Engaging into Alliances to Match the 2030 Science, Society and Students Needs

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Abstract– The education landscape has been evolving across Europe since the initial Bologna Process. At the 2017 Gothenburg Summit, European Union (EU) leaders outlined a vision for education and culture in which new universities alliances have come out that either intensify existing relationships and/or develop new deep institutional transnational cooperation. Technical University of Valencia was involved in the first Bologna exchanges and is participating at ENHANCE, an alliance of ten leading Universities of Technology shaping the future of Europe and driving transformation in science and society.

Keywords—Bologna Process, European University Alliance, iScholar.

I. Introduction

The Bologna Process consists of a series of European ministerial meetings and agreements to ensure comparability in the standards and quality of higher-education qualifications.

The Bologna Process was named after the University of Bologna, founded in 1088 by an organised guild of students (studiorum), and therefore the oldest university in continuous operation in the world. This process was initiated with Magna Charta Universitatum issued at a university rectors meeting held on the occasion of celebrating its 900th anniversary in 1988 [1].

One year before the declaration, the education ministers from France, Germany, Italy and United Kingdom signed the Sorbonne declaration in Paris in 1998 with the goal of "harmonising the architecture of the European Higher Education system" [2].

The Bologna Process has lead to an increasing number pf participating countries, and despite the a basic common structure in the participating countries such as the three-cycle structure, there is room for diversity to special national circumstances as depicted by Cattani et al. [3].

The process has been evolving and enriching the ties between European institutions leading new European universities strategies [4] that have given place to a number of alliances such as ENHANCE, an EuropeaN tecHnological universities alliANCE.

In this Work in Progress paper, we present some of the preliminaries held at Technical University of Valencia, officially named Universitat Politècnica de Valéncia (UPV), in Spain, before its participation in ENHANCE and its concern on the future learning.

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II. The case of ETSID at UPV within EHEA

The arising of European Higher Education Area (EHEA) brought up the implementation of new degrees throughout most of European Universities.

In the realm of this upcoming environment, during 2009–2010 the School of Design Engineering (ETSID) at Universitat Politècnica de València, developed a pioneer experience in the first year of the Bachelor Engineering (BEng) degree in Mechanical Engineering, the guidelines of this innovative experience being defined in accordance with the EHEA approaches and special care was taken to ensure quality in the transition period, [5].

Thus, during this pioneer experience co-existed with non-Bologna teaching-learning methodology followed in the rest of groups of this BEng degree. Positive academic outcomes lead to establish classroom activities so that collaborative work was promoted, autonomous tasks were developed and an assessment that took into account both classroom and autonomous activities was implemented, [6].

Going further, an agreement under the ATLANTIS program was launched determining a triple degree program, which involved the:

- *Laurea in Ingegneria Gestionale* degree program of Università degli Studi di Parma (UNIPR),

BS in Industrial Engineering degree program of New Jersey Institute of Technology (NJIT),

Ingeniería Técnica Industrial especialidad Mecánica degree program of Universitat Politècnica de València (UPV).

The participating students from all institutions had the opportunity to study a selection of courses at their respective home university during two academic years, then moved to study one semester at UPV, followed by another semester at UNIPR and, finally, an academic year at NJIT.

By doing so this agreement enabled the selected students to receive a diploma from the tree institutions, [7].

III. The European University Initiative

The European Universities Initiative is an initiative introduced and mainly funded by the European Union through the Erasmus+ program with the aim at strengthening the strategic partnerships across the EU between higher education institutions and increase the international competitiveness of European higher education.

It was born with the goal of encouraging the emergence by 2024 of some twenty 'European Universities', consisting in

bottom-up networks of universities that would enable students to obtain a degree by combining studies in several EU countries and contribute to the international competitiveness of European universities.

After the first call, the program became more ambitious and was part of the European strategy for universities in search of supporting 60 European Universities Alliances involving more than 500 higher education institutions by mid-2024. Forty-four European alliances have been approved up to now, [8].

IV. THE ENHANCE ALLIANCE

ENHANCE Alliance was founded by seven major research-intensive universities focusing on science and technology, laying the foundations for an innovative European University of Technology.

In order to remind the effort to develop this alliance we recall their official names in their own language in parenthesis when differs from the commonly used in English:

-   Chalmers University (Chalmers Tekniska Högskola AB),
-   Norwegian University of Science and Technology – NTNU (Norges Teknnisk-Naturvitenskapelige Universitet),
-   Politecnico di Milano,
-   RWTH Aacchen University (Rheinisch-Westfaelische Technische Hochschule),
-   Technical University of Berlin - TUB (Technische Universität Berlin),
-   Technical University of Valencia - UPV (Universitat Politècnica de València),
-   Warsaw University of Technology – WUT (Politechnika Warszawska University of Technology).

In November 2022, three more European universities joined the ENHANCE Alliance, bringing the total number of member universities to ten. These new partners were:
-   Technical University of Delft (Technische Universiteit Delft),
-   ETH Zurich (Eidgenössische Technische Hochschule Zürich),
-   Gdansk University of Technology (Politechnika Gdańska).

This alliance intends to empower students, researchers and society to address the challenges of tomorrow responsibly, challenges set out in the Green Deal and Digital Transformation.

The partner institutions have a history of solid cooperation in EU programmes and joint research projects.

The alliance is based on the idea of mutual support in driving necessary innovation for the member institutions as well as ENHANCE itself.

Students are encouraged to reflect on European values such as diversity, democracy and equality and develop critical thinking, at the same time as they achieve their required technological and professional competencies throughout adequate European Educational Pathways.

The ENHANCE alliance strives to create responsible European identities, with the approach of integrating the joint European culture and political system into subject modules.

The alliance looks for contributing to solutions for relevant actual challenges such as:
-   digitalisation and AI,
-   climate action and sustainable cities
-   communities, creating impact through a sustainable entrepreneurship ecosystem.

Hence, to achieve the ENHANCE vision, it focuses on three pilot topics that reflect our common and complementary research strengths, regional priorities and contribute to the European Commission's priorities and the United Nations Sustainable Development Goals of Digitalisation and Artificial Intelligence, Smart and Sustainable Cities and Communities, Climate Action.

Based on these pilot topics, the alliance is developing new models of European cross-disciplinary and co-creative education and research as well as sustainable entrepreneurship and innovation.

V. THE NEW LEARNING STYLE

Because of COVID19, more digital skills have been required worldwide to cope with online education.

Teachers, tutors and parents are more aware than ever of the relevance of technology and blended learning, [9-10], which have proven to become facilitators of university resilience in a pandemic situation, [11-12].

Furthermore, it is clear that these new methodologies and paying attention to the new student needs would have arrived, earlier than later, as a consequence of the new way in which the students born after the irruption of the new digital technologies learn.

These learning style boosts creativity and, indeed, it means a major challenge, at such a point that the ENHANCE alliance has considered to include it in its work packages.

The new emergent digital and visual literacy is not just an idea but a fact. Data has increased the expected results exponentially, [13-18].

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