The Bologna Process: a voluntary harmonization of the European higher education system

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In 1998 France, Germany, UK and Italy signed the Sorbonne Declaration aimed at promoting both mobility of students and teachers within EHEA (European Higher Education Area) and improving their qualifications. In 1999 the Bologna Process (BP) was signed by 29 countries. It is a crucial voluntary harmonization process, not a binding contract. Initially, BP aimed at strengthening competitiveness/attractiveness of higher education, creating connecting tools, improving transparency amongst higher education systems, facilitating recognition of degrees/qualifications, fostering student and teacher mobility and employability, and improving quality assurance, while acknowledging the richness of the diverse national educational systems. A comparable 3-cycle degree system: Bachelor, Master and PhD, has been agreed upon, including qualification frameworks and emphasis on learning outcomes.

European Higher Education Area (EHEA)

In 2011 EHEA had 47 member nations. Consultative members are: Council of Europe, European Commission, Representatives of European universities (EUA), professional higher education institutions (EURASHE), students (ESU), quality assurance agencies (ENQA), the UN Educational, Scientific and Cultural Organisation-European Centre for Higher Education (UNESCO-CEPES), Education International (EI), and Business Europe. Biannual Ministerial Conferences check on progress and plan the future. BP and EHEA are now being consolidated despite diverse reactions to the implementation process.

ECTS, the European Credit Transfer and Accumulation System or colloquially “credits” system, introduced in 1989: a student-centred system based on the student workload (lectures, lab-work, dissertation, etc.) needed to achieve the program objectives defined as competences and learning outcomes. Sixty credits measure the workload of a full-time student during one academic year (on the average 36/40 weeks/year, one credit standing for 25-30 working hours). A first cycle degree lasting officially 3-4 years is expressed as 180-240 credits.

EPS, the European Physical Society, a not-for-profit representative organization created in 1968 to promote physics and physicists in Europe, now has 41 national member societies. It supports the Bologna Process and also has provided European Specifications for University Level Physics Programs, for Bachelor, Master and Doctorate. For instance, Bachelor graduates should know how to: formulate/solve problems; plan/perform experiments; analyze/evaluate data and uncertainties; relate results. The types of general competences should be: problem-solving (also non-standard problems), analytical (also handling of intricate ideas/reasoning), personal (individual and teamwork), communication (clear, concise, in different registers), ICT (to exploit information and communication technologies methods and instruments), language (multilingualism also to contribute to personal development, social cohesion and economic growth). EPS has also proposed a European Benchmark for a Physics Bachelor Degree with at least 140 out of 180 ECTS credits in Physics and Mathematics.

European Physical Society

Begun in 2007, a 3-year EPS project, funded by the European Commission, studied the implementation of Bachelor/Master degrees in Physics in Europe. The International Centre for Higher Education Research at Kassel University, Germany, has analyzed the curricula and administered the survey. Data have been collected from 27 countries, 382 Universities (about 40% of the total number), with 154 curricula submitted.

The conclusions can be summarised as follows:
The implementation of Bachelor programs in some countries (e.g., Belgium, Switzerland, Netherlands) is completed, in others it goes on (e.g., Spain), in others it lags behind (e.g., Ukraine, Belarus, Greece). UK has basically kept its Bachelor degree (three years in England/Wales, four years in Scotland) and a Master degree after an additional year (3 + 1 structure). European Credit Transfer and Accumulation System or a compatible national system of credits are used across Europe, even if the ideas about modularization of studies, student workload and assessment are heterogeneously interpreted and applied. It takes time to endorse new approaches.

Most of the Bachelor programs in physics tend to have some international and interdisciplinary dimensions. Studies abroad (mainly as ERASMUS courses) are possible in most of the programs but are rarely compulsory.

The emphasis on the final examination is reduced, in favor of a more continuous assessment. In more than half of the Bachelor programs, the written thesis plus defense is the typical final examination.

To facilitate the students’ employability after a Bachelor degree and a smooth transition into the labor-market some key skills are required, as foreign language, communication, project management and work.

Access into Master and Doctorate programs is more regulated/selective. Some countries require longer preparatory courses, mostly mathematics (e.g., some universities in Croatia, Switzerland, Germany, and Italy).

Most students continue to study at the Master’s level (exceptions are British, Irish and French universities).

New quality assurance procedures have been established, also by (more or less) independent accreditation. Globally the general structures of European Bachelor physics programs will converge more and more, with an increased level of diversity.

The progress so far in the Bologna Process and the key political future objectives have been presented and discussed at the 2012 EHEA Ministerial Conference and Policy Forum, April 26-27, Bucharest, Romania

Adoption of the Bucharest Ministerial Communiqué and Bologna Policy Forum Statement

The main priorities have been set for actions by 2015:

1. At the national level: widen overall access to higher education; increase completion rates and participation of underrepresented groups; foster student-centered learning, innovative teaching methods and supportive/inspiring working/learning environment; ensure qualifications frameworks and ECTS implementation-based on learning outcomes; implement the “Mobility for better learning” initiative and full portability of national grants/loans across the EHEA.

2. At the European level: promote quality, transparency, employability and mobility in the third cycle; examine national legislation/practices relating to joint programs and degrees as a way to dismantle obstacles to cooperation and mobility embedded in national contexts; evaluate the implementation of the “EHEA in a global setting” strategy.

The next EHEA Ministerial Conference will take place in Yerevan, Armenia in 2015, where the progress on the priorities set above will be reviewed.

The diversity in national academic cultures and teaching/learning styles remains, being viewed, however, as an expression of European richness and an added value. The Bologna Process has been evolving through the years all over Europe, with variable degrees of success as far as its actual implementation is concerned, and it has still a long way to go. But it has been fostering mobility, links and exchanges among students of distant and different countries. Its continued progress represents a social and cultural challenge for the next generations.

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