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Erasmus+ Virtual Exchange as an Add-On for Erasmus Exchange

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ABSTRACT

This Master's Dissertation is structured in two parts. In the first one, the notion of virtual mobility and the progressive virtualization of education in Europe will be explained. To this end, I will first put the concept of virtual mobility into context, as well as the projects that have emerged from it. Afterwards, I will tackle the origin of the Erasmus programme and its evolution to the current Erasmus+ programme, where I will analyze the findings and evidence showing that both types of exchange (physical and Erasmus+ Virtual Exchange) are compatible. In the second part, I will apply these concepts to the school environment, by designing a proposal to enable the virtualization of a school exchange between two European schools thanks to the eTwinning platform, that belongs to the European Union's Erasmus+ programme.

Keywords: Erasmus+ Virtual Exchange, virtual mobility, Europe, exchange, technology, eTwinning.

RESUMEN

Este Trabajo de Fin de Máster se estructura en dos partes. En la primera, se explicará la noción de movilidad virtual y la progresiva virtualización de la educación en Europa. Para ello, pondré primero en contexto el concepto de movilidad virtual, así como los proyectos que han surgido de él. Una vez hecho esto, explicaré el origen del programa Erasmus y su evolución hasta el actual Erasmus+, donde analizaré los hallazgos y pruebas que demuestran que ambos tipos de intercambio (físico y Erasmus+ Virtual Exchange) son compatibles. En la segunda parte, aplicaré estos conceptos al ámbito escolar, mediante el diseño de una propuesta que permita la virtualización de un intercambio escolar entre dos colegios europeos gracias a la plataforma eTwinning, la cual pertenece al programa Erasmus+ de la Unión Europea.

Palabras clave: Erasmus+Virtual Exchange, movilidad virtual, Europa, intercambio, tecnología, eTwinning.

To my family, for their unconditional support.

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1

INTRODUCTION

In the present dissertation, we carried out a double study. The first one seeks to demonstrate that, although the virtualization of the Erasmus exchange may be considered in the long term as the end of the traditional physical Erasmus, in fact both modalities feed back and are totally compatible. To this end, and with the intention of trying to offer my personal standpoint, I will study the concept of virtual mobility in Higher Education Institutions in Europe, as well as the way in which Erasmus+ Virtual Exchange complements and enhances the already well-established Erasmus programme.

Although this initiative is quite recent (2018), the truth is that for years there has been interest in implementing technology in the mobility of members of the European educational community. Given that we live in a society increasingly dominated by ICTs, and the prevailing need to be interlinked with other cultures, the symbiosis of tradition and technology may be a good opportunity to enhance the Erasmus programme in general. Furthermore, the virtualisation to some extent of the Erasmus exchange can increase the number of participants adhering to the programme, as there are many people who, for various reasons, cannot go on a physical Erasmus exchange.

The second study that we will carry out in this work tries to demonstrate that, not only is the virtualization of education and exchanges possible in Higher Education Institutions, but that, as we will see later, it is also possible to do so in schools. Thus, we have designed a brief proposal for a virtual school exchange between a school in Spain and another in Ireland.

The structure of this Master's Dissertation is as follows: The first chapter, entitled "Contextualization: The Concept of Virtual Mobility", will be based on the explanation of the notion of virtual mobility; the second chapter, "REVE Project and the Erasmus Programme: A Step towards Virtualization", will be dedicated to various projects that have emerged to enhance virtual mobility in Europe and, especially, to the analysis of the REVE Project, which promotes the virtualization of the Erasmus programme; the third chapter, entitled "Erasmus+ Virtual Exchange, both an Alternative and an Add-On", will

be focused on demonstrating that, although it is thought that Erasmus+ Virtual Exchange may be a competitor to the physical Erasmus, in fact it is a good add-on and both are compatible.

Finally, in the last chapter, entitled “Virtual School Exchanges and eTwinning. A proposal”, I will demonstrate my theory that it is possible to apply virtual mobility in universities, but also to the scope of schools. To this end, I will design a brief proposal for a virtual school exchange, which will serve as a foundation for future exchanges of this type in European schools.

2

CONTEXTUALIZATION: THE CONCEPT OF VIRTUAL MOBILITY

The concept of virtual mobility is relatively recent, but it has gained great strength recently due to several developments in the world. The first of these is the process of globalization that is currently taking place in our society, where barriers between countries are being broken down, thus enabling better communication and international cooperation. Henceforth, the links and relations between different countries improve, while education and cultural knowledge benefit. Nowadays, each citizen is not an individual entity separated from the rest of society, but is part of a global network of relations between countries. Therefore, virtual mobility can be an effective tool for connecting societies.

On the other hand, the development of ICTs in recent times has been of great importance in the expansion of the term virtual mobility. Thanks to the development in technology, new tools and techniques have appeared that make possible the communication between people of different environments and countries. Technology is an important part of our lives nowadays, as it allows citizens to be interconnected. When physical barriers do not allow it, technology makes it possible to seek a solution.

First of all, we must know what this concept means, and what implications it has for higher education. Although, as mentioned above, it is a relatively recent term, the truth is that it is a broad concept with various nuances. The best known and generally used definition is the one provided by the e-learningeuropa portal, which defines it as: “The use of information and communication technologies (ICT) to obtain the same benefits as one would have with physical mobility but without the need to travel” (Dauksiene et al. 2).

A different definition is given by the author S. Van de Bunt-Kokhuis: “the collaborative communication between a faculty member and his/her counterpart(s) mediated by a computer. More often, these meetings will be interactive and take place across national borders and across time zones” (Dauksiene et al. 2).

Changing perspective, 'The Being Mobile' project team provides another definition to this concept of virtual mobility in Higher Education Institutions, including now a nuance related to the intercultural aspect of the word:

Virtual Mobility is a form of learning which consists of virtual components through an ICT supported learning environment that includes crossborder collaboration with people from different backgrounds and cultures working and studying together, having, as its main purpose, the enhancement of intercultural understanding and the exchange of knowledge. (Dauksiene et al. 3)

Students on the Workshop of BEST Symposium on Education, in Bucharest, on 23-29 July, 2006, defined Virtual Mobility as simply "the possibility to take an abroad course without travelling" (Dauksiene et al. 3).

Nevertheless, there are certain authors such as B. Schreurs, S. Verjans and W. Van Petegem who note certain shortcomings in this type of minimalist definition, and propose the following definition, adding an international dimension:

Virtual student exchange allows collaboration with foreign students and teachers that are no longer location dependent. The exchange might range from a single course to a full academic year. Through Virtual Mobility a university can also offer international experience for students and staff through an international discussion group, an international seminar an international learning community with regard to a theme of a course or a cluster of courses. (Dauksiene et al. 3)

However, the one that interests us the most for our purpose is the one presented in the Lifelong Learning Programme 2007-2013 glossary:

A complement; or as a substitute to physical mobility (Erasmus or similar) in addition to a type of independent mobility which builds on the specific potentials of on-line learning and network communication. It may prepare and extend physical mobility, and/or offer new opportunities for students/academic staff who are unwilling or unable to take advantage of physical mobility. (Dauksiene et al. 3)

As it can be seen here, this definition goes further in the concept of virtual mobility and adds what we defend in the thesis: VM (Virtual Mobility) not only as an alternative or substitute for physical mobility (in this case Erasmus+), but also as a complement that serves to improve this type of mobility in Higher Education Institutions.

Notwithstanding, what are the distinctive features of this VM concept? According to The Green Paper of the Commission of the European Communities (2009), the term virtual mobility has some common characteristics. Among the most important ones, we can highlight:

- Sharing some of the benefits of physical mobility.
- The use of the Internet and the well-known ICT.
- It allows students to prepare for a future physical Erasmus, for example, either by attending online seminars with the host institution or by taking preparatory courses.
- The fact that it is an effective option for young students who do not want to travel abroad for whatever reason.
- It allows to keep in touch with the host country even if the mobility period has ended.

Once the different connotations of this concept and its characteristics are known, it would be convenient to establish the different types of VMs that we may find. Since it is a broad term that can encompass a wide range of activities and procedures, we will categorize it according to the literary sources available to us. According to Poulová et al., we can divide the different types of virtual mobility taking into account the following three aspects: according to the use of virtualization (totally virtual, partially virtual, dual or mixed); based on the used technology; based on the educational aspects - the teaching and/or learning scenario that has been used (2).

Apart from this proposed classification, the expert team of the Being Mobile project suggests a different division around these four types: a virtual course (as part of a programme) or seminar (series) at a Higher Education Institution; the whole programme at a Higher Education Institution; virtual student placements; virtual support activities to physical exchange (2).

3

REVE PROJECT AND THE ERASMUS PROGRAMME: A STEP TOWARDS VIRTUALIZATION

In order to promote and encourage virtual mobility in Europe, some institutions have created certain VM projects. The aim of these initiatives is for this phenomenon to gain greater strength in the coming years, i.e., its ubiquity is sought, while always taking into account the limitations that exist for implementing these projects in HEIs (Higher Education Institutions).

In addition to pursuing the aim of increasing its presence in European universities and other institutions, the intention is to implement the bases and recommendations for undertaking these educational reforms. Now, before entering to analyze the REVE Project, it is advisable to have an acquaintance with other virtual mobility projects.

The first of these projects that we are going to discuss here is the VM-BASE Project, and we will be based on the paper by Bijnens et al. “Extending and Supporting Physical Student Mobility Through Virtual Mobility: The VM-BASE Experience”.

As the authors suggest, “The VM-BASE project (Virtual Mobility Before and After Student Exchanges) examines, develops and implements procedures of ‘blended mobility’, in which aspects of physical and virtual mobility are combined in order to maximize the advantages of both approaches” (1).

As regards the virtual support prior to the exchange proposed by this project, three fundamental aspects are proposed: orientation guidelines, pre-selection tools and preparatory courses.

The first of these has to do with the occasional lack of information available to students about the institution where they are going to carry out their exchange. The VM-BASE Project does not intend to modify this HEI-student information channel, but rather proposes other means of communication to make the process easier; many times, students

need to know the context of their host institution beforehand to better acclimatize to the change. The proposed communication methods are: e-mail, Skype and MSN (2).

Regarding the pre-selection tools, it is worth noting that those students who want to make an exchange, either physical or virtual, can evaluate their degree of compatibility with the host university. Thanks to these tools, the student can assess whether his or her academic level is in line with that of the host university, and may choose from several options. As mentioned in the article, “VM-BASE wishes to develop codes of good practice in designing such pre-selection tests for students” (2).

Now we move on to the third fundamental aspect of the pre-selection support suggested by the VM-BASE Project, and Bijmens et al. state:

The VM-BASE project considers not only language courses as being beneficial for exchange students but aims at developing a blueprint for preliminary courses for students preparing for a physical Erasmus exchange in three subject areas: language courses (basic skills in the language of the host country), culture courses (about the history and culture of the host country, the organisation and academic traditions of the host institution) and digital literacy courses (if particular ICT systems, e.g. a digital learning environment, are in use in the host institution, that require prior training). (3)

As we can infer from the above quotation, not only good preparation in terms of the language of the host country is important for this project, but other aspects like the culture of the country, or training aimed at mastering the institution’s own ICTs are also important. This not only improves the learning of the student in question, but also greatly speeds up the process of adaptation, resulting in more effective mobility.

Now we move on to the virtual support after the exchange within the VM-BASE project. Here, we find two cornerstones. The first one is the virtual assessment and evaluation at a distance. The VM-BASE Project encourages the use of virtual media for the evaluation of exchange students. This is useful as virtual mobility students can benefit from this measure by being able to take the exams from home. Furthermore, those students enjoying a physical exchange can benefit from this virtual evaluation, since if they have failed a subject or have not finished their final project, they can finish it even if they are not in the host country anymore.

The second element we find here is the concept of ‘Virtual Alumni’. The authors comment on the following:

Virtual mobility can sustain contacts after leaving the host university. At the end of the physical exchange, students can keep in touch with their peers, scattered around the world, and finish their common research project, or paper work. They can also establish a so-called 'Virtual Alumni' organization, to foster a life-long friendship. (4)

As we can see, this community of 'Virtual Alumni' may be very beneficial for student exchanges, whether physical or virtual. Although lately there is a downward trend of students attached to physical mobility, the fact that students can share their experiences through this virtual community can even increase the number of students who want to participate in an Erasmus+ exchange.

Among other projects promoted by the European Commission and other international agencies, we find the EVENE project (Erasmus Virtual Economics & Management Studies Exchange). This project, according to Poulová et al., consists of the following:

The core aim of this project was creation of a network of traditional European higher education institutions for the purpose of mutual exchange and sharing of courses and pedagogues and a possibility of providing these to students in a distance form of education supported by the eLearning format. The EVENE project creates a core network of universities operating in the field of Economics and Management study. (2)

The goal of this project is therefore to promote cooperation between different European universities through virtual mobility, from which both the heads of these institutions and the students who are part of them will benefit.

Apart from this other project to encourage VM, we find the EVICAB Project (European Virtual Campus for Biomedical Engineering). This project is based on the creation of an online platform where various universities and institutions can offer their courses. Each university adds their courses to the platform, and students browsing the online platform have a great amalgam of different options to choose in order to decide which course is the most convenient for them.

Thanks to this, lesser-known universities can make themselves visible to the world and increase their educational offerings, resulting in improved education and student choice. It should be added that each university is responsible for their own courses, not the platform. Likewise, the institutions attached to this online platform can take ideas from the courses of the other universities and improve their quality (2).

Another interesting project is VENUS (Virtual and E-mobility for Networking Universities in Society). This project is attractive because it proposes two models of virtual seminars. The first one consists of a series of monthly virtual seminars, which take place during the academic period. The second model is totally different, being a week of intensive webinars, this time during the summer period. According to Poulová et al., these seminars consist of three main parts: “interactive preparatory activities, seminar delivery (presentation, localization and discussions) and interactive follow-up activity. Seminars aim at promoting European citizenship, collaboration and personal development” (2).

All these projects are key for the promotion and dissemination of virtual mobility in HEIs and especially in Europe. However, there is one project that we will analyze in more depth due to our purpose in this work, which is to try to show that it is possible to virtualize exchanges in Higher Education Institutions, as well as in schools (as we will observe in the last chapter). We are referring to the REVE project (Real Virtual Erasmus), that aims to promote the traditional Erasmus programme through its virtualisation. Now, it would be useful to know the origin of the Erasmus programme and its subsequent development.

To put it in context, the Erasmus programme was created in 1987, so it has already achieved more than 30 years of exchanges between members of the educational community of Higher Education Institutions in Europe. This programme was created with the intention of promoting mobility between institutions in different European countries, and also to improve the relations and intercultural competence of citizens. As suggested by Botez, “University education and student mobility have become a matter of European Community interest. The Council of Europe, founded as an institution in 1949, had as its primary objective: “Strengthening the union between the Member States and proposing common ideas and principles in order to foster economic and social progress”” (192).

For this reason, The Council of Europe has throughout this time encouraged students, teachers, researchers etc. to participate in these mobility actions, so that participants acquire the necessary skills in European society, as well as other kinds of knowledge. Mobility is a necessary value for the advancement of European identity (Botez 193).

And, in order to promote mobility in Europe, the emphasis is on the following aspects:

For students, access to study and training opportunities and related services; For teachers, researchers and administrative staff, recognition and capitalization on periods spent in the European competition through research, teaching and training, without prejudice to their statutory rights; Promoting European cooperation in ensuring the quality of a vision related to the idea of developing comparable criteria and methodologies; Promoting the necessary European dimensions of higher education, especially in curriculum development, inter-institutional cooperation, mobility schemes and integrated study programs, training and research. (Botez 193)

More recently, in 2014, the Erasmus+ programme has emerged by bringing together all the European Commission's current plans for the fields of education, training, youth and sport. These include:

Comenius - school curricula, Erasmus - Higher Education, Leonardo da Vinci - vocational training, Grundtvig - for adult education, Youth in Action - non-formal and informal learning in the youth field; Jean Monnet - dedicated to studies on the European Union, Erasmus Mundus - geared to the globalization of European education, also open to non-EU citizens. (Botez 194)

The Erasmus plus programme is a very important initiative because it symbolises the reunification of Europe and the creation of a new European identity, but it does not replace the existing one (Botez 194). The Erasmus+ programme is not only an improved version of the exchange programme, but “the addition of two more programs from the European Commission: The Lifelong learning program (LLP) and the “Youth in Action” program” (Botez 196).

Thus, Erasmus+ goes beyond its predecessor by offering the same possibilities, but with new modalities, such as being able to carry out exchanges with HEIs outside the EU that have an agreement with the university. In other words, the Erasmus+ programme complements and encourages the already existing programme, in the same way that the Erasmus+ Virtual Exchange also encourages the physical version, contrary to the general thought. In short, as Botez concludes:

The Erasmus plus program means a useful tool in modernizing and reforming higher education by offering all participants, students, teachers, other staff, the possibility of defining a new European dimension of education by widening the knowledge horizon, acquiring new skills both at the theoretical level and practically, intercultural exchanges and an improvement in the field of interhuman communication, all of them have a direct impact on widening access and equal opportunities for all Community citizens. (196)

Now that we know the context of the physical exchanges, it is time to get to know the project that seeks a new scope: the virtualization of the Erasmus program. To do so, we

will rely on the article “REVE – Real Virtual Erasmus: Opportunitites and Challenges”, by Mázár and Op de Beeck. As the authors suggest in the abstract, “the REVE (Real Virtual Erasmus) project wants to enhance the impact & efficiency of traditional Erasmus programmes through the development & support of mainstream Virtual Erasmus actions” (1).

This quotation reinforces the idea defended in the thesis of this dissertation, that is, virtual Erasmus should not be considered as an impediment or obstacle to physical Erasmus. Although it is true that the REVE project exposes the Virtual Erasmus+ as an alternative for people who do not want to enter into a traditional exchange, this project also aims to put the necessary means for the physical Erasmus to benefit from its virtual counterpart. In summary, both modalities are completely compatible, and one can benefit from the other by creating a symbiosis or synergy.

Now, what is the action plan to carry out this project? Well, the collaborating members carried out measures from two different approaches. The first one would be:

Virtual mobility course actions, in which Real Virtual Erasmus is implemented on the basis of new as well as improved existing courses and programmes, with the right blend of virtual and real collaboration between students, teachers, and other knowledge workers across institutional and national borders. Several courses (e.g. Erasmus Mundus Master programmes, International Student Business Challenge course), organised (jointly) by project partners, were selected based on their potential for visibility, scalability, and transferability of the initiative. The main result is really working virtual mobility actions within the real environment of mainstream higher education of partners. (1)

The second approach would be horizontal support actions, which would support the first line of action. The first one of these actions would be the development and implementation of various elements to support virtual mobility. Among them, we can highlight “the necessary technological, organisational, and pedagogical tools, techniques and services” (2). Likewise, an analysis will be carried out in this first action of the interactions between the different scenarios in which this project is implemented.

The second horizontal support action is the improvement and refinement of existing models and procedures. Specifically, special attention will be paid to aspects such as accreditation and credit transfer, the location of institutions and the various agreements and arrangements (2). This is an arduous and not easy task, so the members of this project were distributed in groups and were responsible for gathering information about other

virtual mobility programmes and, especially, previous experiences in physical Erasmus programmes.

The third is, as the authors explain: “Elaboration and delivery of appropriate training (e.g. seminar series on ‘Culture and Technology’) and ad hoc advice for teachers, support staff and students in e-competences related to virtual mobility (e.g. customised training on the use of videoconferencing)” (2). This third element is very important since, if what is to be promoted is the virtualization of a physical exchange, a specific plan must be elaborated to reinforce and support the use of technology.

To this end, REVE Project will try to encourage the correct training in competencies related to ICT through seminars, as well as advising not only teachers, but also support staff and students in this complex but necessary subject like technology. Specifically, this project will promote the use and knowledge of the different tools for videoconferences, which will be key in this type of virtual exchanges.

Given that we are in an increasingly globalized world in which technology plays a paramount role, knowledge of the e-learning field becomes fundamental. Proof of this is that, nowadays, institutions considered as traditional are adapting to these technological changes, and ICTs are increasing their ubiquity in the educational context. REVE Project also supports this technological development in Higher Education Institutions, as we can see in:

The partners’ attitude and efforts are continuously changing according to the trends in the e-learning field in order to improve the quality and efficacy of the strategies implemented, yet it should be mentioned that the above described developments are very well in line with the project’s aims. The fact that technologies and ICT tools are more and more used in ‘traditional’ or ‘regular’ education systems augments the relevance of REVE. On the other hand, university business processes supported by ICT are in general in premature phase. (3)

As we can see, it is the task of this project to facilitate the path to progressive technologicalization of education in various institutions. Thanks to this, the implementation of virtual exchanges will be faster and more effective, making it possible for more members to benefit from Virtual Erasmus.

Finally, the fourth action is the effective dissemination of the results and conclusions obtained from this project. There is no point in stimulating virtual mobility

if you do not share the final product obtained from that stimulus, so that other organizations and institutions can benefit from your findings.

To this end, REVE Project will organize international workshops for the exchange of information, in collaboration with other entities (2). This flow of information can be interesting, since virtual mobility and, more specifically, Virtual Erasmus, can benefit from it and increase its ubiquity in Higher Education Institutions.

Likewise, as Mázár and Op de Beeck mention, “the final results of the REVE project will also be published in an online manual on “Global Framework for Networked eLearning” including concrete and validated procedures, collaboration models, conditions, agreements and guidelines” (2).

In relation to this dissemination of information and of the results of the project, it should be noted that one of the measures taken is the fact that the institutions involved must complete an exhaustive questionnaire every six months. The content of this questionnaire is the following: “[...] views and remarks not only on the general progress of the project but also its sustainability in the future, the status and development of the European e-learning environment (and its influence on the project goals and activities), and the partnership both considered as a whole and as a collaborative network of expert bodies” (2-3).

These questionnaires are important as they allow the promoters of this project to know the feedback of the members involved in the project and, thus, to draw conclusions in order to improve the virtualisation of the exchanges. In general, the assessments that have been collected are good, and staff members, students and other participants view this project as a way to improve education.

However, REVE Project admits that there is still room for improvement regarding the implementation of an e-learning environment in Higher Education Institutions. Some experiences, like the one belonging to 2005, was not as successful as expected at the beginning:

At the Virtual Erasmus Week in March 2005 (participants: Erasmus Mundus coordinators, staff members of the Study Advisory Centre), and at the REVE workshop of the EDEN 2005 Annual Conference (participants: professionals of the field) some feedback showed that although virtual mobility is in the centre of the attention among e-learning and ODL professionals, academic staff members are still not very well aware of such opportunities applicable for them. The organisational

problems of virtual mobility programmes are also pointed out by some partners, underlining the importance to improve the processes in including the virtual courses in the academic curricula (in terms of the attitude of the academic staff, the financial background, etc.). (4)

However, this information is not a problem, but an opportunity for improvement in the field of virtual mobility and virtual exchanges. From these constructive criticisms, the REVE Project promoters can highlight the strengths and weaknesses of their initiative. This is not an easy task, as it requires a process of reflection and self-criticism in order to learn from failures and to be able to move forward. From a period of analysis by the members, a conclusion was reached about the status quo of the project.

Among the strengths of the project, as suggested by Mázár and Op de Beeck, we may find: the topic itself; efficient use of resources; real courses, high relevance and potential; enthusiastic, committed and competent partnership, some of whom already have experience in working together; project can be adapted to new requirements; the project idea of stimulation e-learning by cooperating; it offers the opportunity to learn from the experience of different actors in the field (7).

On the other hand, certain aspects have been observed that could be improved. Among them, we can highlight the following ones: legislations and internal university rules make it hard to involve significant number of students in the pilot virtual courses; quite some obstacles before really being able to realise Virtual Erasmus being fully implemented in mainstream education; the assessment of the courses and the accreditation; after succeeding with the courses it will be hard to extend participation to other universities; more financial backing would be needed; normal teaching duties crisscross with the project; the contacts with the course organizers/ course teams can be improved. We need to find ways to make them feel more involved in the REVE project. It might be a good idea to bring the course teams in touch with each other during the course of this project (7).

4

ERASMUS+ VIRTUAL EXCHANGE, BOTH AN ALTERNATIVE AND AN ADD-ON

Now that we have an acquaintance with the concept of virtual mobility, the various initiatives that have emerged to promote it, the concept of physical Erasmus and the attempts at its virtualisation, it is time to talk about Erasmus+ Virtual Exchange. To this end, we will focus on two documents. The first one, Erasmus+ Virtual Exchange Impact Report 2018, by Helm and van der Velden; the second one, Erasmus+ Virtual Exchange, by Guth et al.

The Erasmus+ Virtual Exchange is a type of virtual mobility that emerged in 2018 as an initiative to improve the Erasmus+ programme. And, although there is a belief that this type of mobility will mean the end of the traditional physical Erasmus, it is the contrary actually. Lately, a decrease in the number of students participating in the Erasmus programme has been noted. As suggested by Guth et al.:

In recent years, there has been growing recognition of the limited reach of mobility (European Commission, 2019), which is accessible to only a minority of students and staff. Furthermore, there is limited diversity among the youth who undertake or participate in study abroad as well as among the host regions for international students: the majority of youth who participate in international exchange come from families with higher social status and institutions in metropolitan cities. (2)

It is true that the financial aspect may be one of the main causes of this problem, since not all students have the necessary means to pay for a physical Erasmus, and all the rent and travel expenses that it entails. Therefore, the virtualization of the exchange can be an effective way to lower costs and enable more people to participate in these programs of the European Union, since it can be done from home and without having to move.

Likewise, one of the main reasons why students go on a physical Erasmus, is the fact of improving their intercultural competence, a skill promoted by the European Commission and that is fundamental nowadays in the students' learning. However, it has

been perceived that the Erasmus exchange does not always guarantee an improvement in this much needed competence:

It is also important to highlight that mobility does not necessarily lead to intercultural learning. Research studies have found that international experiences can even lead to an increase in ethnocentric attitudes and less willingness to interact with cultural 'others' (Jackson, 2018; Jackson & Oguro, 2017). Educational interventions are needed to encourage domestic and international students to develop meaningful relationships and to move beyond cultural stereotypes. (Guth et al., 3)

In this way, Erasmus+ Virtual Exchange can be a good way to complement traditional Erasmus, either by replacing one with another, or by doing both at the same time, which may be possible. Ideally, if the necessary means are available, both types of exchange should be combined. You can participate in a physical Erasmus and, at the same time, get involved in the activities proposed by the Erasmus+ Virtual Exchange. The main premise is as follows, as Guth et al. comment: "These exchanges use online learning activities and technology-enabled solutions to strengthen people-to-people contacts and intercultural dialogue as well as employability and citizenship" (6).

Now, what is the main objective of Erasmus+ Virtual Exchange? According to Helm and van der Velden, this initiative was not created exclusively to replace the traditional Erasmus, but so that through technology, the scope of traditional intercultural learning programmes can be expanded (6). The reason for the creation of this initiative is mainly driven by European policies. One of these is the Paris Declaration, which is based on: "a recognition of the challenge in safeguarding pluralistic societies and calls for education systems and policies to promote greater social inclusion, non-discrimination and intercultural dialogue, including through the support of Erasmus+" (Helm and van der Velden, 6).

Another European policy is the European Neighbourhood Policy, which seeks to promote exchanges between young people, as well as their education and learning. The third policy is the European Commission Digital Education Action Plan, which is very important, because it promotes the use of technology in educational areas and digital competence development (Helm and van der Velden, 6), a fundamental aspect that is not always present in physical Erasmus and can thus be a good add-on.

The fourth policy, and a very important one too, is as follows:

The European Commission Communication on European higher education in the world which calls for “internationalization-at-home” strategies - the integration of a global dimension in the design and content of all curricula and teaching/learning processes - to ensure that the large majority of learners are able to acquire the international skills required in a globalised world. (Helm and van der Velden, 6)

Furthermore, apart from the main objective already mentioned of serving not only as an alternative, but as an add-on as well, the European Commission pursues other objectives with the Erasmus+ Virtual Exchange. These objectives, as mentioned by Helm and van der Velden, are the following:

Encourage intercultural dialogue and increase tolerance through online people-to-people interactions; Promote various types of Virtual Exchange as a complement to Erasmus+ physical mobility, allowing more young people to benefit from intercultural and international experience; Enhance critical thinking and media literacy, and the use of Internet and social media; Foster soft skills development of participants, including the practice of foreign languages and teamwork, notably to enhance employability; Support the objectives of the 2015 Paris declaration to promote citizenship and the common values of freedom, tolerance and nondiscrimination through education; Strengthen the youth dimension of the EU neighbouring policy with Southern Mediterranean countries. (7)

As for the models of Erasmus+ Virtual Exchange that we can find, there are two. The first one of these is the ‘Ready-made’ dialogue-based exchange which, according to Guth et al.: “Institutions can integrate ‘ready-made’ exchanges into existing curricula or offer them as stand alone ‘general courses’ for students to develop transversal skills. These ‘ready-made’ programmes were designed by pedagogical experts at organisations that specialise in virtual exchange that is based in facilitated dialogue” (8).

As we can appreciate in this quote, both types of exchange are compatible and can complement each other. The content of this first model is based on live conversations led by facilitators. These sessions are weekly and last two hours, in which participants discuss a variety of topics with peers from different cultural backgrounds. This is a great opportunity, since sharing knowledge and ideas with people from other countries improves communication skills, intercultural competence, critical thinking and empathy (Guth et al. 8).

All this is a key complement to the studies of each university student, since there are times when we embark on an Erasmus exchange that we do not have time or do not see the opportunity to put into practice and improve these skills. In addition, as the sessions

take place on a videoconferencing platform, the knowledge of ICTs in participants is complemented.

The second model of Erasmus+ Virtual Exchange for Higher Education Institutions is the so-called ‘Grassroots’ exchanges, which would consist of: “[...] it is teaching staff at HEIs who design a virtual exchange in collaboration with one or more international partner educators to integrate intercultural perspectives into their course while still meeting their specific course objectives” (Guth et al. 9).

In this case, the institutions start from scratch and have the opportunity to create their own course in collaboration with other members who wish to participate, complementing the existing teachings. Prior to the implementation of the virtual course, the HEIs must have taken a training course organized by Erasmus+ Virtual Exchange to meet the general requirements of the program. Guth et al. add: “Through this international collaboration both educators and students are exposed to different perspectives on the subject they are studying-whether it is history, business, health sciences-and they learn to communicate and collaborate with their international peers through technology” (9).

Several months after the implementation of EVE in various institutions, the results were analysed and a series of findings were made regarding the usefulness of this type of exchange, as well as its potential to become a complement to physical Erasmus.

The first finding is that positive results were found in terms of changes in the perceived effectiveness in intercultural communication, an improvement in values such as self-esteem and curiosity, as well as the belief in strong relations between European and Southern Mediterranean countries (Helm and van der Velden 7).

The second finding concerns the fact that the participant evaluations were generally very good, which shows that EVE can be a great bonus in the learning of young university students.

The third finding is related to the stimulus that EVE gave to students, since it was a new experience that included the use of technology, and it improved the motivation to do more exchanges (either physical or virtual) in the future.

The fourth would consist of the following, according to Helm and van der Velden: “Many participants reported building positive and meaningful relationships with their peers, with some remaining in contact beyond the exchange itself. The majority told other

people within their communities about their experience and said they would be interested in engaging in other Virtual Exchanges in the future” (7). This is a key issue, as good feedback from participants may lead more students to consider participating in the Erasmus programme, either in its physical or virtual version.

The fifth finding relates to the fact that participants reported that their mastery of technology improved, with ICT skills being a key element of the European Commission’s framework of Digital Competences. Thus, this skill can be applied in the future by students improving their professional path, especially taking into account the increasingly digitalized world in which we find ourselves.

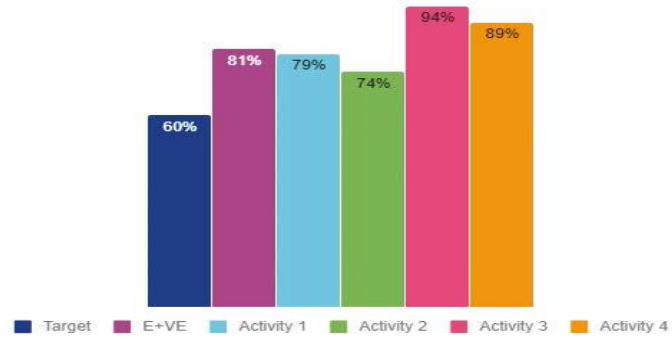
The sixth finding is also important, as it directly concerns English:

Virtual Exchange improved other soft skills such as foreign language (predominantly English), teamwork and collaborative problem-solving. Evidence of critical thinking and media literacy was found in some of the participants’ reflections: participants showed insight into their learning process, and related it to the model of exchange they were participating in. Participants further showed understanding of intercultural issues, addressing the difficulties that arose in working across cultures, and some reported challenging media misrepresentation, another indicator of increased media literacy and critical thinking. (Helm and van der Velden 7)

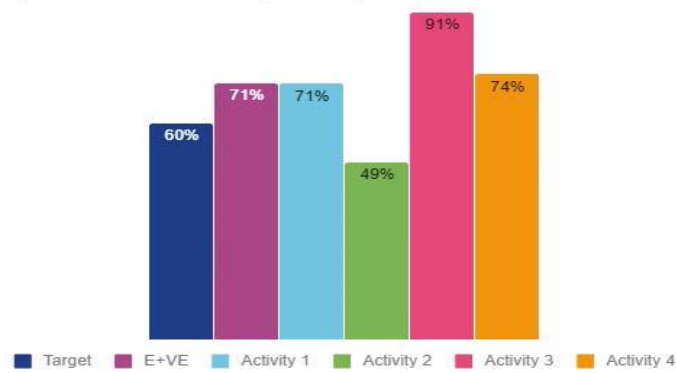
The last two findings are interrelated, because one has to do with increasing tolerance, and the other with strong evidence of intercultural sensitivity (Helm and van der Velden 7). Thanks to the Erasmus+ Virtual Exchange, participants were positively affected by exposure to people from other cultures. This resulted in a better understanding of intercultural relations, as well as a reduction of stereotypes of the “us/them” type.

But not only these findings by the researchers reinforce our thesis, but also the evaluation by the participants of the impact of EVE shows that this type of exchange is a good add-on for the Erasmus programme in general. The following graphs are taken from the Erasmus+ Virtual Exchange Impact Report 2018, and show the percentage improvement in various areas obtained from a questionnaire before and after the exchange, which also assesses the results with respect to the activities contained in EVE:

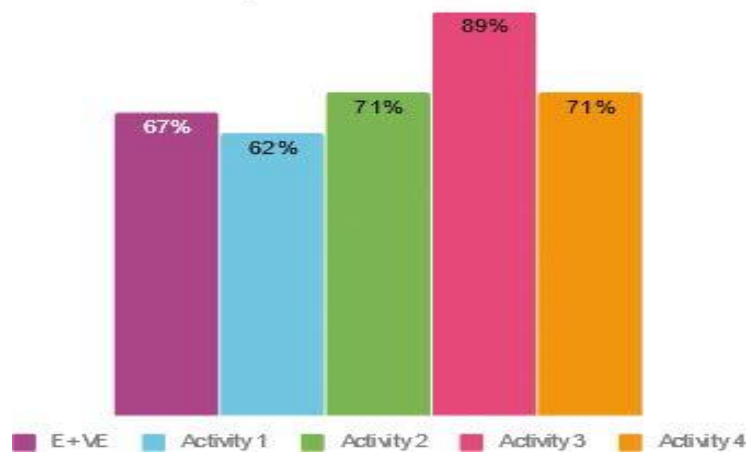
Increased knowledge of relationship between societies



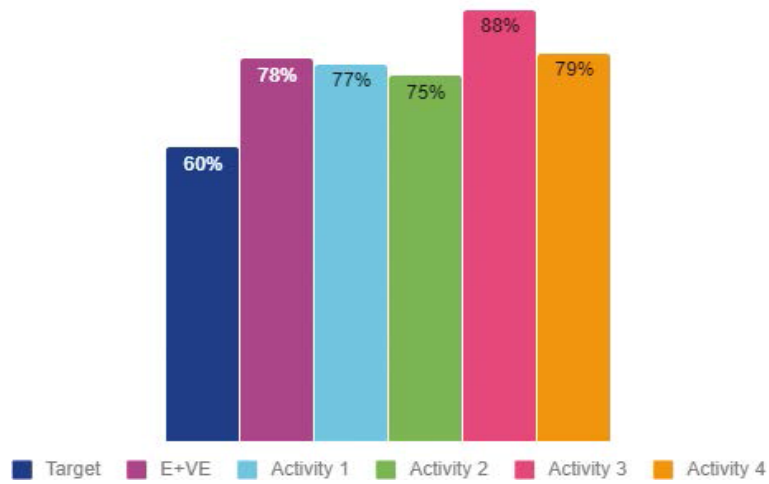
Built positive relationships with peers from different countries



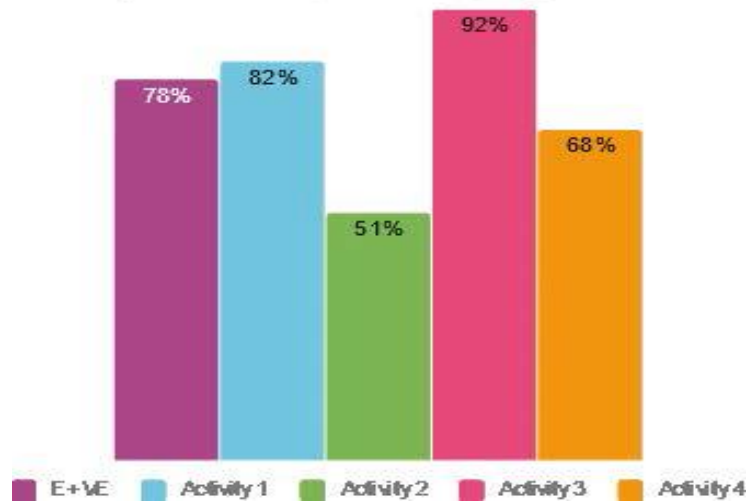
Improved team-work



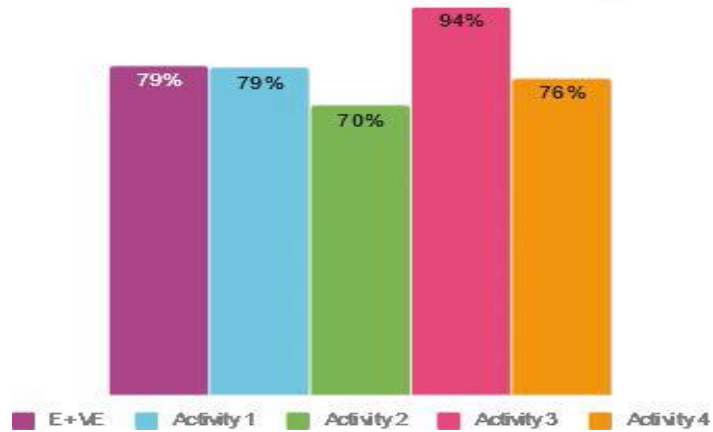
Improve Digital Competences



Improved English Language Skills



Interest in Future Virtual Exchanges



While it is true that Erasmus+ Virtual Exchange has great potential to improve the Erasmus programme, and the fact that students who experience it are more motivated to do Erasmus face-to-face in the future, certain limitations must also be considered. For example, the lack of knowledge of the term ‘virtual mobility’ among many university students may generate doubts when it comes to carrying out this type of exchange (Guth et al. 13).

Furthermore, the fact that before being able to implement virtual Erasmus in a Higher Education Institution, it is necessary to undergo exhaustive training based on the curriculum of the Erasmus programme and the use of the different tools it comprises, this creates reticence in the members of the institutions.

What is more, there are doubts regarding the funding that universities could receive. Although it is true that the cost to the student compared to the physical version is much lower, the European Union must make an effort to improve the budget to finance this type of exchange, since with a good financing system the number of universities that would want to get involved in this initiative would increase.

Finally, another relevant issue that needs to be clarified is that of the accreditation of subjects. As this is a relatively recent initiative (2018), it is not yet known whether students taking an EVE will be able to accredit subjects if they want to do a physical exchange in the future.

5

VIRTUAL SCHOOL EXCHANGES AND ETWINNING. A PROPOSAL

As we have seen throughout this Master's Dissertation, the virtualization of education in universities is a fact thanks to the Erasmus+ programme and the multiple projects that are present in this work, which supposed an advance in terms of virtual mobility. Especially the REVE Project, that led to the appearing of the Erasmus+ Virtual Exchange initiative. But now, would it be possible to implement this not only in European universities, but also in schools? In this chapter, we propose a brief proposal for the implementation of a virtual school exchange for students of 2nd ESO in the subject of English at Nuestra Señora del Pilar School in Valladolid.

Thanks to the eTwinning platform (which could be regarded as an analog to the Erasmus+ Virtual Exchange in schools, and that I will describe below), the pupils will be able to carry out a virtual exchange with a school in Galway (Ireland). As an alternative to the physical exchange, pupils from both countries will work together on a joint project called 'Schoolvision'.

5.1 eTwinning Platform

According to INTEF (Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado), "eTwinning is an initiative of the European Commission aimed at promoting the establishment of school twinning and the development of collaborative projects through the Internet between two or more schools in different European countries on any topic in the school environment agreed by the participants". It started in 2005 as a key part of the eLearning Programme and since 2007 it has been integrated into the Lifelong Learning Programme.

It is also part of the Erasmus+ programme, which we discussed earlier. The aim of this initiative is to improve the basic skills of European students, which are key to the globalised world in which we live.

5.2 Justification

Given the need to get to know the cultures of other countries and their people, school exchanges are a necessity. Thanks to them, not only our competence in the foreign language in question is improved (in this case, we are interested in English), but also several links are created between European citizens that will be very useful in the future. Intercultural competence must be instilled in our pupils, as well as other skills such as cooperation, teamwork, respect, use and handling of ICT etc. However, it is not always possible to carry out an exchange, as we have already seen in the case of university students.

This year, for example, the students of 2nd year of ESO at Nuestra Señora del Pilar school were on the verge of embarking on a cultural exchange for one week in Galway (Ireland). Nevertheless, owing to this nightmare in the shape of a virus, these young students have lost that possibility, thus damaging their learning. The aim of this proposal for implementation is precisely to find a solution to this problem, since no event or pandemic has the right to worsen the education of our students, which must be a priority for teachers.

To this end, we propose the creation of a project called ‘SchoolVision’ as a substitute for physical exchange, using technology and the eTwinning platform. This project will be described later, and will involve Spanish pupils with a Galway school that may want to participate in this initiative.

5.3 Educational Context

The School Ntra. Sra. del Pilar of Valladolid is located in the south zone of the city, Cañada Real, 300; Postal District: 47008, bordering the center of Interpretation of the Nature, in the district of Covaresa. It is an area of expansion of the city. In the neighborhood there is a high density of population due to the tendency of the city to

expand towards the south. In the vicinity there are other private and public schools, communication with the city center is comfortable and frequent. It is a subsidized center registered in the Civil Registry with the number 47004111.

The building was built at the beginning of the 1950s and has been operating as a recognised elementary school since the 1956-57 school year. In the 1971-72 school year it was transformed into an E.G.B. school, partly boarding and partly attended by outsiders, although at present it only functions as an external school. The building is spacious, with three floors and a basement. Two pavilions embrace a large church.

The school serves a diversified population with the characteristics of each neighborhood that can be defined as such: Families from La Cañada, La Rubia and Los Pueblos are almost all workers. The families of Covaresa are families of professionals, it is frequent that both spouses work. At some times there have been cases of unemployment; at the present time it is not striking. There is an increase in the economic and cultural level, due to the professional groups of Covaresa and other neighborhoods.

The classes are distributed in different areas and floors depending on the course in question. The size of the classroom is quite adequate, making cooperation between students possible. As a general rule, students are placed in pairs, which facilitates work and solidarity among colleagues.

All classes have both a traditional and a digital blackboard, as well as reference books and dictionaries for the language area in question. As for the decoration, it is worth mentioning the presence on the walls of abundant posters with motivating statements of learning, calendar, projects carried out by the students etc. Finally, the duration of the classes is 55 minutes. The timetable for ESO and Bachiller will be from 8h to 14:10h.

In this particular case, there are 28 students in the 2nd ESO class, with different characteristics but with enthusiasm to improve their English skills, as well as other important competences for their future.

5.4 The ‘SchoolVision’ Project

The students of both schools will have to cooperate in order to successfully carry out this project. The reason for the initiative is as follows: the 2nd grade students of Nuestra

Señora del Pilar school have been chosen to represent Spain in the SchoolVision festival, the equivalent to the Eurovision Junior festival for schools. However, due to recent events, this year the festival counts with two peculiarities: it will take place in a telematic way, and all the songs must be in English.

For this reason, the Spanish students contact a group of musical experts (the students of the Irish school located in the city of Galway), to familiarize themselves with the British culture and thus be able to create a song with a video clip, which will be sent to the jury of the competition.

We have chosen the cultural element of music for several reasons. Firstly, because it is a topic that teenagers like and which is part of their daily life. Furthermore, music is present all over the world, so its ubiquity can be beneficial for our purpose. In addition, this element is a cultural nexus that interrelates many societies; the same song can be heard in different parts of the world, regardless of the race or origin of the person listening.

Thus, thanks to music, we can teach our students about the cultures of the different countries that make up the world. Added to this, the blend of language contained in the lyrics of a song and the culture belonging to that music, we can increase our intercultural knowledge in a pleasant way.

Also, through music, we can transmit to our pupils values that are necessary in today's world to be able to live with others: respect for other cultures, solidarity, cooperative work, harmony, etc.

5.4.1 Objectives

The objectives are the following ones:

To create a link between cultures through music.

To improve the intercultural knowledge of our students in an amusing way.

To get to know the musical cultures of other countries.

To foster cooperation between different cultures thanks to music.

To appreciate similarities between our culture and that of other countries.

To promote European identity among our students.

To improve digital competence and to stimulate the use of ICT.

5.4.2 Implementation

Prior to the start of the project, it is necessary to follow a series of steps to register in this European initiative. The first contact with eTwinning is made through the portals, both Spanish (www.etwinning.es) and European (www.etwinning.net). Both offer the user news, information of interest, ideas and support, all in a public way and available to anyone who accesses the portals. From here we move on to the next phase.

Secondly, you have to register. Users register with eTwinning, providing some personal and workplace details. They fill in a form with their details and explain what ideas they want to work on a project. Once they receive the username and password, access to their personal desktop is immediate, although the National Services check the veracity of the data.

This desk is the platform where they can contact other teachers, exchange and discuss ideas, create groups and finally start a project. It has tools such as a partner search engine, a forum, internal messaging, a contact list, profile management, teacher rooms, educational resources, news published by the Spanish National Support Service... Once registered, teachers can participate in eTwinning Groups, Didactic Meetings or create a Teacher Room, regardless of whether they start a project or not

Now, it is time to register the project our students are going to work on. The whole process is done through the Personal Desk. The only indispensable condition for a project to be approved is that it be initiated by two teachers from two different countries. These teachers are the “founding partners”. Once the project has been approved, more teachers can join it, with no limit on their number and regardless of their nationality; they are the “annexed partners”.

There is no prior assessment of projects; generally, all projects that meet the above-mentioned prerequisite and that have acceptable content and objectives in teaching practice are approved. Before proceeding to the approval of a project, the National

Support Service (SNA), in collaboration with the corresponding Autonomous Community, verifies that the data are true and that the school community of the educational centre is aware of the existence of the project.

Once the project is approved by the two National Support Services of the countries of the two founding partners, the collaborative workspace is automatically generated: the TwinSpace. This is a private and safe environment where students and teachers from the participating schools carry out the designed project. This space is only accessible to those participants to whom the teachers' administrators have given permission: other teachers, students, parents... These teacher administrators have absolute control over user permissions. The TwinSpace has communication tools (mail, forum, chat) and a content manager to share documents, photos, sounds, etc. All these contents can be made public or kept private.

5.4.3 Contents

The contents will be included within the five days in which the virtual exchange will take place:

Day 1

The first day of the exchange will be dedicated to having an acquaintance with the eTwinning platform, as well as the explanation by the teacher of the various tools, like TwinSpace. The teacher will be in charge of serving as a guide for the students on this platform, facilitating their adaptation work. Once familiarized with the use of the platform, the students will be able to access it from the school's computer room, or from their homes.

To do this, they must have a computer with internet access, a microphone and their own webcam. In case of lack of any of these tools, a solution would be sought, either by going to the school's computer room in person, or by using the alternatives offered by TwinSpace, such as the forum and chat.

Now is the time to establish contact between the two schools by videoconference. At all times, both the teacher in Spain and the teacher in Ireland will act as mediators and moderators. In turns, students will have the opportunity to introduce themselves to each

other. Using English, they will have to describe themselves, talk about their life, their hobbies, previous experiences in other countries...

Day 2

The time has come to get to know the cultures of both countries. In groups of 4-6 people, the students must make a power point presentation about their respective cities (Valladolid and Galway). Students will be able to choose from the following topics: monuments and sites to visit; history of the city; leisure and sports activities organized; gastronomy; as well as other additional topics proposed by the teachers. The duration of each presentation would be around 10 minutes, and it can include all kinds of audiovisual elements like photos and videos.

Once the presentation is finished, it will be shared on TwinSpace, so that all students can see it. Afterwards, the members of each group will take turns to present the presentation to the rest of their classmates.

This activity has several objectives. On the one hand, to improve the use of English in the different language skills. On the other hand, to encourage the use of digital tools, which are very important nowadays. Finally, to improve the intercultural competence of the students, by getting to know a country and culture different to their own.

Day 3

The third day will be dedicated to learning about British and Spanish musical culture. Both teachers will be in charge of this, by explaining the fundamental aspects and characteristics of each musical culture. There will also be a projection of videos showing the musical folklore of Great Britain and Spain.

Afterwards, we will enter fully into the 'SchoolVision' project. For this, pupils will be shown Ireland's performances at the Eurovision festival which, by the way, is the most successful country, having accumulated the greatest number of victories in history. Finally, a debate will be opened between the students of both schools in relation to these songs. The aim is to share ideas and evaluations about the different performances, in order

to extract the information that will be necessary to culminate the final product of the project: the creation of a song and a video clip.

They may comment on the singers' clothes, the lyrics, the musical style, the staging, etc. Here, the idea is to establish a dialogue in order to get ideas that can be used when preparing the song and the video clip. Therefore, the collaboration and the search of common links between both groups of students through the English language is pursued.

Day 4

The fourth day will be dedicated solely and exclusively to the creation of the song and the video clip. For this purpose, the Spanish and Irish students will work together in groups, which will be designed by the teachers. Each member of the group will have to choose a song from a British band, that will be uploaded to the space contained in eTwinning for this purpose, TwinSpace. Once the songs have been chosen, the members of the group must agree on a song, whose melody will serve as the basis for the lyrics they must write.

Now, the Irish pupils, acting as musical experts, must advise the Spanish pupils in the production of the song lyrics. Since the project 'SchoolVision' is based on the twinning of cultures, the content of the song should present the following themes: cooperation between equals, Europe, solidarity, and respect for other cultures.

Once the pupils have written the lyrics, they have to record a video clip for the song and share it on TwinSpace. For the recording of the video, students can record themselves singing the song through a virtual conference, or they can also record only their voice and attach it to slides or videos that they create with images.

Finally, the video clip will be shared with the teachers and/or in the TwinSpace tool, as the last day will be dedicated to decide which song will be chosen to represent Spain in SchoolVision, with the help from our Irish friends.

Day 5

This will be the last day of the exchange, and the most special one too. There will be a preliminary phase in which the song that will represent Spain in the SchoolVision festival will be chosen, where Spain and Ireland collaborate together. After watching the video clips, the rest of the pupils will have to act as if they were the jury, and then agree on the choice of a song. As a criterion for the choice, the ICT skills applied in the creation of the video will be taken into account but, above all, the fundamental criterion is the following: the song must reflect as faithfully as possible this feeling of twinning between citizens of the European Union.

5.4.4 Analysis and Assessment of the Project

While we are aware of the brevity of the project, we believe that this proposal to implement a virtual school exchange can serve as a basis for future initiatives of this kind. The main idea was to transfer the idea of the Erasmus+ Virtual Exchange to the school environment, and we believe that tools like eTwinning, which belongs to the Erasmus+ programme, is an ideal way of doing this.

As we have seen, it is not always possible to carry out a physical exchange and, this year, due to the coronavirus, it has been the case. That is why we believe that this virtual exchange modality can be a good solution for students to benefit from the advantages and experiences of doing an exchange with another country, in this case Ireland.

Thanks to the ‘SchoolVision’ project, the students of 2nd Grade of the Nuestra Señora del Pilar School in Valladolid will be able to benefit from this type of exchange. We also believe that music can be a good link between cultures, as well as being an attractive subject for young people. Through music and this project, students will be able to improve their intercultural competence by establishing relationships with people from another country. Furthermore, with the excuse of having fun, they will be able to improve other essential skills in the globalized world in which we live, such as: the perception of European identity, cooperation and teamwork, respect, or the dissemination of ideas, among others.

However, all this would not be possible without technology, which plays a key role as it makes the virtualization of exchanges possible. Thanks to the eTwinning programme, the use of video conferences, the handling of programmes for slide presentations, and the creation of a video clip, pupils will also improve their digital competence in a great manner, which is essential today.

6

CONCLUSIONS

The first aim of this study was to demonstrate that, although it is believed that Erasmus+ Virtual Exchange may lead to a decrease in the number of participants in physical Erasmus exchanges, in fact there is evidence that the effect is the opposite, and that it may be a great add-on to the Erasmus programme in general. In recent years, a decrease in the number of participants in physical Erasmus has been noted, and the virtualisation of Erasmus may provide a stimulus to change this negative trend.

Indeed, as it may be seen in this dissertation, both modalities (physical and virtual) are compatible and complement each other. It would be interesting to be able to carry out a physical and virtual exchange at the same time since there are many findings discovered by EVE researchers that show that this version improves aspects which physical Erasmus cannot reach, such as mastering ICTs, improving interpersonal relations, or promoting European identity, among other aspects. In addition, getting good feedback from participants who were involved in this initiative can encourage other members of the European educational community to participate in the Erasmus programme.

Nevertheless, albeit this initiative has great potential in the future, we are aware of its limitations. It is true that there are aspects that need to be clarified, like the aspects of funding or accreditation. Furthermore, given that technology plays an important role in this type of mobility, the issue of connectivity may be improved so that there are no problems in the process.

The second purpose of this work was to demonstrate that not only is the virtualization of education possible in universities, but that it is also possible to do so at the school level. To this end, based on the idea of Erasmus+ Virtual Exchange, we have presented a proposal for a virtual school exchange through the eTwinning programme, which in turn belongs to the European Union's Erasmus+ programme.

This proposal consisted in the realization of a project called 'SchoolVision', which involved students from two schools in Valladolid and Galway. We proposed the

realization of this project in case the physical exchange could not be carried out, and we saw that it would be a good substitute because it would promote aspects present in a traditional exchange, such as intercultural competence, cooperation between European citizens, or respect for other cultures. In addition to this, we would add digital competence, which is not usually present in physical mobility, and which is a magnificent complement to our students' learning.

It would also be interesting for other schools in different European countries to join this initiative, as they could benefit from the collaboration between countries, and the 'SchoolVision' project would gain more strength leading to a better implementation.

With all this, we can conclude that the virtualization of education at all levels is a fact, and this work is an impulse for its progressive implementation, although there is still some room for improvement. Thus, the path is open to continue the investigation carried out in this Master's Thesis.

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