

# **Upper secondary curriculum in Madrid: a case study**

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This report forms part of a collection of six case studies commissioned by the Royal Society in 2017 examining upper-secondary education reform in different jurisdictions. The case studies are designed to give the reader an understanding of the trends in upper secondary curriculum reform and, in particular, the recent moves that certain jurisdictions have made towards a broader and more balanced curriculum.

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## **Introduction**

The following case study provides an overview of the upper secondary curriculum in Madrid and addresses the issue of breadth in curriculum and assessment, particularly in relation to the two-year non-compulsory Bachillerato programme which follows compulsory secondary education in Spain.

The case study highlights the need for well-designed assessment reform to ensure pupils are receiving the right breadth and depth of knowledge and skills from a broad baccalaureate-style curriculum. It also addresses some of the key issues of educational reform in a system where there is complex local and regional autonomy.

Sections 1 and 2 provide a summary of the education system and the structure of the upper secondary curriculum in Madrid, explaining the type of curriculum breadth within the Bachillerato, its relationship to the vocational tracks, and the main changes associated with the LOMCE reforms in 2013. Section 3 looks at the political and policy context behind the curriculum reform and the process of decentralization that the education system has undergone. This is followed, in sections 4, by an account of scientific subjects within the reformed curriculum. Finally, in sections 5 and 6, we address the impact of the broad nature of the curriculum on students' outcomes, looking at trends in higher education admissions, with breakdowns by gender. A short summary of the financial and practical implications of the curriculum model is also included.

### **1. Overview of education in Madrid**

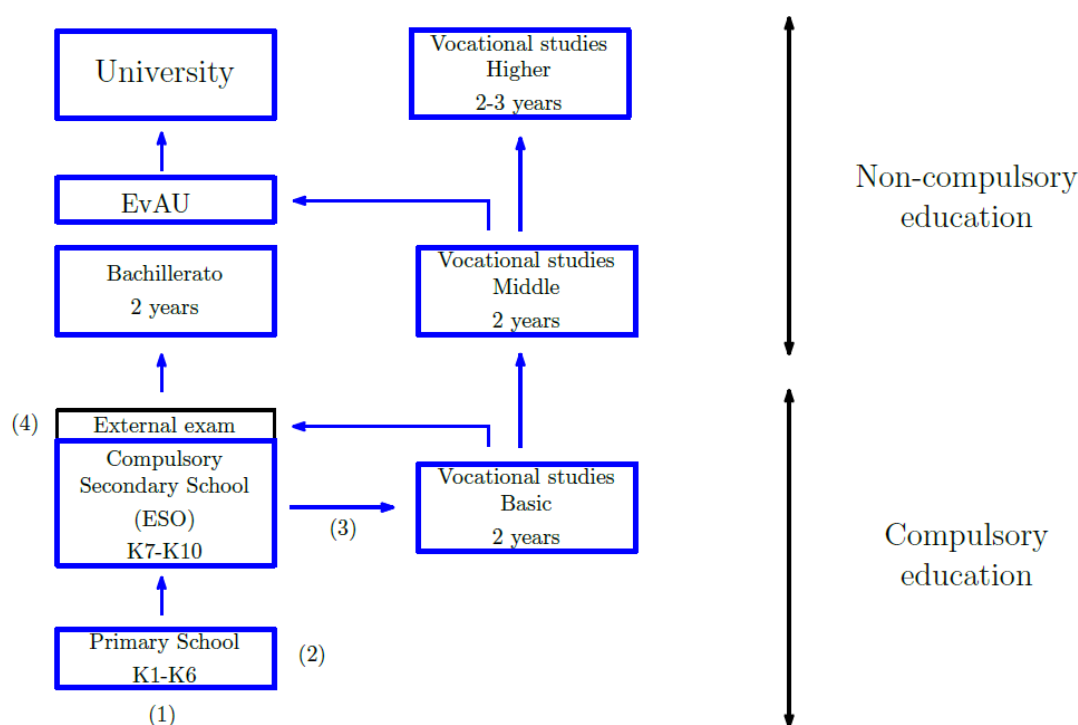
Although the education system in Spain is decentralized, basic decisions like the structure of the curriculum are taken at the national level. Organizational issues are left to regions, and there are some relevant differences between Madrid and most of the other Spanish regions. In particular, the number of charter schools, which are similar to academies in England, is larger in Madrid than in other regions. This is a highly political issue in Spain, and a major cause of difficult relations between teacher associations and the Madrid administration.

Regarding curriculum deployment, there are relevant differences according to whether or not the government of a given region agrees with the central one. In the case of Madrid, the coordination has been good for most of the last 25 years, and Madrid has implemented some of the changes faster than other regions. In particular, external exams were introduced some years ago.

As an example of a reform initiated at the local level, Madrid has implemented a bilingual programme in the public system. The programme started 12 years ago, and it has been growing continuously. It has had a good impact on increasing the level of knowledge of the English language, but its impact on other subjects and in respect of inequality issues is more arguable. Some studies suggest that bilingual classes can produce a tracking situation, where students with low performance or low socioeconomic background tend to choose monolingual classes.

## 2. Structure of the upper secondary curriculum in Madrid

The main change in the Spanish education system took place in 1990, with the introduction of a new reform, the *Organic Law of General Management of the Educational System* (LOGSE). Prior to that, education was governed by the *General Law of Education* (LGB), which had been left largely intact since its establishment in 1970. The LGB established compulsory basic general education (EGB), for years K1–K8 (ages 6 to 14), from which some students could proceed to the academic track, consisting of four additional years before university, while some other students started vocational studies. In the LOGSE, compulsory education was extended to 10 years, divided into two periods: Primary Education, years K1–K6 (ages 6 to 12), and ESO (Compulsory Secondary Education), years K7–K10 (ages 12 to 16). After that, a non-compulsory secondary step of two academic years became the option needed to proceed with academic studies.



- (1) Students enter K1 in September if in that natural year they become 6 years old.
- (2) External evaluation at the end of K3 and at the end of K6 (this exam has no impact on the student record).
- (3) Students that do not pass the ESO course for two years can move to basic vocational studies. The decision is taken by agreement between the school and the families.
- (4) In order to get the ESO degree, the LOMCE includes an external exam, but it has not been implemented yet.

The diagram is a summary extracted from [1], where a more detailed version can be found.

In the rest of this report, we will use the Spanish word, *Bachillerato*, to discuss this two year programme of non-compulsory academic studies. *Bachillerato* is taken by students who are typically 16–18 years old. In the first year, the students choose one of these three tracks (all of them academic): Science and Technology, Humanities and Social Sciences, Arts. It was

possible to change between tracks, but we will more specific about those details when dealing with the new regulation.

In 2013, the *Organic Law on the Improvement of Quality of Education* (LOMCE), the current law organizing the education system, was approved, and the first cohort that studied Bachillerato under LOMCE finished in June 2017. This law has not changed the main characteristics of the system as defined by LOGSE. After 10 years of compulsory education, students can proceed to either vocational education or academic education.

There are three levels of vocational education:

- Basic: designed for people leaving the compulsory K-10 period.
- Middle: mostly taken by students after the K-10 period as the main alternative to the academic track, Bachillerato.
- Higher: professional studies, which students enter after Bachillerato or the middle level.

According to the last published report [2, p. 9], the number of students enrolled in the Basic level of vocational studies in Madrid during the academic year 2014–2015 was around 2% of the total number of students of the corresponding age. For the Middle level, the number increased to around 25% of the cohort.

There are three types of schools teaching Bachillerato:

- **Public schools.** Funded both at the regional and at the local level. Admission is regulated: the administration decides how many students can enter each school, and the basic criteria are proximity (home or job of the parents) and economic situation of the family. Percentage of students (Academic year 2015-2016): Spain: 76.2%, Madrid: 63.5%.
- **Private schools.** Funded by families. They are free to decide admission numbers and criteria. Percentage of students: Spain: 10.1%, Madrid: 28.9%.
- **Charter schools.** Privately owned, publicly funded. They are free to choose the management criteria, but admission numbers and criteria, and the school calendar, are decided by the administration. Percentage of students: Spain: 13.7%, Madrid: 7.6%.

Bachillerato has a three-track structure, with the aim of being flexible and having the following objectives:

- to provide students with the academic foundation needed in order for them to proceed to university and to higher professional studies;
- to improve the academic background for students that do not want to proceed with further studies, in order to become a competent citizen.

The three tracks are:

- a) Science (includes Technology).
- b) Humanities and Social Sciences.
- c) Arts.

For Public and Charter schools, the administration decides the variants of Bachillerato that each centre can offer.

There are three types of subjects: Core subjects, Specific subjects (with the aim of deepening knowledge and skills in particular areas), and a third type that is determined at the regional level.

We now describe the organization of the **Science (and Technology) track** of Bachillerato.

**Bachillerato 1 (first year):** Students must take the following subjects:

A. **Core subjects.** Philosophy, Spanish Language and Literature I, and First Foreign Language I (these three subjects are compulsory for students in all tracks). Mathematics is the fourth core compulsory subject for students in the Science track. Furthermore, students in the Science track must choose at least two additional core subjects out of these three<sup>1</sup>:

- Biology and Geology
- Technical Drawing I
- Physics and Chemistry

At the national level, it is decided that at least 50% of the total number of teaching hours must be devoted to core subjects. Further direction is left to the regional level, and in most cases the number of hours goes far above this minimum. In Madrid, 4 hours per week are assigned to each of the six core subjects, while the total number of teaching hours is 30–32 per week. This means core subjects take up 75–80% of standard teaching hours in Madrid. These numbers seem to be similar in most Spanish regions.

B. **Specific subjects.** These subjects are assigned 2 teaching hours per week. Physical Education (compulsory for students in all tracks) and either two or three subjects from this list:

- Catholic Religion
- Second Foreign Language I
- Information and Communication Technologies I
- Industrial Technology I
- The subject included in the core list but not chosen by the student
- Music I
- Applied Anatomy
- Scientific Culture
- Artistic Drawing I
- Music: Language and Practice
- Volume (Drawing)

The schools must offer the first three subjects on this list and also the fourth one if the school offers the Science track. For the rest, the decision is made at the school level, according to its policy and the available resources.

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<sup>1</sup> In the first year of the Bachillerato, Biology and Geology, and Physics and Chemistry are taught as combined subjects, but in the second year, they are run as separate subjects. This situation is a source of issues as the course content in Bachillerato 1, and thus the content split within the combined subjects, is largely down to the preference of the teacher, leading to inconsistency in the provision of these science courses and the levels of knowledge a student has when entering Bachillerato 2.

Most students in Madrid opt for 24 hours of studying core subjects plus 6 hours studying 3 specific subjects (2 hours each), totalling 30 hours per week.

- C. **Subjects decided at the regional level.** This block is important in regions with their own language, but less relevant in the rest of the country.

The administration and the schools can design itineraries (packages of subjects) in order to help the students in the election of subjects.

As stated in the law, in this step of non-compulsory education, students start to make decisions that can have a strong influence in their future. Therefore, academic and professional orientation should be provided in order to help in the selection of the track of Bachillerato, and/or the vocational studies, as a prerequisite for a good positioning in labour market. However, it is unclear how well this information is working.

**Bachillerato 2 (second year):** Students must take the following subjects:

A) **Core subjects.** Spanish History, Spanish Language and Literature II, and First Foreign Language II (these three subjects are compulsory for students in all tracks). Mathematics is the fourth core compulsory subject for students in the Science track. Furthermore, students in the Science track must choose at least two additional core subjects out of these three:

- Biology.
- Technical Drawing II.
- Physics.
- Geology.
- Chemistry.

As for the number of teaching hours, the regulation is similar to Bachillerato 1.

B) **Specific subjects.** These subjects are assigned 2 teaching hours per week. Students must take either three or four subjects from the following list:

- Second Foreign Language II
- Information and Communication Technologies II
- Industrial Technology II
- One subject included in the core list but not chosen by the student (4 hours)
- Music II
- Earth and Environmental Science
- Artistic Drawing II
- Foundations of Administration and Management
- History of Music and Dance
- Image and Sound
- Catholic Religion
- Graphic and Plastic Expression

The first two subjects of this list are programmed in all schools, and the third one must be also offered in the Science track. For the rest, the decision is made at the school level, according to its policy and the available resources.



C) Furthermore, students can study an additional subject. Again, this is only relevant in regions with their own language.

For the total number of teaching hours per week, these are the possibilities:

- ➔ Minimum: 24 h (core subjects) + 6 h (specific subjects)
- ➔ Maximum: 24 h (core subjects) + 8 h (specific subjects) or 24 h (core subjects) + 6 h (specific subjects) + 2 h (additional subject)

It is possible to move from the academic to the vocational track, and vice-versa. For instance, after the middle vocational education, students can enter Bachillerato. However, this is not very common, because a typical student finishes the middle vocational education when she/he is 18 years old. Depending on the vocational study, they can get the Bachillerato degree once they take a reduced number of subjects.

People that leave the education system without either Bachillerato or a middle vocational degree are a big concern in Spain. According to the 2015 annual report, 20% of 18–24 year olds are in this situation. This figure has improved over the last few years. However, it is not clear whether the reason for this improvement is related to changes in the education system, or if it is related to the economic situation. With unemployment among young people being close to 50%, incentives to stay in the education system increase.

Next, we present some data for the number of students in the different tracks in Madrid in the academic year 2014–2015.

- Bachillerato: 105,000 students.
- Vocational studies (middle level): 34,000 students.
- Vocational studies (upper level): 39,000 students.

The proportion of students enrolled in the different variants of Bachillerato in Madrid were:

- Humanities and Social Sciences: 49.6%;
- Science (includes Technology): 44.9%;
- Arts: 5.5%.

The exams leading to the Bachillerato degree are administered at the school level. One of the main objectives of the last reform was to implement an external examination as a requirement to get the Bachillerato degree. However, this particular point has been confronted by huge social opposition (from teacher unions, parents' associations and political parties) and, subsequently, has not yet been implemented, and it is not clear whether it will be implemented at some point in the future.

Students need to go through an external exam in order to access the university. We will refer to these exams using their current denomination, the EvAU. These exams are designed by the universities, and coordinated at the regional level. The admissions process at public universities is strictly regulated. Students gain a place according to a single number, obtained from the Bachillerato grades and the EvAU grades in a way that we will describe shortly.

Because most of the students finishing Bachillerato want to proceed to university, it should be no surprise that EvAU has a strong influence on how Bachillerato subjects are taught, and a common complaint among teachers, particularly in the second year of Bachillerato, is that *teaching to the test* becomes a very serious problem.

From Bachillerato, students carry a grade in a scale from 5 to 10 (5 means *pass*, and 10 is the maximum). Then they take the exams for four subjects in the general phase of the EvAU, and they gain a grade that is a weighted average (60% from the Bachillerato grade, 40% from the EvAU grade). The student passes the EvAU if the average is at least 5 (with the additional requirement that the EvAU grade should be at least 4). More than 85% of the students pass the exam.

Additionally, students can get up to four extra points by taking exams in two additional subjects they can choose from a list. This list depends on the particular study the student wants to apply to study at university.

Before the last reform, the following subjects were compulsory for all students:

- Spanish Language and Literature.
- Foreign Language.
- Spanish History or Philosophy (students choose one).

95% of the students chose English as their foreign language, while approximately half of the students chose History or Philosophy. The fourth subject of the general phase is chosen by the student from among the subjects of the track. In 2014, 14.2% of the students (across all tracks) took the Mathematics II exam<sup>2</sup>. Comparing this with the number of students on the Science (and Technology) track, this means that only roughly one-third of the students on this track took the Mathematics II exam. Worse, in the university admissions process, as we have already mentioned, the only parameter is the overall grade, so when a university accepts a student for an Engineering or Science degree it is not known whether or not the student took the Mathematics exam.

After the LOMCE reform, subjects compulsory for all students are:

- Spanish Language and Literature.
- Foreign Language.
- Spanish History.

Furthermore, for students in the Science (and Technology) track, Mathematics II is also compulsory. The companion subject, Applied Mathematics, is also compulsory for students taking the Social Science track. This has been implemented this year for the first time, and it is a very partial solution to the problem, because a student can pass the EvAU exam, and even get a good grade even with a poor performance in Mathematics. Again, universities do not have that information during the admissions process.

Another criticism widely extended to the EvAU is about the design of the exams. They are short (90 minutes per subject) and highly standardized. Of course, this worsens the

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2 This is the only variant of Mathematics in the Science track.

teaching-to-the-test problem already mentioned. The LOMCE has made no difference to this problem.

One final comment about the admission grade: it is valid in the whole country, but is obtained from the school grades and from exams designed at the regional level. In a recent study, Rueda [3] reports relevant differences in the grades between regions, which can lead to inequality problems, particularly in some studies that are in high demand, such as Medicine. The LOMCE tried to confront this issue, by seeking to administer the exams at the national level, but this issue has triggered major opposition at the regional level and, as a result, has not been implemented yet.

### **3. Political and policy context behind reform of the curriculum**

As part of the development of the Spanish political system, a massive decentralization process took place during the last 30 years, including Education and Health Care. Undoubtedly, this has had several positive consequences, but it is also true that several issues remain largely unsolved. Each reform creates tension between the central and regional administrations, related to the depth and extent of the national regulation. The LOMCE has not been an exception in this regard, and as we have already mentioned, the problem of having a grade for entering university that is valid at the national level, but obtained at local and regional level, remains unsolved largely due to political issues. Another problem that this reform has not yet addressed is that of further decentralizing from regional administration to schools: autonomy of Spanish schools is small when compared to most countries in Europe.

One of the main reasons for the reform was to try to improve the quality of the system, which was perceived to be low, according to international studies, such as PISA. Before the LOMCE, only a few regions in Spain had some variant of external examinations, and extending external exams was one of the key tools introduced in the law in order to improve quality. However, this issue became highly controversial: according to the LOMCE, all students should go through external exams in years K3 and K6 (these exams, in Primary school, would have only informative value), an exam at the end of K10 and another one at the end of Bachillerato that would be necessary for the award of the ESO (compulsory education) and the Bachillerato degrees, respectively. According to the LOMCE, during the academic year 2016-2017 all the exams should have already been implemented. However, because most of the decisions are taken at the regional level, the programme has been only partially implemented, its implementation being especially dependent on whether the governing political party in a given region is the same as the one in charge of the central government. At this point, it is not clear how this process will develop in the future.

### **4. Scientific subjects and skills within the curriculum**

Another important objective of the reform is to improve skills and competences of the students and align them to the needs of the job market. According to the LOMCE, the approach of science subjects is basically academic, and the aim is to widen and deepen knowledge and competences that students have developed in previous years in such a way

that this scientific education can become a solid foundation for successful higher education studies.

It is expected that studying science subjects should contribute to developing the following:

- Access to the basic scientific and technological knowledge.
- Mastery of basic scientific skills.
- Understanding basic elements and procedures of research and the scientific method.
- Understanding and critically appraising the contribution of science and technology to the improvement of living conditions, and developing respect for the environment and its sensitivity.
- Fostering entrepreneurial spirit through creativity, flexibility, initiative, teamwork skills, self-confidence and critical thinking.

However, because the structure of the exams taken for university entry has not changed, and the professional training of the teachers has been very scarce, it is unclear to what extent these objectives will be achieved by schools.

On the other hand, as already mentioned, prior to the LOMCE, the choice of subjects within a track was very flexible. In particular, Mathematics was not compulsory in the Science track. We are not aware of any data concerning how many students of the Science track take Mathematics, but some information can be obtained from data from the university entrance exam; the percentage of students taking each subject in the general phase was released for the first time for the 2013 exam year. These are the data for the main Science subjects (for the whole country):

- Mathematics II: 14.9%;
- Chemistry: 6.3%;
- Physics: 4.3%.

Taking into account that around 45% of the students are taking the Science track in Bachillerato, it turns out that a lot of students avoid what could be defined as core science subjects in the EvAU exam. It is important to recall here that in the admissions process universities only can use the overall grade; they cannot ask for particular subjects. The main reason for this avoidance may be that these subjects are perceived as more difficult, it being convenient to avoid them in order to get a better overall grade. There is some support for this perception within the exam data: these three subjects are also the ones with the lowest pass rates (at least grade 5) in the exam (65% for Mathematics and Chemistry, 67% for Physics). For the sake of comparison, pass rates among the rest of the core subjects are: Spanish Language and Literature, 79.4%, Foreign Language (English): 75.9%, Philosophy, 79.6%, Spanish History, 78.1% [4, p. 17]. As already mentioned, after the LOMCE reform, the Mathematics exam is compulsory in the Science track and the Applied Mathematics exam is also compulsory in the Social Science track. But this change has been implemented in June 2017 for the first time, so no data are yet available with which to measure the possible impact on the system.

## 5. Impact of the broad nature of the curriculum on student outcomes

There are no data about students' outcomes additional to the EvAU exams data already mentioned. Furthermore, the development of the LOMCE is recent, and some changes that can be observed, as some variation in the demand of university degrees, that will be specified later, and the slight increase that can be observed in the number of students taking upper level vocational studies are most likely more related to the economic situation than to any change in the education system.

The structure of the EvAU exams does have a deep impact on how Mathematics and other subjects are studied during the year. Exams are 1.5 h long, and highly standardized. For instance, in subjects like History, the exam reduces to a list of short and long possible questions, which makes the exam rely heavily on rote memorization. In Mathematics, a short overview of the exams of each region reveals that most of the questions respond to a small number of mathematical problems. It is therefore not surprising that most of the class time during the second year of Bachillerato is devoted to a relatively small set of techniques, to the detriment of other, perhaps more formative tasks. This is a common complaint of high school teachers; however, when some experiences directed at broadening the tasks of the exam have been tried, the number of students failing the exam has tended to increase. This may be a consequence of the traditional assessment system in Spain, which uses an absolute scale, where each problem or exercise is given a mark, for a total of 10 points in the exam, and the student needs at least 5 points to pass.

## 6. Additional data on gender

Although not directly related to the last reform, we present some data that summarizes some relevant gender-related aspects of the Spanish education system.

The low number of students in STEM areas is a general problem in Spain, as is the case internationally. This problem is also related to the low participation of women in Science and Technology areas.

In the following table, we present the percentage of women in the Science areas of the EvAU exam. These data are not available after 2009. Furthermore, these data are not comparable, because Science and Health Science have been unified in the exam. As can be observed, the gender inequality in Science did not improve in the years presented.

	% women, EvAU exam, 2004	% women, EvAU exam 2009
Science and Technology	33.3%	29.5%
Health Science (Medicine, Pharmacy, Nursing School)	70.2%	66.5%

In order to study the evolution of this problem until now, we present data about the number of students enrolled in different areas of study, and the percentage of women studying each area.

In the table below, we show the percentage of students taking the EvAU exam in different areas, which mostly coincides with the track studied during Bachillerato. It can be seen that the trend in Science and Technology areas describes a small but steady decrease. It is worth noting that part of the decrease in Social Sciences (and the increase in Health Science) is mainly due to the change of the Psychology degree from Social Sciences to Health Science (data taken from [4]).

	% women, 2005–2006	% women, 2014–2015
Engineering and Architecture	26.2%	20.2%
Health Science	8.2%	17.9%
Science	7.0%	5.7%
Social Sciences	49.5%	46.6%
Humanities	9.2%	9.5%
<b>Total</b>	<b>100%</b>	<b>100%</b>

In the following table, we present the percentage of woman enrolled in university degrees. It can be noted that the percentage of women decreases in each individual area, but the total percentage increases slightly. This is an example of Simpson's paradox, in which a trend may appear in different groups, but reverses when the groups are combined.

	% women enrolled, 2004–2005	% women enrolled, 2014–2015
University degrees, all areas	54.2%	54.3%
Engineering and Architecture	27.1%	25.8%
Health Science	73.5%	69.4%
Science	59.3%	51.2%
Social Sciences	62.6%	60.0%
Humanities	64.4%	61.1%

Finally, we present a table with the percentage of woman *graduating* in different areas. When these data are compared with the corresponding data of the previous table, it seems that, on average, women outperform men in all areas of study.

	% women graduating, 2014-2015
University degrees, all areas	58.5%
Engineering and Architecture	27.9%
Health Science	73.2%
Science	57.2%
Social Sciences	65.7%
Humanities	61.1%

## 7. Financial and practical implications of the curriculum model adopted

One of the main complaints of the teacher unions is that the reform has been implemented during a period of budgetary restrictions. In the public system, teachers are selected by the regional administration, and then assigned by it to centres. It is not only that changes have been implemented without additional resources, but that in some years, retiring teachers were not being replaced, so every year it became more difficult to deploy teachers with the proper training to all classes. It is only recently that this situation has started to change.

### Conclusion

After an examination of the upper secondary curriculum in Madrid and its wider relationship to the national education system in Spain, and in consideration of the most recent educational reforms, we can comment on several key issues for countries that seek to deliver high performance within a broad and balanced curriculum.

One of the difficult decisions in upper secondary education is whether or not there should be an external assessment at the end of the period. What the situation in Madrid, and in Spain more widely, suggests is that it is crucial to have a well-designed exam. Without an assessment system that effectively measures the breadth and depth each pupil has achieved in their study, it is not possible for employers or higher education providers to adequately determine the skillset of a pupil.

Another difficult decision concerns the number and variety of subjects that should be included in the external exam. Finding the right combination of depth and breadth can be crucial.

One of the main problems of the external exam in Spain is that it is the only tool that can be used for universities in the admissions process, so in effect it works as a sorting procedure for students applying to highly competitive courses, such as Medicine. If we want to implement a more flexible system, universities should have the right incentives to try to select good students, which are scarce in the present Spanish system.

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## ANNEX 1

### Bachillerato 1

TRACKS				
	Science	Humanities and Social Sciences		Arts
		Track Humanities	Track Social Sciences	
<b>Core subjects</b>	Common subjects			
	<ul style="list-style-type: none"> <li>- Philosophy</li> <li>- Spanish Language and Literature I</li> <li>- First Foreign Language I</li> </ul>			
	- Mathematics I	- Latin I	- Mathematics applied to social sciences I	- Fundamentals of arts I
	Optional subjects: at least two of the following			
	<ul style="list-style-type: none"> <li>- Biology and Geology</li> <li>- Technical Drawing I</li> <li>- Physics and Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>- Economy</li> <li>- Greek I</li> <li>- Contemporary History</li> <li>- Universal Literature</li> </ul>	<ul style="list-style-type: none"> <li>- Audiovisual Culture I</li> <li>- Contemporary History</li> <li>- Universal Literature</li> </ul>	
<b>Specific subjects</b>	<ul style="list-style-type: none"> <li>- Physical Education</li> </ul>			
	Either two or three subjects from this list: <ul style="list-style-type: none"> <li>- Catholic Religion (1)</li> <li>- Second Foreign Language I (1)</li> <li>- Information and Communication Technologies I (1)</li> <li>- Industrial Technology I (2)</li> <li>- Music I</li> <li>- Applied Anatomy</li> <li>- Scientific Culture</li> <li>- Artistic Drawing I</li> <li>- Music: Language and Practice</li> <li>- Volume (Drawing)</li> <li>- The subject included in the core list but not chosen by the student</li> </ul>			
<b>Subjects proposed at the regional level</b>	<ul style="list-style-type: none"> <li>- Coofficial Language and Literature</li> <li>- Subjects belonging the block of specific of subjects which are not studied</li> <li>- Subjects of extension</li> <li>- Other subjects to be determined</li> </ul>			

(1) Schools must offer this subject in all tracks.

(2) Schools must offer this subject in the Science track.

## Bachillerato 2

TRACKS				
Science		Humanities and Social Sciences		Arts
		Track Humanities	Track Social Sciences	
<b>Core subjects</b>	<b>General subjects</b>			
	<ul style="list-style-type: none"> <li>- Spanish History</li> <li>- Spanish Language and Literature II</li> <li>- First Foreign Language II</li> </ul>			
	- Mathematics II	- Latin II	- Mathematics applied to social sciences II	- Fundamentals of arts II
	<b>Optional subjects: at least two of the following</b>			
<ul style="list-style-type: none"> <li>- Biology</li> <li>- Geology</li> <li>- Technical Drawing II</li> <li>- Physics</li> <li>- Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>- Business Economics</li> <li>- Greek II</li> <li>- History of Art</li> <li>- History of Philosophy</li> <li>- Geography</li> </ul>	<ul style="list-style-type: none"> <li>- Audiovisual Culture II</li> <li>- Scenic arts</li> <li>- Design</li> </ul>		
<b>Specific subjects</b>	Either two or three subjects from this list: <ul style="list-style-type: none"> <li>- Catholic Religion (1)</li> <li>- Second Foreign Language II (1)</li> <li>- Information and Communication Technologies II (1)</li> <li>- Industrial Technology II (2)</li> <li>- Musical Analysis II</li> <li>- Artistic Drawing II</li> <li>- Earth and Environmental Sciences</li> <li>- Fundamentals of Administration and Management</li> <li>- History of Music and Launch</li> <li>- Image and Sound</li> <li>- Psychology</li> <li>- Graphic-plastic expression techniques</li> <li>- The subject included in the core list but not chosen by the student</li> <li>-</li> </ul>			
	<ul style="list-style-type: none"> <li>- Coofficial Language and Literature</li> <li>- Subjects belonging the block of specific of subjects which are not studied</li> <li>- Subjects of extension</li> <li>- Other subjects to be determined</li> </ul>			
<b>Subjects proposed at the regional level</b>	<ul style="list-style-type: none"> <li>- Coofficial Language and Literature</li> <li>- Subjects belonging the block of specific of subjects which are not studied</li> <li>- Subjects of extension</li> <li>- Other subjects to be determined</li> </ul>			

(1) Schools must offer this subject in all tracks.

(2) Schools must offer this subject in the Science track.