



BeyondScale

Developing the Organisational Capacity of Higher Education Institutions using the HEInnovate platform to facilitate peer learning and a pan-European community of practice

Institutional Country Note

NOVA IMS – Information Management School

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NOVA IMS

Institutional Country Note

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1. The Portuguese higher education

The Portuguese higher education system has been in the process of modernization in the European context promoting the knowledge-based economy and society. In Portugal, higher education is provided as public and private university education and polytechnic education. Main types of institutions that engage in university education include universities, university institutes, and other university(-level) teaching institutions. University education is guided by research and knowledge creation and aims to provide technical training to enable students for innovation and critical analysis. In the polytechnic sector, polytechnic institutes and other polytechnic teaching institutions provide education. Polytechnic education is guided by an applied research and development perspective that aims at understanding and solving concrete problems.

Higher education is composed of three cycles of studies, leading to the academic degrees of licenciado ((bachelor), mestre (master) and doutor (PhD). As presented in Figure 1, Portugal had in 2019 a total of 385,247 students enrolled in the HES from which 176,660 (46%) were male and 208,587 (54%) female.

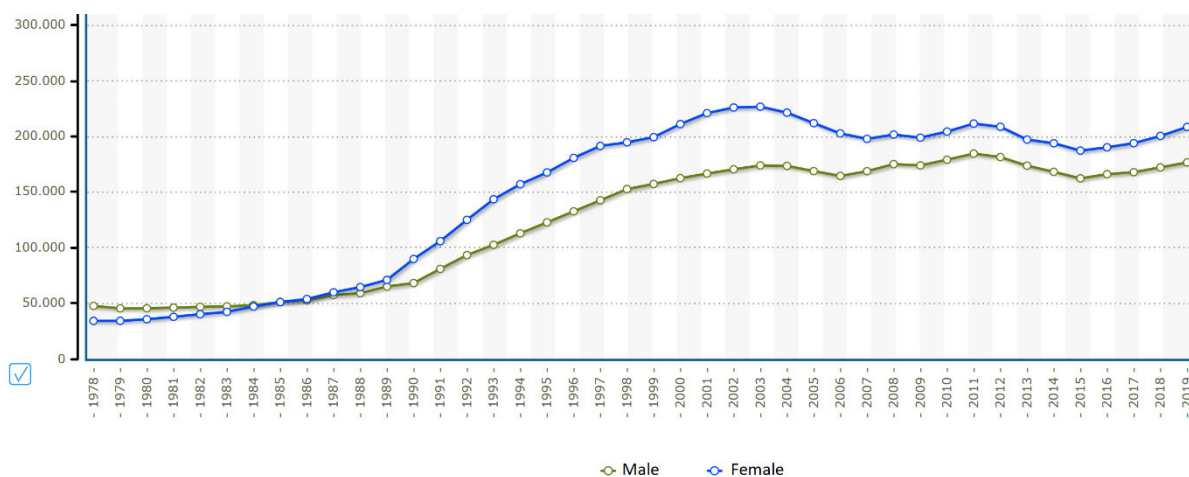


Figure 1– Student enrolled in the HES in Portugal. From (Pordata.pt, 2020)

According to the national report of education (Educação, 2019), the number of individuals with no training or qualification has been significantly decreasing in the active population resident in Portugal in 2018 while the numbers of individuals who at least completed secondary education increased continuously.

In Portugal there 14 public universities, 20 public polytechnic institutes, and 6 military and police higher education institutions. The number of private institutions is considerably higher: There are 36 private universities and 64 private polytechnic institutes.

Universidade NOVA de Lisboa, as a public University, is recognized internationally for its Teaching excellence, focused on its students and providing them with rigorous knowledge, creativity, critical sense, sense of citizenship, and justice that allows them professional success and a spirit of leadership. The emphasis on international and interdisciplinary collaboration in all areas of activity embodies NOVA's vision of a university open to the world and committed to the challenges presented in the 21st century. NOVA has a history of successful participation in mobility and international cooperation programs, leveraged by programs such as Erasmus, especially in countries of the European Union. These mobilities have been reinforced in recent years with the neighboring countries of the European Union, Africa, Latin America, and Asia, as well as research and training actions.

1.1. Entrepreneurship at NOVA

The creation and development of an entrepreneurial ecosystem within NOVA is an important step to stimulate entrepreneurship among students.

The entrepreneurship support office collaborates with the various faculties and departments to support the development of ideas and promotes several initiatives in the entrepreneurship area such as the Starters Academy, NOVA Idea Competition, NOVA Social Up and Plugged in NOVA.

The Starters Academy trains students and provides them the tools to develop their projects in an innovative and multidisciplinary environment. NOVA Idea Competition is an annual initiative of the Value Creation Office that rewards the best ideas that may be turned into a business, providing students an integrated learning experience. NOVA Social Up is a set of conferences that will encourage best practices for new entrepreneurs covering topics such as social entrepreneurship. Plugged in NOVA is a support program where startups can be supported with legal support and accounting among other services.

1.2. NOVA IMS

NOVA University is composed of nine faculties, offering a diversified range of study cycles in all the domains of knowledge.

One of the NOVA's faculties is NOVA Information Management School (NOVA IMS). NOVA IMS was created in 1989 with a special focus in the areas of data science, data analytics, and information management. NOVA IMS currently has about 1.500 students enrolled in ten awarding degree programs (two bachelor programs, seven master programs, and one doctoral program) plus a large number of post-graduation programs. The degree programs of NOVA IMS are accredited by A3ES, the national agency for the evaluation and accreditation of higher education in Portugal.

NOVA IMS is an international school with significant levels of internationalization and a considerable demand from international students (in 2019 NOVA IMS had 30% international students coming from more than 80 different nationalities) and with the participation of internationally renowned teachers in its teaching staff but also in research and development activities that are supported mainly by international partnerships.

With a solid connection to the market, NOVA IMS has the highest student employment rates from NOVA University, which is a result of the shortage of professionals in the area and the recognition of competence and quality of NOVA IMS' students. NOVA IMS has also identified the need for continuous improvement in the quality of teaching and learning and the need to reinforce digital skills amongst our graduates.

As part of the project "Beyond Scale", this report describes the two activities planned by NOVA IMS in this context. The first activity builds on the HEInnovate dimension "Digital Transformation and Capability" and focusses on improving the quality of teaching and learning using digital tools. Also, providing digital skills to the graduates is identified as a major requirement from the market.

The second activity relates to "Knowledge exchange and collaboration", and the challenge is to improve the network of companies associated with the school and promote the exchange of knowledge about curricula requirements, required skills, master project definition or internships.

Although NOVA IMS, in its 30 years of existence, has always collaborated with many different companies and received feedback to support the curricula design, there is still room for improvement.

2. Activity 1 (inbound): promote the use of digital tools in teaching and learning

2.1. Planned activities of the HEI for the BeyondScale project which use the HEInnovate platform

Activity 1 focuses on the HEInnovate dimension "Digital Transformation and Capability" and is inbound.

2.1.1. Proposed activity: description, rationale

NOVA IMS has defined in the strategic plan for 2019-2022 to invest in pedagogical innovation mechanisms, and digital initiatives focused on the Data Science area. Following this goal, we conducted at NOVA IMS in the last year several sessions with students and professors, which pointed to the need to improve the teaching and learning processes supported by the use of digital tools and content in course curricula.

The aim of this activity is focused on the use of digital technology to enhance learning and teaching. We argue that use of digital technology would not only complement teaching and learning but would also allow students to upskill their digital competences, which are highly required in today's market. More specifically, we aim at the specific goals of: 1) promoting the use of digital technologies by professors and students, 2) discussing and developing new pedagogies of teaching and learning, and 3) monitor and assess the evolution and student and professors satisfaction of the proposed pedagogies.

2.1.2. Actions

With the support of the HEInnovate Self-Assessment, specifically the dimension "Digital Transformation and Capability" the actions needed to achieve the goals presented will be defined.

This activity has the following actions planned:

1. Review current digital capabilities applied by NOVA IMS in teaching and learning by using the HEInnovate self-assessment tool;
2. Use a Design Thinking methodology to discuss and propose the use of digital learning to support the institution's pedagogy and the design of curricula.
3. Monitor the experience of students and professors by applying questionnaires and learning analytics. The use of questionnaires will allow us to survey the overall satisfaction. In complement, the use of learning analytics (applying data analytics to student's performance data) will allow the assessment of learning efficiency.

2.1.3. Objectives & Outcomes

Action 1: Review current digital capabilities

A meeting with stakeholders (8-12 people Program directors and professors) is proposed where a self-reflection and assessment of the current digital technologies to support teaching will take place. The HEinnovate tool will be presented, and an evaluation of the dimension Digital Transformation and Capability) is proposed to the participants. HEInnovate, its resources, and the BeyondScale project will also be presented;

Details:

- Participants: 8-12 people (Program directors and professors)
- Duration: 2 hours in duration
- Presenters: Beyond Scale team and Innovation and Analytics Lab staff.
- Equipment: Laptops, whiteboards.
- Location: NOVA IMS, July 2020

The outcome for this action will be: 1) self-awareness of the digital context on programs as well as digital tools and strategies used in the learning process; 2) a set of recommendations for digital strategy to be included in the program curricula and; 3) a set of learning outcomes to be included in the programs

Action 2: Digital learning to support the institution's pedagogy

A session using a Design Thinking methodology is provided to students enrolled in the Course of Innovation and Change Management (although open to other students) and professors to discuss the use of digital learning and teaching and innovative approaches in the curricula or pedagogical approach to be prototyped in some courses. Design Thinking is used to promote the discussion and the listing of innovative ideas and possible solutions to the problem in hands.

Details:

- Participants: 40-50 people (Professors and students)
- Duration: 16 hours in duration
- Presenters: NOVA IMS Beyond Scale team and Innovation and Analytics Lab staff.
- Equipment: whiteboards.
- Location: NOVA IMS, September 2020

The outcome for this action will be: 1) a clear definition of digital skills and how can be they be used to improve the learning process; 2) a set of possible ideas and solutions to be prototyped in some courses

(e.g. use digital content to implement flipped classrooms; promote the interaction between students on a videoconference call by presenting small exercises to be developed in groups)

Action 3: Monitor the experiences of students and professors by applying questionnaires and learning analytics

From the previous action, a list of possible solutions will allow us to redesign the curricula and test the use of new digital approaches.

To monitor the evolution and satisfaction of these courses, we will apply questionnaires to the students enrolled in those courses. To assess the learning efficiency and students' performance, we will use learning analytics. Since digital learning implies digital students' activities, each student's behaviour and trajectory in the learning process can be measured and associated with the final performance. This way, finding patterns amongst students and the use of digital content, will allow us to understand better the efficiency of the developed tools for each profile of student.

This way, the use of analytics applied to students' performance and academic achievement, will help to understand which pedagogical strategies provided better results to specific students. We expect that this analysis will form a baseline for possible future improvements on the level of innovation in teaching.

Details:

- Participants: Professors and students of the selected courses
- Duration: 1 year
- Implementation: Innovation and Analytics Lab staff
- Location: NOVA IMS, September 2020

2.1.4. Barriers, challenges & opportunities

Barriers

Although some implementation of digital learning initiatives exists at NOVA IMS, such as 1) the use of Learning Management Systems, 2) one (out of 7) fully e-learning master program (Master in Geographic Information Systems), and one blended learning program, 3) the creation and use of digital content and digital interaction with students, different obstacles are preventing a more broad adoption of this approach. Some of the already known barriers are:

- Refusal of professors of new digital pedagogical methods and tools, who consider these as a second-best option, providing less reputation and quality;
- Students resistance to new pedagogical approaches, which imply continuous learning, more hours of work during the semester and self-discipline to maintain the pace;
- Students e-learning illiteracy, the lack of awareness, and motivation;
- Lack of dedicated strategies, and lack of dedicated team to support a digital strategy;

Challenges

The main challenges identified in this activity are:

- Convince professors of the benefits on the use of a digital pedagogical approach and present it as a complementary approach that increases the performance of the learning and teaching processes rather than as an alternative approach
- Promote training and knowledge sharing among academic staff to diminish the digital barriers which in many situations might exacerbate existing social and economic inequalities between students;
- Address the problem in a broad approach, building a strategy and creating (hiring) a multidisciplinary team (Education Technology Specialist, e-Learning specialist, Instructional Designer) to promote, support and monitor the implementation of digital tools and digital content in curricula;

Opportunities

NOVA IMS is a school with considerable growth in the number of students in the last decade (10% a year), with a significant increase in the number of students, faculty, and programs. From this context, several opportunities are considered, such as:

- The mitigation of a physical space problem with a blended approach, allowing for more efficient use of face-to-face sessions
- Better experience for a heterogeneous profile of the student, which in many cases present different backgrounds and support for various programs, by applying digital approach which might provide a student-centered learning, customized approaches, and self-paced learning;
- The current COVID-19 context, which forced to use digital technologies, and showed professors and students advantageous situations for its use and disadvantages. It is, thus, vital to use the learnings from the experience to improve the learning and teaching processes.
- To promote innovation and implement processes that lead to innovation as a continuous search to ideate, prototype, learn from it, and improve the learning experience;

2.2. Applying the HEInnovate platform to support Activity 1

The HEInnovate framework includes besides a collection of use cases and stories, a self-assessment tool that HEI can use to reflect on current practices and as inspiration for possible changes.

In this activity, the self-assessment tool is used in action 1 and action 2. The questionnaire-based on the HEInnovate framework will centre on the dimension “Digital Transformation and Capability” to facilitate a structured discussion between program coordinators, professors and students about current and planned practices.

We expected with the use of the tool, the buddy system, and resources available on the HEInnovate website to facilitate an institutional self-reflection on NOVA IMS and get inspired by other schools or Universities with the same challenge, allowing for comparable information on the organizational, digital, and pedagogical level of each participant.

The tool is helpful in fostering a clear vision for digital learning and how it depends on all stakeholders. Also, from the case studies published on the HEInnovate website, they will be inspirational in the pursuit of more digital learning.

We expect from the two sessions held on action 1 and action 2 to provide some uses cases, as well as feedback to the tool about the digital learning process.

2.3. Conclusion for Activity 1

The use of a digital approach provides opportunities for innovative curriculum design and supports for new pedagogical methods. Also, digital competences and skills should be included in the curricula, as they are fundamental to the workforce to meet the new demands in the labour market. Institutions should monitor how the experiences of students can be enhanced through the deployment of digital tools and practices. The Heinnovate framework may be beneficial to uncover the state of the art at NOVA IMS and monitor for the steps to be taken. Therefore, the use of Heinnovate helps to mitigate the barriers and challenges and take advantage of the opportunities presented.

In the opposite direction, we believe that the activity presented can provide feedback to the Heinnovate framework and offer a case study for the implementation of digital technologies for teaching, learning, and assessment in a Portuguese HEI.

3. Activity 2 (outbound): collaboration and knowledge exchange with industry

Activity 2 focuses on the HEInnovate dimension "Knowledge exchange and collaboration" and is an outbound activity.

3.1.1. Proposed activity: description, rationale

This activity relates to the dimension of "Knowledge exchange and collaboration", and the goal is to improve the collaboration and knowledge exchange of the network of companies associated with the school and promote shared experiences about curricula requirements, required skills, master project definition, or internships goals.

NOVA IMS, since its creation, has a General Council chaired and partially composed by representatives of companies belonging to a NOVA IMS network. This council is also composed of professors and students. The tasks of the incumbents include, among others, to elect the Dean, analyse and approve the strategic plan as well as the annual activity plans, appreciate the activity report and accounts, and to promote NOVA IMS connection with business sectors and public and private organizations.

Besides the eight companies that are part of the institutional network, NOVA IMS also collaborates with further companies through partnerships.

Some examples of partnerships with companies at NOVA IMS include 1) the involvement of industry partners in teaching; 2) internships for master level students; 3) co-creation, sponsoring, and teaching support in company-specific educational programs; 4) research consortiums and partnerships, etc.

Thus, NOVA IMS identified the need to need to improve the channels for knowledge exchange and collaboration with such a diverse and different number of companies.

3.1.2. Actions

With the support of the HEInnovate Self-Assessment, specifically the dimension "Knowledge exchange and collaboration" this activity has the following actions planned:

1. Define and specify the different types of relationships that can exist with companies, private or public which involve students;
2. Develop the mechanisms and efficient channels for knowledge exchange and collaboration
3. Create a Knowledge Base repository with exchange activities and collaborations made allowing an easier diffusion among students, professors and other companies of the work done;

3.1.3. Objectives & Outcomes

Action 1: Define and specify the different types of relationships that can exist with companies, private or public directed involving students;

A meeting with stakeholders (program coordinators, students and Alumni, companies, and staff related to the institutional network of companies) is proposed where a self-reflection and assessment of the current partnerships is performed, as well as the eventual proposal of new relationships.

The Heinnovate tool will be presented, and an evaluation of the dimension knowledge exchange and collaboration is proposed to the participants.

Details:

- Participants: 15- 25 people (program coordinators, students and Alumni, companies, and staff related to the institutional network of companies)
- Duration: 2 hours in duration
- Presenters: Beyond Scale team and Innovation and Analytics Lab staff.
- Equipment: Laptops, whiteboards.
- Location: NOVA IMS, November 2020

The outcome for this action will be: 1) a list of the partnerships that exist with companies and; 2) the definition and objectives of collaborations.

Action 2: Provide the mechanisms and efficient channels for knowledge exchange and collaboration

Creation of a team composed by company representatives, NOVA IMS professors, and the subdirector for Teaching Affairs and subdirector for the Third Mission, which objective will be the discussion of possible measures to improve the knowledge exchange and collaboration with companies. The aim is that this will lead to an increase in the number of partnerships, allowing a close connection to industry and an earlier exposure from students to the market environment;

Details:

- Participants: 8-12 people (companies representatives, NOVA IMS professors, subdirector for Teaching Affairs and subdirector for the Third Mission)
- Duration: 3 months with several meetings starting in November 2020

Action 3: Create a Knowledge Base repository with exchange activities and collaborations made to inform students, professors and other companies about possibilities for collaboration

Having a repository with current and past activities is an essential step for developing knowledge exchange between NOVA IMS and its partners.

From the action 1 in this activity a list of possible partnerships and their definition and objectives is obtained, which need to be recorded for future sharing and collaboration.

This way, the definition of data to be recorded, as well as the diffusion of the database, will allow us to share knowledge, which is essential to achieve continual learning from experience and apply that to improve learning at NOVA IMS.

Details:

- Duration: 6 months
- Implementation: Innovation and Analytics Lab staff
- Location: NOVA IMS, starting in December 2020

3.1.4. Barriers, challenges & opportunities

Barriers

- Some resistance from companies in the discussion and definition of a structured network of shared knowledge due to possible competition and private information;
- Some resistance of professors or Program Coordinators in taking company feedback to upgrade curriculum;
- Due to the potentially high number of companies involved, the management of the network will be challenging.

Challenges

The main challenges identified in this activity are:

- Convince all stakeholders of the benefits on the use definition of a shared network of information

Opportunities

As stated before, due to the nature of most NOVA IMS programs (data science, statistics, and information systems), there is a very high demand for professionals with these skills. Thus, companies might find these partnerships with the school very beneficial since they provide connections with students.

Also, historically a large number of entities (private and public) have been involved with several aspects of the school, such as program design, internships availability, overall strategy, among others.

Within this context, several opportunities are considered, such as:

- Develop new links and collaborations with companies
- Identify new types of stakeholders

- Take advantage of the HEInnovate framework to leverage the collaboration and knowledge sharing

3.2. Applying the HEInnovate platform to support Activity 2

In the process of improving NOVA IMS connection with companies, it is relevant to systematically identify and define the main steps and procedures to create an active collaboration network.

We must identify the key relationships with companies and define the guidelines to normalize and leverage those to more companies. The HEInnovate framework provides an excellent opportunity for this since it includes a collection of use cases and stories, a self-assessment tool that we can use to reflect on current practices, and as inspiration for possible changes.

In this activity, the self-assessment tool is used in action 1 from Activity 2. The questionnaire-based on the HEInnovate framework will centre on the dimension "Knowledge exchange and collaboration", providing a more structured discussion about current relationships.

We expect with the use of the tool, the buddy system, and resources available in the HEInnovate website to have an exchange between NOVA IMS with other schools or Universities with the same challenge, allowing for comparative analysis and experience share.

3.3. Conclusion for Activity 2

We believe that the HEInnovate platform can be of great value in this outbound activity allowing the collaboration and knowledge share between industry and NOVA IMS. We also believe that activities developed will also add new use cases and examples to the HEInnovate resources.

References

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