society 1 is of pure knowledge, which during their time was only useful to the university. However, further transformation of the society 1 to society 2, which is more into the applied and developmental knowledge that are useful to both society and the university. In sum, within the age of the knowledge society, it is inevitable for both the university and society to concentrate on research, teaching, and learning activities, since education itself has proven to be of quite a social impact and significance [35].

With this having said, it is obvious that society in general is quite concern on how education is evolving; in a sense how university are functioning. Following what Clark [23] mentioned that knowledge is the basis for academic work; wherein knowledge is composed of several dimensions, such as: understanding, discovery, dissemination, application, and control. These different dimensions in turn can be translated into the learning, research, teaching, and service functions within an academic organization. More important is that the major function of academic work is best described in terms of discovery of knowledge (or research) and its dissemination (or teaching) [27].

As mentioned before in the previous section regarding the contemporary perspectives on teaching and research; the link between research and teaching in not guaranteed. Adding to the various disparities that exist within the academic profession, there is actually a need for a so-called balance or harmony between research and teaching, which is in reality, an immense challenge. More important is that within the Humboldtian ideal of universities; wherein there is a

unity of teaching and research through the inclusion of students in the process of knowledge generation [37-40], noting that students are important part of the entire process.

Within the contemporary academic work, in addition to teaching and research, faculty are expected to provide service (including unpaid consultations and the like), administrative duties (being part of committees, departmental meetings, and the like), and other academic activities (such as coaching in competitions, and many others). In the CAP survey, results have shown that these additional tasks takes an average of 11 hours per week for Hong Kong, 10 hours per week for Australia, the UK, and Malaysia, 9 hours per week for Canada, 7 hours per week in Germany, 6 hours per week for Korea and the US, and 5 hours or less for Argentina, Brazil, China, and Italy. In sum, faculty estimates that besides their teaching and research activities, a substantial proportion of their working time is used in doing additional tasks [27].

Within the varied responsibilities of the contemporary faculty, the need for a R-T-N seems clear. Even though that R-T-N is fundamental to academic work [41], many universities are seemingly unaware of their practice [42]. In a review of 195 articles published in 61 journals regarding research method development in social sciences courses, it is noted that many studies claimed that faculty lack sufficient skills (or knowledge) in research methodologies [43]. Furthermore, their analysis revealed that many R-T-N studies in various countries suggest the use of research-oriented teaching and the need for developing a pedagogical culture for research methods.

Researches have also showed the benefits of having a balanced R-T-N. Krause et al. (2007, as cited in Boyd et al.) suggests that with a properly design R-T-N, benefits such as enhancement of teaching and learning in higher education; engages and motivates students; develops important graduate attributes; prepares students for future employment; and offers professional benefits for academic staff are observed. This also holds true for universities in UK practicing R-T-N, wherein the students' awareness of the nature of research and the development of research skills are also perceived as a plus factor for future employment [44]. While, in a study in US universities shows the need to better link teaching and research activities into an integrated learning process; a sort of research-based teaching [45].

Universities in Australia are also quite active in improving their R-T-N, wherein one important thought has emerged which is that faculty are not expected to become a top researcher and teacher at the same time; instead, a balance of teaching and research contributions [46]. In essence, for Taiwan HEIs to be able to compete in this era of dynamic change, strong academic productivity is a must. This would implied the need for productivity in both research and teaching, since research and teaching are not two separate activities, but in reality are two indispensable partners in academic work.

## III. RESULTS

It is highly proposed that a link between teaching and research should be made possible as mentioned by the previous literatures. Four types of viable R-T-N that can be incorporated within the curriculum as highly practiced within the University of Melbourne and Central Queensland University in Australia that are worthy of taking note of, namely:

Research-led teaching - This is defined as the teaching that is informed by the specialist research interests of staff (research-led teaching). The emphasis is on understanding the detailed subject content of current research, following the model by which information is transmitted from research-active staff to students. This often occurs within more specialized final year courses or, in the earlier years, through the examples used to illustrate specific points. A related aspect is current research from the literature being used within teaching activities, to maximize the currency and relevance of the material.

Research-oriented teaching - This is defined as the teaching that focuses on research and inquiry skills. The emphasis is on how research and inquiry can be used to create new knowledge. Students develop an appreciation of the underlying philosophy of the research process, for example through the teaching of research and inquiry skills within specific courses. Alternatively, staff might use case examples to illustrate the means by which researchers have created new knowledge, so that students understand the underlying process of research.

Research-based teaching - This is defined as the teaching that is designed around inquiry. In this alternative to the traditional content delivery model, staff and students work together to address particular questions, maximizing the two-way interactions between teaching and research. This includes problem-based learning, project-based learning, and designing research activities (for example, scientific experiments). Typically, staff and students are partners in the inquiry process, or students design their own research projects under the supervision and mentorship of postgraduate students or academic staff.

Research-informed teaching - This is defined by teaching that is informed through the scholarship of learning and teaching. Within the curriculum design (learning activities and assessment tasks) is informed by current knowledge and understanding of learning and teaching processes. Such as researching innovations in teaching practice, publishing the results from this research and making changes in response to these results, and applying the published finding of others to teaching activities [47].

Ultimately, for a R-T-N to work, the cooperation of the university administration through the use of institutional policy is a must [48-50].

## CONCLUSION

The issue of changing academic profession is not new; however, it is still currently evolving. Already, there are 19 advanced, developed, and developing countries in terms of their higher education system that are quite involved in understanding their own situation and at the same time comparing what other countries are doing. Besides understanding and comparing their changing academic professions, these countries' ultimate goal is to achieve a balanced research and teaching nexus. Therefore, analyzing and understanding the current situation in Taiwan's HEIs should be able to bring about policy enhancement that would encourage a well-balanced academic profession. More important, as the challenge of decreasing enrolment in Taiwan is inevitable, this dilemma can be thought of as an opportunity to revisit the core functions of the university and make effective use of the oversupply of academic resources. If done correctly, this should be able to uplift the quality of both faculty research and teaching. Most important of all, provide the opportunity to promote the well-being of the academe. As with a balanced R-T-N, does not only benefit the faculty, more important, is that student learns on the basis of research; hence promote a culture of research-led, research-oriented, research-based, and research-informed teaching. In essence, students are expected to study and prove their creative thinking ability rather than receiving knowledge from their teachers.

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