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PROCEEDINGS

Edited by
Demetrios G. Sampson
Dirk Ifenthaler
Pedro Isaías

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international association for development of the information society

15th INTERNATIONAL CONFERENCE
on

COGNITION AND EXPLORATORY LEARNING IN THE DIGITAL AGE (CELDA 2018)

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Start@unito: A SUPPORTING MODEL FOR HIGH SCHOOL STUDENTS ENROLLING TO UNIVERSITY

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ABSTRACT

Students need help in transitioning from high school to university. It's important to facilitate their guidance in choosing the course of study and consequently their experience with the first exams, reducing the abandonment. The University of Turin, financially supported by the banking institution Compagnia di San Paolo, has invested in e-learning creating Start@unito: a Learning Management System that delivers twenty freely available, self-paced, online courses on different topics. The paper discusses the model adopted by Start@unito and the first results obtained.

KEYWORDS

e-Learning, Learning Management System, Open Online Courses, Self-Paced MOOC, Transition between the Secondary School and the University Education System, University Guidance

1. INTRODUCTION

Technology Enhanced Learning (TEL) has been widely and rapidly spreading since the beginning of the new millennium; universities are the right place in which best practices in teaching and learning should be adopted. E-learning provides many advantages (Ross, Morrison, & Lowther, 2010): there are a variety of solutions available; if built correctly, the system can accommodate everyone's needs; the contents are available anytime; there is a higher coverage; it is cheaper for students and more affordable; the impact on the environment is lighter; the main kind of users are millennials: they were born surrounded by technology. Of course, TEL is not effective by itself, but it needs a lot of knowledge and deep understanding of how these technologies can work to their full potential, and this should be the standard for teachers (Hicks, 2011). Technology should help students overcome difficult steps throughout their career and fill the gap between secondary and tertiary education. According to the annual report 2016 of the University of Turin (https://www.unito.it/sites/default/files/relazione_annuale_2016.pdf), around one third of the courses of study show a dropout rate higher than 20%. The main objectives of the recent experience at University of Turin, the "Start@unito" project, financed by Compagnia di San Paolo, are to improve the success rate on first year university exams and to help students with university guidance in the choice of their course of study. The project aims at using a Learning Management System (LMS) to create and provide Open Online Courses which can be accessed by everyone, but specifically targeted to the last year high school students, because a successful transition from secondary school to University is a crucial phase for both students and institutions (Barana, Bogino, Fioravera, Floris, Marchisio, Operti, & Rabellino, 2017; Barana, Bogino, Fioravera, Marchisio, & Rabellino, 2016; Barana, Bogino, Fioravera, Marchisio, & Rabellino, 2017). The project uses good practices developed both in local and European contexts (Brancaccio, Marchisio, Meneghini, & Pardini, 2015). Users can follow online self-paced open courses before their application at the University, and after submitting a final test they obtain a certificate of attendance. After the enrolment at the University of Turin, students can attempt the official exam and, if passed, add it to their career obtaining an immediate recognition of their efforts. This paper discusses the methodologies adopted and the results obtained.

2. THEORETICAL FRAMEWORK

Regarding online courses there are two main aspects to take into account: didactics and technology. From the didactical point of view there are six main theories: Behaviourist, Situated, Informal and lifelong, Collaborative, Learning and teaching support, Constructivist (Naismith, Lonsdale, Vavoula, & Sharples, 2004), the last one being the most suitable for online self-paced courses. In any case, the university didactics should optimize individual learning, involving the students in activities of collaborative exchange, comparison, negotiation, conception and planning of cognitive and/or real object (Ravinelli, & Serina, 2014). From the technological point of view, digital technologies can be a great advantage while dealing with learning, because of their enhanced interactivity (giving prompts and feedbacks, facilitating remote interaction among peers or with the instructor). With these features, digital environments have a positive impact on motivation and self-confidence, very important properties for lifelong learning (Barana, Conte, Fioravera, Marchisio, & Rabellino, 2018). Furthermore, automatic assessment provides the possibility of assigning grades and offering immediate feedback via computer. Real time information given to students and teachers by digital technologies promote the processes of formative assessment (Barana et al., 2018). Regarding the existing experiences in Italy, it is important to mention EduOpen (https://learn.eduopen.org/) and Federica (http://www.federica.unina.it/). With the project Start@unito, 20 online courses are available (and 34 more are under preparation): no other Italian university provides such an amount of full university courses. Around the world, there are many experiences of MOOC providers, like Coursera (https://www.coursera.org/) and edX (https://www.edx.org/). Openness is a key feature for the courses of the project Start@unito, declined as “contents available anytime to anyone”. A disadvantage of this approach is the absence of tutoring, the learning process being completely self-paced. To reduce the downsides, during the design of the courses every solution that could accompany the student was considered, exploiting all the competencies developed by professors in the University of Turin.

3. ADDRESSED PROBLEM

After graduating, students have to choose their path, facing up to the transition between the secondary school and the university education system. Universities are used to organizing many guidance activities, useful to get to know all the details about competencies, outcomes, job opportunities. Despite this, when students start their career at university, they usually face other difficulties:

- **different approach to the subject**: during high school, teachers usually follow the main learning trend of the class and it is very difficult to adapt teaching to best, average and below average students, all together;
- **mandatory exams not easy to pass**: scientific courses of study have got Maths and Physics exams in their program, which students underrate, but which are actually the basis of future knowledge;
- **lecture rooms full of students**: having too many students in one room could be a real problem, both for professors and students, and for security issues too;
- **self-consciousness of their study**: university students have to become directly responsible for their own approach to learning and not everyone knows how to handle this;
- **change of course of study** after the enrollment: students do not get enough help during this transition;
- **admission tests** to access some of the bachelor courses: students who fail it, usually select another transitory course of study.

Online learning can be a partial answer to many of these problems. Worldwide universities provide free and open access to educational content via MOOCs (Grainger, 2013): this is not effective in improving students’ guidance if open learning plans are not designed for this objective but mainly for advertising purpose (Barana et al., 2017; Barana et al., 2016; Barana, Bogino, Fioravera, Marchisio, & Rabellino, 2017).

4. THE MODEL

The project Start@unito starts from the experience gained through various activities, such as Orient@mente (Barana et al., 2017; Barana et al., 2016; Barana et al., 2017) that contains open online courses for realignment, recovery of gaps, and test preparation, developing a model for the design, implementation and availability of official university teachings through Open Online University Courses. In the following subsections we analyze the components of the model in greater detail.

The Open Online University Courses are developed to achieve the following objectives. The first one is **supporting students**. Following complete online university courses, students can see the different approach to teaching, getting an overview of what the university offers. Another important objective is the spreading of knowledge and education (University Third Mission). Expected consequences of these advantages are the reduction of the first year dropout rate and a largest number of passed exams. The second objective is **improving the outcomes of the evaluation criteria of first year university students**, increasing the number of ECTS that first year students obtain; by guiding students through their first exams, the positive outcomes are expected to raise. The third objective is **enhancing the use of e-learning in university teachings**. With more than 60 professors involved, who attended a training course, more people in university are now aware of the potential of online courses.

The actors involved in the model were divided into a procedure created for team working, the so-called Deming Cycle: Plan, Do, Check, Act.

Plan: the leading group of the project is the Scientific Committee, composed of professors of the university who have already gained experience about online learning. Chief of the Scientific Committee is the Vice-Rector. Another key member of the committee is the project manager, expert in digital education. They were supported by two Research Fellows Coordinators, who were experts and became more expert about e-learning and surroundings.

Do: a group of professors, experts in their own teaching topic, were engaged to create online courses, supported by coordinators and Junior Research Fellows, with a master degree or a PhD in the subject. With the guidance of professors of the Department of Philosophy and Educational Sciences, of the staff of the IT and E-learning bureau (DSIPE) and of an interdepartmental center, Cinedumedia (http://www.cinedumedia.it/), they learned about many areas of e-learning. Respecting teaching autonomy, professors and fellows attended a training cycle in which, in compliance with the aim of the project and with the tools available, they planned and rethought the contents in terms of learning objects. This training was very useful, because even the most experienced teachers are more accustomed to traditional or blended teaching: they had to rethink how to achieve the educational objectives. The University of Turin is trying to create a culture on digital education among all its professors. Training consisted of 10 lessons equally distributed between methodology (how to design an online course, how to obtain the best in communication and effectiveness) and practice (how to construct online resources, how to manage the adopted tools). Cinedumedia was also involved to help with video technologies and perform a presentation of every course.

Check: coordinators in collaboration with DSIPE staff were involved in validating the online contents, platform and communication management, online support and data analysis.

Act: platform managers and researchers provide adjustments according to feedbacks, methodologies and related topics. The main role in this phase was provided by the technical platform manager, experienced in handling and developing the virtual learning environment Moodle.

The tools to reinforce the early career of university students are provided by the LMS Moodle, a platform designed to provide educators, administrators and learners with a single robust, secure and pluggable system able to create custom learning environments (https://moodle.org/). The platform allows the integration of external tools, which allow a full learning and interactive experience, like web conferences tools or STEM oriented-tools. The use of an Advanced Computing Environment (ACE) is a great advantage, not only for scientific disciplines (Mathematics, Physics,...) but also for other topics involving a scientific approach. Our choice was to integrate Maple, which is a powerful ACE, very useful to analyze, explore, visualize, and solve mathematical problems. This environment can manage numeric and symbolic computations, geometric visualizations in two and three dimensions and interactive worksheets with embedded components. It is extensively used in several university activities like courses, exams and other projects. A useful component of this tool is MapleNet, the online worksheet player, which turns native worksheets into Moodle resources (Baldoni, Cordero, Coriasco, & Marchisio, 2011). The use of an Automatic Assessment System (AAS) helps

universities in the testing and monitoring of students, who can find free and accessible tests validated by university experts. The native moodle assessment tools can be extended with the AAS Maple T.A. that is based on Maple engine, thus inheriting many benefits, such as numeric and symbolic computations, geometric visualizations in two and three dimensions, interactive components, algorithms and randomly generated variables. Maple T.A. integration allows assignments to be executed as Moodle resources, and students' results to be automatically updated in the gradebook (Barana, Marchisio, & Rabellino, 2015). The main multimedia content is video, and for this purpose the integrated tool chosen is Kaltura Video Platform, which provides live and on-demand video SaaS (Software as a Service) solutions to thousands of organizations around the world (https://corp.kaltura.com/). Besides the high quality of the player, the chance to integrate quizzes in video, provided by Kaltura, is a powerful learning method, which allows students to immediately check their comprehension.

The platform (http://start.unito.it/) hosts 20 online courses (number which is going to increase) divided into thematic areas, covering many basic topics about first-year university lectures. Every course is presented by a description of the main outcomes and a presentation video; some short details about the courses are also shown. All of them are first-year courses, also provided in presence. Every course can also cross different disciplines and, because of this, they are usually followed by students from different courses of study. Courses have a similar structure. They are divided into sections. The Moodle grid format is used to simplify students' navigation through sections. During the design of courses, previously experimented learning methodologies, such as immediate and interactive feedback (Barana et al., 2018) in tests with automatic evaluation or adaptive digital resources (Barana, Fioravera, Marchisio, & Rabellino, 2017) were adopted. The first contents that students can reach are an introduction to the course, the learning outcomes, how the exam works and other information on how to better attend the course. Then, all the other materials, regardless of the topic, are organized following the main structure of a classic learning object:

- **Entry test and Introduction**, in order to see if the student has the right prerequisites and to make him aware on what he is going to learn in the following steps.
- **Online contents**: short resources in which just one concept is introduced in a short way.
- **Summary**: map of all the concepts studied, with hyper references to the referred resource
- **Exit test** with immediate feedback and the possibility to check answers and get a grade
- **Deepening** (External resources): videos, journals, articles, blogs, scientific sites, official pages, data, which could be useful for the student to have a look at.

Other tools available are:

- **Glossary**: the main terms used in the online course are inserted here; students can check it whenever they want and all the concepts, everytime they appear in the course, are highlighted.
- **Progress bar**: every resource can be marked as viewed or completed. Completion progress is then highlighted in a panel showing a bar and the percentage of progress along the online course.
- **Gradebook**: in every moment, students can check their grades and their test details.

The model is characterized by the following properties.

- **Accessibility**: an high-legibility font designed for people with dyslexia is adopted (http://www.easyreading.it/en/); in addition, all resources consider many accessibility details like color contrast, short sentences, transcriptions of videos, etc.
- **Adaptability**: the structure and all tools chosen generate a versatile model.
- **Consistency**: this model is adopted by many projects within the University of Turin and students can easily become familiar with it throughout their career.
- **Control**: coordinators perform analysis and, if necessary, corrections; students are supported by immediate and interactive feedback.
- **Convenience**: the environment is useful and suitable for research on new technologies, thanks to the integration of multiple resources.
- **Free availability**: materials are distributed under Creative Commons license, they can be re-used in schools or in other learning contexts.
- **Efficiency**: first point of contact between learners and institutions.
- **High-quality**: the online contents are created by qualified personnel continuously improving their skills and collaboration among experts from distinct ranges of expertize.
- **Sustainability**: contained costs for students, they just pay for their device and its connection.
- **Usefulness**: students are more aware of their enrolment choices, positively affecting institutions and improving the quality of courses.

5. RESULTS AND DISCUSSION

The 20 online courses were opened on 1st March 2018, immediately after University Guidance Days. Access to platform is granted using Social Networks authentication API (Google and Facebook). In the summer the number of accesses increased. July and August is a good time frame for online learning: students just ended high school and they are evaluating which path may be the right one for their future. The actual amount of subscribed students is 4383. The number of subscriptions to courses can vary depending on several factors, like an attractive title, the advertisement, the presentations made in schools, the interest in the discipline. After completing the course, students are asked to fill an evaluation questionnaire. Analyzing the completion progress of students subscribed to courses, we notice that only a small percentage of students completed more than 40% of the course and attended it regularly. This is in line with the open characteristic of Start@unito courses: users can just have a look to a full university course and have an idea on how it works.

6. CONCLUSION

Start@unito is something that comes after a wide research experience of the University of Turin about digital online education. Looking at these first results, we can say that the starting point is very promising. Even after meetings with teachers and students in schools and during University Guidance Days, everybody was very interested in the great occasion that Start@unito project represents. High school teachers asked to be able to use some of the resources of online courses with their students, in order to deepen topics introduced during their lessons. This way of spreading tertiary education is a very useful service, especially for the most disadvantaged people, both economically or with learning and working issues. Working students can find and download all the materials, studying them during their free time; students with learning difficulties have available recovery activities that allow them to fill gaps; foreign, off-site or particularly gifted students can start to study before enrolling at the University and anticipate exams. Students who normally attend the course in presence can use the online course as a support for traditional lessons. People, unwilling to enrol at the University, but curious and interested in deepening some themes to broaden their knowledge and acquire some additional interpretative key can find materials prepared by experts and freely usable. High school teachers can find materials available at any time to enrich their lessons with insights and food for thought. That is why the University decided to extend the number of courses available amounting, for the academic year 2019-2020, to 34 new open online courses, including some missing disciplines, like pedagogy, chemistry and various foreign languages. Moreover, to promote the internationalization and the mobility of students, many of the new courses will be taught in English.

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Start@unito: A SUPPORTING MODEL FOR HIGH SCHOOL STUDENTS ENROLLING TO UNIVERSITY

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ABSTRACT

Students need help in transitioning from high school to university. It's important to facilitate their guidance in choosing the course of study and consequently their experience with the first exams, reducing the abandonment. The University of Turin, financially supported by the banking institution Compagnia di San Paolo, has invested in e-learning creating Start@unito: a Learning Management System that delivers twenty freely available, self-paced, online courses on different topics. The paper discusses the model adopted by Start@unito and the first results obtained.

KEYWORDS

e-Learning, Learning Management System, Open Online Courses, Self-Paced MOOC, Transition between the Secondary School and the University Education System, University Guidance

1. INTRODUCTION

Technology Enhanced Learning (TEL) has been widely and rapidly spreading since the beginning of the new millennium; universities are the right place in which best practices in teaching and learning should be adopted. E-learning provides many advantages (Ross, Morrison, & Lowther, 2010): there are a variety of solutions available; if built correctly, the system can accommodate everyone's needs; the contents are available anytime; there is a higher coverage; it is cheaper for students and more affordable; the impact on the environment is lighter; the main kind of users are millennials: they were born surrounded by technology. Of course, TEL is not effective by itself, but it needs a lot of knowledge and deep understanding of how these technologies can work to their full potential, and this should be the standard for teachers (Hicks, 2011). Technology should help students overcome difficult steps throughout their career and fill the gap between secondary and tertiary education. According to the annual report 2016 of the University of Turin (https://www.unito.it/sites/default/files/relazione_annuale_2016.pdf), around one third of the courses of study show a dropout rate higher than 20%. The main objectives of the recent experience at University of Turin, the "Start@unito" project, financed by Compagnia di San Paolo, are to improve the success rate on first year university exams and to help students with university guidance in the choice of their course of study. The project aims at using a Learning Management System (LMS) to create and provide Open Online Courses which can be accessed by everyone, but specifically targeted to the last year high school students, because a successful transition from secondary school to University is a crucial phase for both students and institutions (Barana, Bogino, Fioravera, Floris, Marchisio, Operti, & Rabellino, 2017; Barana, Bogino, Fioravera, Marchisio, & Rabellino, 2016; Barana, Bogino, Fioravera, Marchisio, & Rabellino, 2017). The project uses good practices developed both in local and European contexts (Brancaccio, Marchisio, Meneghini, & Pardini, 2015). Users can follow online self-paced open courses before their application at the University, and after submitting a final test they obtain a certificate of attendance. After the enrolment at the University of Turin, students can attempt the official exam and, if passed, add it to their career obtaining an immediate recognition of their efforts. This paper discusses the methodologies adopted and the results obtained.

2. THEORETICAL FRAMEWORK

Regarding online courses there are two main aspects to take into account: didactics and technology. From the didactical point of view there are six main theories: Behaviourist, Situated, Informal and lifelong, Collaborative, Learning and teaching support, Constructivist (Naismith, Lonsdale, Vavoula, & Sharples, 2004), the last one being the most suitable for online self-paced courses. In any case, the university didactics should optimize individual learning, involving the students in activities of collaborative exchange, comparison, negotiation, conception and planning of cognitive and/or real object (Ravinelli, & Serina, 2014). From the technological point of view, digital technologies can be a great advantage while dealing with learning, because of their enhanced interactivity (giving prompts and feedbacks, facilitating remote interaction among peers or with the instructor). With these features, digital environments have a positive impact on motivation and self-confidence, very important properties for lifelong learning (Barana, Conte, Fioravera, Marchisio, & Rabellino, 2018). Furthermore, automatic assessment provides the possibility of assigning grades and offering immediate feedback via computer. Real time information given to students and teachers by digital technologies promote the processes of formative assessment (Barana et al., 2018). Regarding the existing experiences in Italy, it is important to mention EduOpen (https://learn.eduopen.org/) and Federica (http://www.federica.unina.it/). With the project Start@unito, 20 online courses are available (and 34 more are under preparation): no other Italian university provides such an amount of full university courses. Around the world, there are many experiences of MOOC providers, like Coursera (https://www.coursera.org/) and edX (https://www.edx.org/). Openness is a key feature for the courses of the project Start@unito, declined as “contents available anytime to anyone”. A disadvantage of this approach is the absence of tutoring, the learning process being completely self-paced. To reduce the downsides, during the design of the courses every solution that could accompany the student was considered, exploiting all the competencies developed by professors in the University of Turin.

3. ADDRESSED PROBLEM

After graduating, students have to choose their path, facing up to the transition between the secondary school and the university education system. Universities are used to organizing many guidance activities, useful to get to know all the details about competencies, outcomes, job opportunities. Despite this, when students start their career at university, they usually face other difficulties:

- **different approach to the subject**: during high school, teachers usually follow the main learning trend of the class and it is very difficult to adapt teaching to best, average and below average students, all together;
- **mandatory exams not easy to pass**: scientific courses of study have got Maths and Physics exams in their program, which students underrate, but which are actually the basis of future knowledge;
- **lecture rooms full of students**: having too many students in one room could be a real problem, both for professors and students, and for security issues too;
- **self-consciousness of their study**: university students have to become directly responsible for their own approach to learning and not everyone knows how to handle this;
- **change of course of study** after the enrollment: students do not get enough help during this transition;
- **admission tests** to access some of the bachelor courses: students who fail it, usually select another transitory course of study.

Online learning can be a partial answer to many of these problems. Worldwide universities provide free and open access to educational content via MOOCs (Grainger, 2013): this is not effective in improving students’ guidance if open learning plans are not designed for this objective but mainly for advertising purpose (Barana et al., 2017; Barana et al., 2016; Barana, Bogino, Fioravera, Marchisio, & Rabellino, 2017).

4. THE MODEL

The project Start@unito starts from the experience gained through various activities, such as Orient@mente (Barana et al., 2017; Barana et al., 2016; Barana et al., 2017) that contains open online courses for realignment, recovery of gaps, and test preparation, developing a model for the design, implementation and availability of official university teachings through Open Online University Courses. In the following subsections we analyze the components of the model in greater detail.

The Open Online University Courses are developed to achieve the following objectives. The first one is **supporting students**. Following complete online university courses, students can see the different approach to teaching, getting an overview of what the university offers. Another important objective is the spreading of knowledge and education (University Third Mission). Expected consequences of these advantages are the reduction of the first year dropout rate and a largest number of passed exams. The second objective is **improving the outcomes of the evaluation criteria of first year university students**, increasing the number of ECTS that first year students obtain; by guiding students through their first exams, the positive outcomes are expected to raise. The third objective is **enhancing the use of e-learning in university teachings**. With more than 60 professors involved, who attended a training course, more people in university are now aware of the potential of online courses.

The actors involved in the model were divided into a procedure created for team working, the so-called Deming Cycle: Plan, Do, Check, Act.

Plan: the leading group of the project is the Scientific Committee, composed of professors of the university who have already gained experience about online learning. Chief of the Scientific Committee is the Vice-Rector. Another key member of the committee is the project manager, expert in digital education. They were supported by two Research Fellows Coordinators, who were experts and became more expert about e-learning and surroundings.

Do: a group of professors, experts in their own teaching topic, were engaged to create online courses, supported by coordinators and Junior Research Fellows, with a master degree or a PhD in the subject. With the guidance of professors of the Department of Philosophy and Educational Sciences, of the staff of the IT and E-learning bureau (DSIPE) and of an interdepartmental center, Cinedumedia (http://www.cinedumedia.it/), they learned about many areas of e-learning. Respecting teaching autonomy, professors and fellows attended a training cycle in which, in compliance with the aim of the project and with the tools available, they planned and rethought the contents in terms of learning objects. This training was very useful, because even the most experienced teachers are more accustomed to traditional or blended teaching: they had to rethink how to achieve the educational objectives. The University of Turin is trying to create a culture on digital education among all its professors. Training consisted of 10 lessons equally distributed between methodology (how to design an online course, how to obtain the best in communication and effectiveness) and practice (how to construct online resources, how to manage the adopted tools). Cinedumedia was also involved to help with video technologies and perform a presentation of every course.

Check: coordinators in collaboration with DSIPE staff were involved in validating the online contents, platform and communication management, online support and data analysis.

Act: platform managers and researchers provide adjustments according to feedbacks, methodologies and related topics. The main role in this phase was provided by the technical platform manager, experienced in handling and developing the virtual learning environment Moodle.

The tools to reinforce the early career of university students are provided by the LMS Moodle, a platform designed to provide educators, administrators and learners with a single robust, secure and pluggable system able to create custom learning environments (https://moodle.org/). The platform allows the integration of external tools, which allow a full learning and interactive experience, like web conferences tools or STEM oriented-tools. The use of an Advanced Computing Environment (ACE) is a great advantage, not only for scientific disciplines (Mathematics, Physics,...) but also for other topics involving a scientific approach. Our choice was to integrate Maple, which is a powerful ACE, very useful to analyze, explore, visualize, and solve mathematical problems. This environment can manage numeric and symbolic computations, geometric visualizations in two and three dimensions and interactive worksheets with embedded components. It is extensively used in several university activities like courses, exams and other projects. A useful component of this tool is MapleNet, the online worksheet player, which turns native worksheets into Moodle resources (Baldoni, Cordero, Coriasco, & Marchisio, 2011). The use of an Automatic Assessment System (AAS) helps

universities in the testing and monitoring of students, who can find free and accessible tests validated by university experts. The native moodle assessment tools can be extended with the AAS Maple T.A. that is based on Maple engine, thus inheriting many benefits, such as numeric and symbolic computations, geometric visualizations in two and three dimensions, interactive components, algorithms and randomly generated variables. Maple T.A. integration allows assignments to be executed as Moodle resources, and students' results to be automatically updated in the gradebook (Barana, Marchisio, & Rabellino, 2015). The main multimedia content is video, and for this purpose the integrated tool chosen is Kaltura Video Platform, which provides live and on-demand video SaaS (Software as a Service) solutions to thousands of organizations around the world (https://corp.kaltura.com/). Besides the high quality of the player, the chance to integrate quizzes in video, provided by Kaltura, is a powerful learning method, which allows students to immediately check their comprehension.

The platform (http://start.unito.it/) hosts 20 online courses (number which is going to increase) divided into thematic areas, covering many basic topics about first-year university lectures. Every course is presented by a description of the main outcomes and a presentation video; some short details about the courses are also shown. All of them are first-year courses, also provided in presence. Every course can also cross different disciplines and, because of this, they are usually followed by students from different courses of study. Courses have a similar structure. They are divided into sections. The Moodle grid format is used to simplify students' navigation through sections. During the design of courses, previously experimented learning methodologies, such as immediate and interactive feedback (Barana et al., 2018) in tests with automatic evaluation or adaptive digital resources (Barana, Fioravera, Marchisio, & Rabellino, 2017) were adopted. The first contents that students can reach are an introduction to the course, the learning outcomes, how the exam works and other information on how to better attend the course. Then, all the other materials, regardless of the topic, are organized following the main structure of a classic learning object:

- **Entry test and Introduction**, in order to see if the student has the right prerequisites and to make him aware on what he is going to learn in the following steps.
- **Online contents**: short resources in which just one concept is introduced in a short way.
- **Summary**: map of all the concepts studied, with hyper references to the referred resource
- **Exit test** with immediate feedback and the possibility to check answers and get a grade
- **Deepening** (External resources): videos, journals, articles, blogs, scientific sites, official pages, data, which could be useful for the student to have a look at.

Other tools available are:

- **Glossary**: the main terms used in the online course are inserted here; students can check it whenever they want and all the concepts, everytime they appear in the course, are highlighted.
- **Progress bar**: every resource can be marked as viewed or completed. Completion progress is then highlighted in a panel showing a bar and the percentage of progress along the online course.
- **Gradebook**: in every moment, students can check their grades and their test details.

The model is characterized by the following properties.

- **Accessibility**: an high-legibility font designed for people with dyslexia is adopted (http://www.easyreading.it/en/); in addition, all resources consider many accessibility details like color contrast, short sentences, transcriptions of videos, etc.
- **Adaptability**: the structure and all tools chosen generate a versatile model.
- **Consistency**: this model is adopted by many projects within the University of Turin and students can easily become familiar with it throughout their career.
- **Control**: coordinators perform analysis and, if necessary, corrections; students are supported by immediate and interactive feedback.
- **Convenience**: the environment is useful and suitable for research on new technologies, thanks to the integration of multiple resources.
- **Free availability**: materials are distributed under Creative Commons license, they can be re-used in schools or in other learning contexts.
- **Efficiency**: first point of contact between learners and institutions.
- **High-quality**: the online contents are created by qualified personnel continuously improving their skills and collaboration among experts from distinct ranges of expertize.
- **Sustainability**: contained costs for students, they just pay for their device and its connection.
- **Usefulness**: students are more aware of their enrolment choices, positively affecting institutions and improving the quality of courses.

5. RESULTS AND DISCUSSION

The 20 online courses were opened on 1st March 2018, immediately after University Guidance Days. Access to platform is granted using Social Networks authentication API (Google and Facebook). In the summer the number of accesses increased. July and August is a good time frame for online learning: students just ended high school and they are evaluating which path may be the right one for their future. The actual amount of subscribed students is 4383. The number of subscriptions to courses can vary depending on several factors, like an attractive title, the advertisement, the presentations made in schools, the interest in the discipline. After completing the course, students are asked to fill an evaluation questionnaire. Analyzing the completion progress of students subscribed to courses, we notice that only a small percentage of students completed more than 40% of the course and attended it regularly. This is in line with the open characteristic of Start@unito courses: users can just have a look to a full university course and have an idea on how it works.

6. CONCLUSION

Start@unito is something that comes after a wide research experience of the University of Turin about digital online education. Looking at these first results, we can say that the starting point is very promising. Even after meetings with teachers and students in schools and during University Guidance Days, everybody was very interested in the great occasion that Start@unito project represents. High school teachers asked to be able to use some of the resources of online courses with their students, in order to deepen topics introduced during their lessons. This way of spreading tertiary education is a very useful service, especially for the most disadvantaged people, both economically or with learning and working issues. Working students can find and download all the materials, studying them during their free time; students with learning difficulties have available recovery activities that allow them to fill gaps; foreign, off-site or particularly gifted students can start to study before enrolling at the University and anticipate exams. Students who normally attend the course in presence can use the online course as a support for traditional lessons. People, unwilling to enrol at the University, but curious and interested in deepening some themes to broaden their knowledge and acquire some additional interpretative key can find materials prepared by experts and freely usable. High school teachers can find materials available at any time to enrich their lessons with insights and food for thought. That is why the University decided to extend the number of courses available amounting, for the academic year 2019-2020, to 34 new open online courses, including some missing disciplines, like pedagogy, chemistry and various foreign languages. Moreover, to promote the internationalization and the mobility of students, many of the new courses will be taught in English.

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