THE ROLE OF KEY-STAKEHOLDERS AND COLLABORATORS IN THE LONG-TERM SUSTAINABILITY OF AN E-LEARNING PORTAL: THE CASE OF OPEN DISCOVERY SPACE PORTAL

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Abstract

E-Learning resources, learning technologies and applications are becoming more and more popular in Europe, attracting the interest of the European Union and individual governments. E-Learning portals can be proved to be a "deus ex machina" solution in the global budget reduction for education. Stakeholders have a direct influence on factors that stimulate sustainable development and growth of technology and infrastructures and can greatly affect the sustainability of a project and its outcomes. The ODS project aims to create a pan-European E-Learning portal (multilingual open innovation platform) which acknowledges that engagement of stakeholders and their collaborative interaction with content, technology, software, webinar management service providers and e-publishers is very important for the success and long- term sustainability of the project. Thus, drawing on first-hand experiences from own research, as well as on previous knowledge, a new "stakeholder and collaborator analysis framework" and "engagement strategy" is proposed and developed for this purpose.

Introduction

E-Learning resources, learning technologies and applications are becoming more and more popular in Europe attracting the interest of the European Union and individual governments. ICT use in the schools is increasing as well as the access for the EU citizens to online resources at home However, there is plenty of space for further development of the use of ICT for learning purposes since the percentage of such kind of use remains lower than 40% in some EU countries (European Commission, 2013)

Globally, spending on e-learning at K-12 level is predicted to grow at a 33% between 2012 and 2017 (Eurostat, 2009). Conversely, many countries are reducing their education budget. However, some countries are still investing heavily in educational and learning technology, since they are either starting from a lower base or have not been (acutely) affected by the

economic recession. These countries tend to invest more on new eLearning (Eurostat, 2009; European Commission, 2013). Generally, learning technology is far more pervasive and, for example, the increasing availability of iPad and mobile devices would suggest penetration will continue to increase.

Recent studies showed that (most of the users are using computer/internet at home followed by the work place. Only in the group of age, 16-24 the home use is followed by the use of computer/internet in education.

Moreover, Figure 1 (data from Eurostat, 2009) presents the computer/internet use in education as a percentage of individuals in EU27 that used ICT in the past three months before the study in every country belonging in EU27 plus Norway. What is noteworthy is that as the age grows the use of computer/internet in education declines.
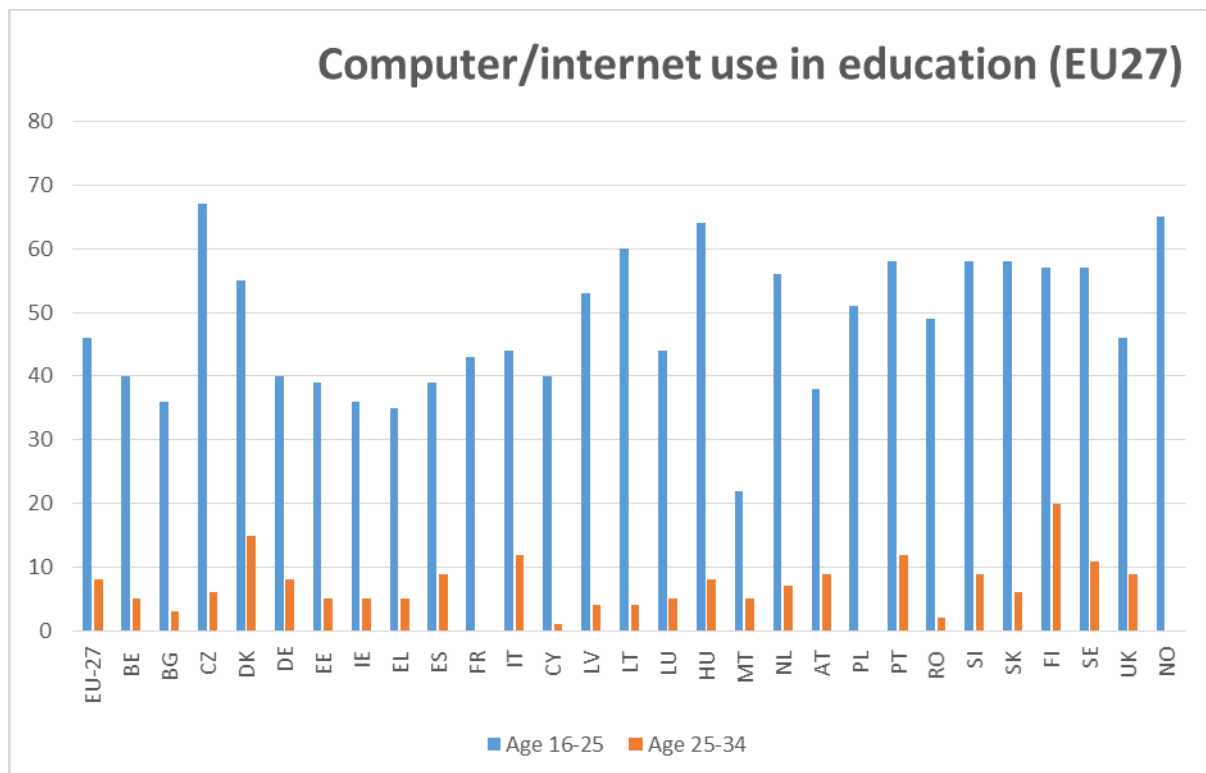

Figure 1. Computer/internet use in education (EU27)

E-Learning portals/platform can be a "deus ex machina" solution in the afore-mentioned eLearning environment helping in the improvement of cost-efficiency of education. One of the main success factors for every eLearning portal and OER initiative in order to be sustainable and successful is the requirement to identify its main/key stakeholders and collaborators, address their needs, requirements, and overcome their barriers (Faust et al, 2013). Following Downes (2007), by sustainable we mean "has long-term viability for all concerned". Stakeholders, collaborators and customers have an important and decisive role in the success of any project and online portal, since their requirements, interests, motivations, and satisfaction are important factors for development and sustainability of the project. The

identification and analysis of the key stakeholders/customers and collaborators has an important role for the success of any project implementation and specifically for the design of the business plan and marketing strategy required (Bryson, 2004). Similarly, in the context of OER, sustainability is closely linked not only to the financial viability of the initiative but also to the identification and analysis of the key stakeholders' needs and requirements as well as the ways of fulfilling them. This has a significant impact on the growth and expansion of the project community and, thus, the sustainability of the project.

The case of Open Discovery Space project (ODS)

Open Discovery Space project (ODS) aims to develop an eLearning portal that will enable teachers to better respond to diversity and heterogeneity in the classroom and to adapt learning materials, resources, scenarios, tools, technologies, software and objectives to individual students' learning needs. ODS portal will allow teachers to compile personalised sets of learning materials; to constantly monitor progress without having to interfere in the learning process; to re-align learning objectives and strategies in response to progress made; and to use a vast variety of engaging and interesting learning materials, effective eLearning resources and tools that more effectively facilitate, motivate and engage online learners.

However, in order to ensure the success and long-term sustainability of ODS. It is critical not only to identify its key stakeholders interests, motives and expectations towards the projects and its outcomes but also to identify strategies for fulfilling their needs and actively engaging with this diverse community of actors, who in some cases act both as "consumers" and "producers" of content. In order to achieve these aims the current paper present the key stakeholders analysis and engagement strategy created by the ODS consortium. This identification and engagement strategy framework can be used also as a generic model in other OER cases, projects and organizational structures in order to facilitate stakeholder engagement and long term sustainability of the project.

ODS Key Stakeholders and collaborators Engagement Strategy Development Framework

Background

Stakeholders have a direct influence on factors that enhance the sustainable development and growth of technology and infrastructures (Rangarajan et al, 2013). Freeman (1984) published a book with the title "Strategic Management: A Stakeholders' Approach" which remains the bible of stakeholders' analysis and engagement strategies development. He states that stakeholders are likely to contribute significantly towards the developing policies and objectives for efficient functioning in a region, organization or project, opinion that is verified by Coombs et al. (1998) who emphasize the important role of stakeholders in the success and long term sustainability especially of Research and Development projects. More specifically Freeman (1984) defines stakeholders as "groups of power" that without their support an

organization/project can "cease to exist". Finally, planning incorporating stakeholder involvement is considered to be a more sustainable and effective approach than conventional planning (Faust et al, 2013; Global World Partnership Technical Advisory Committee, 2000; Giordano et al., 2007; World Bank Group, 2008).

Freeman (1984) and Rangarajan et al. (2013) established the foundations of the modern stakeholder analysis process development proposing a three-level framework for the analysis and engagement assessment of the key stakeholders of an organization. The first level of this framework (rational) involves the understanding of "who" are the stakeholders, the creation of a stakeholder profiling and the identification of their potential interest and motivations regarding the operations of the organization as well as the early identification of potential barriers that might appear in the relationship between those stakeholders and the organization that aims to engage them in its operations. The second level (process) involves the action of the organization to engage and retain a tight relationship with the afore-mentioned stakeholders while the third level (transaction) involves the boundaries that the organisation establishes in the negotiation with the stakeholders.

ODS stakeholder and collaborator analysis strategy

ODS consortium used the well-established background knowledge on stakeholder's analysis as a guide in the development of its unique stakeholders' analysis and engagement strategy following the three levels of Freeman's framework. This framework can be generalised and be applied in any other project and organizational structure.

For identification and analysis the key stakeholders, a purpose-built framework was developed (see Figure 2 below):
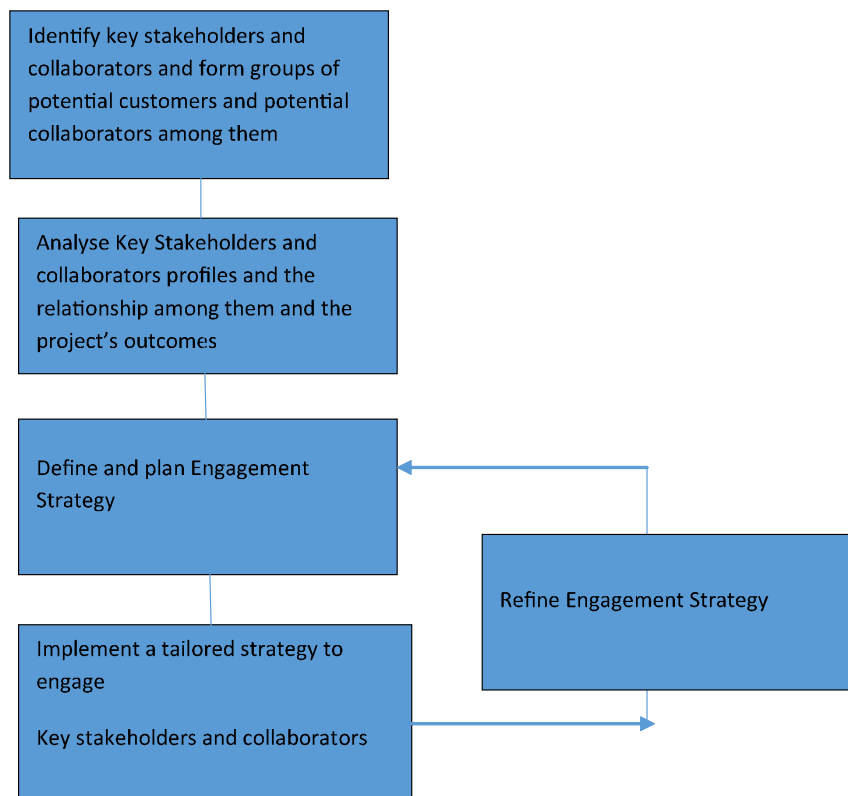
Figure 2. Stakeholder and collaborator engagement framework

As presented in the Figure 3, the key stakeholders involved in the ODS projects are classified into three different categories. The first category refers to those stakeholders that will be the main customers of the ODS consortium. ODS consortium needs to address them as the main target market, or potential customers, for the project's results. The second category includes those stakeholders who proved to be collaborators of the ODS project's outcomes and innovations. Finally, between those two groups there is a "grey" area that includes those key stakeholders that can act both as customers as well as potential collaborators. The ODS portal also offers also a special area for the affiliated partners.
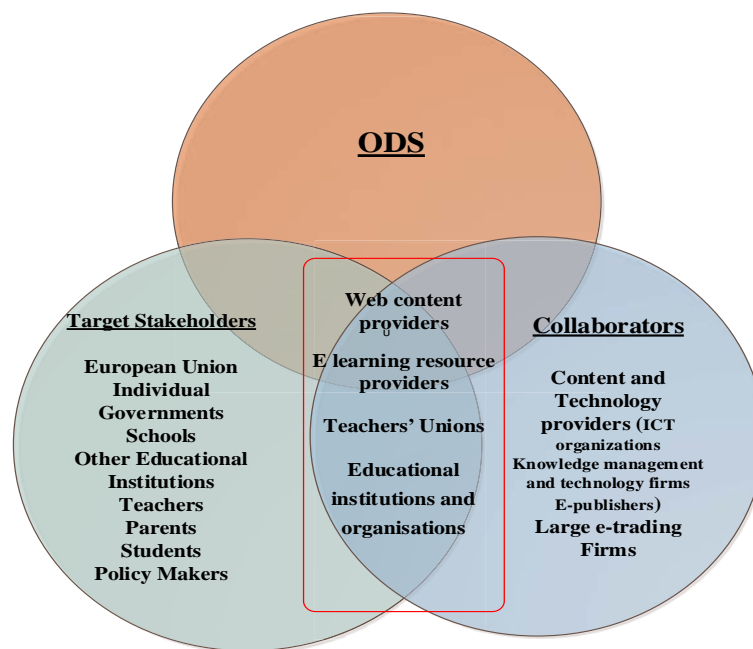
Figure 3. Key stakeholders and ODS relationship

The following step, after the afore-mentioned filtering of the stakeholders, involved their profiling identifying roughly their main interest and motivation and what the ODS portal will offer to address their requirements.

Description of the "customer-type" key stakeholders

European Commission

European commission is one of the most important and influential key stakeholder for the project, along with teachers and teachers' communities and networks, since it is willing and motivated to provide support in order to exploit further the advantages of a successful portal and long term sustainability beyond its funding. European Commission has an interest in the portal since it will enhance and unify education processes in a pan-European level. The source of this motivation is the improvements, enhancement, opportunities and the options that the ODS will provide to European education -enhancing its flexibility, efficiency and, specifically providing (in the future) better educated human capital resources.

Individual Governments and Ministries for Education/ policy makers

Individual Governments, Ministries for Education and Policy makers are also key stakeholders for the ODS project with high power over the project outcomes and very high interest on the project's outcomes. Governments will have mainly the role of a demand factor using the new portals in a more institutionalised manner wanting to provide better education towards the improvement of the "societal welfarism" of their citizens.

Parents, Parents' Communities, and students

Parents and students are on the demand side of the stakeholders involved. They want to have access to a wide range of constantly- updated, educational materials presented in a user-friendly environment. It will be useful for them the proposition of relevant material and the access to premium content.

Students and their parents can support the ODS portal by using, and reusing, the portal's content as well as by evaluating and continuously providing feedback regarding the content and the functions of the portal. As more and more students will use the portal and exploit benefits from it, the portal will become more and more popular, resulting in it being more attractive for organizations, content providers, and technology developers who will want to share, market and advertise their own educational material and activities. Moreover, as the students and the parents (along with the teachers) will be the day-to-day users of the ODS portal, their feedback on the functionality of the portal and on the identification of potential bugs, errors or harmful material will be vital.

Description of the ODS potential collaborators

ICT organizations, Knowledge management technology firms and e-Publishers

The organizations that develop information and communication technologies or organizations that are active in Knowledge management by identifying, creating, representing and distributing knowledge, have the infrastructure, the experience and the market share to produce products and services competitive to the ODS outcomes. ICT organizations in cooperation with knowledge management firms, web content providers and e-publishers will offer competitive products to the ODS project's outcomes. Moreover, Knowledge management technology firms in cooperation with ICT organizations can provide E-learning portals using their vast knowledge databases.

Moreover, e-publishers will provide their content to the ODS portal either in the form of free content or premium content provided to the users charging them a fee. They will also have a great opportunity to expand their business against the traditional publishers. Similar to the web-content providers, e-publishers have also the advantage of promoting and advertising their content as well as financial benefits from the premium content. They will exploit further the educational content distribution channel that the ODS portal will create. Large e-publishing organizations might develop, in cooperation with web content providers and ICT organizations their own portals, to promote, share, and market their own educational material.

Training software developers

Training software developers although focused on the development of portal to make more efficient the training of employees in specific sectors, have the required knowledge, experience and resources to provide broader educational material and create products competitive to the ODS portal.

Description of Stakeholders that can act both as customers and as potential collaborators

Web content providers and other relevant stakeholders

Web content providers, ICT organizations, knowledge management technology firms, as well as web content management firms and providers, are the business actors from the side of support as well as from the side of the demand of the project's outcomes and they can also act as possible collaborators. They can support the portal providing content under a form of a contract or formal cooperation in form of memorandum of understanding (MoU). The web content providers have the advantage of promoting and advertising their content as well as financial benefits from premium content that the users will have to pay for. In order to have access to the resources and exploit further the educational content distribution channel that the ODS portal will create. Web providers except of ODS portal collaborators can also be in the side of the competition acquiring the knowledge needed to build similar types of portals.

E-learning resources providers

They will provide their content to the ODS portal either in the form of free content or premium content provided to the users with a fee. However, they will develop in cooperation with web content providers, e-publishers and ICT organizations their own portals to promote, share, and market their own educational material.

Educational organizations/Schools and networks

Educational organizations/Schools are the target stakeholders of the portal. A number of 2000 schools in almost 23 European countries will be engaged in innovative eLearning ODS practices and outcomes validation processes. ODS consortium will implement the project activities in 600 schools during the school year 2013-2014 (September 2013 – April 2014). The implementation will be in the following countries: Greece, Netherlands, Finland, France, Germany, Austria, Italy, UK, Portugal, Latvia, Estonia, Lithuania, Belgium, Ireland, Spain, Croatia, Cyprus, Bulgaria, Denmark, Turkey, Poland, Hungary, Romania and Serbia. Moreover a large-scale-validation phase, will take place during the school year 2014-2015 involving 2,000 schools all over the Europe. Some of these organizations might be appear later on as a possible competitor by creating their own similar types of portal with the cooperation of web providers and e-publishers.

Teachers and Teachers' Communities

Open Discovery Space is a project that is targeting its community towards various stakeholders of teachers, teacher trainees and curriculum developers. Overall, the aim of the Open Discovery Space consortium is to mobilise 10,000 teachers and 40,000 students in the framework of the proposed activities (requirements elicitation, implementation and assessment, validation), from start to implementation phase of the project.

Teachers, Teachers' communities, networks, associations and other professionals involved in the learning procedure have an active role contributing to the learning material of the portal as well as evaluating it. Especially teachers and teachers' communities will offer the most, since teachers are the key players in the modernisation and continuous improvement of education. As a result of collaboration Teachers, Teachers' Communities, networks and associations can put pressure on the educational institutional to obtain and adopt new technologies, resources, applications, methods and materials in order to enhance their educational purpose. Among other methods, being part of a network allows them to improve the quality of their teaching and exploit further the educational content distribution channel that the ODS portal will create, supporting their motivation and satisfaction. ODS consortium aims that teachers coming to the trials will learn and understand resource-based learning and scenarios.

Relationship between the ODS service and the Stakeholders

Figure 4 shows the relationship between ODS and its stakeholders. This relationship diagram is very important for ODS consortium to manage its stakeholders closely. The thicker lines represent stronger relationship with these stakeholders in a matter of support, dependency and influence while the thinner lines represent a weaker relationship.

The key stakeholders relationship diagram showing – the European Commission, the individual governments and education ministries, the schools and other educational organizations and finally the teachers and the students. The teachers are the main targeted group as this project aims intends Open Discovery Space to be a project that is targeting its community towards various stakeholders of teachers, teacher trainees and teacher curriculum developers. These creates a bidirectional dependent relationship between the ODS services and the stakeholders that act as sponsors, promoters, customers and feedback providers.
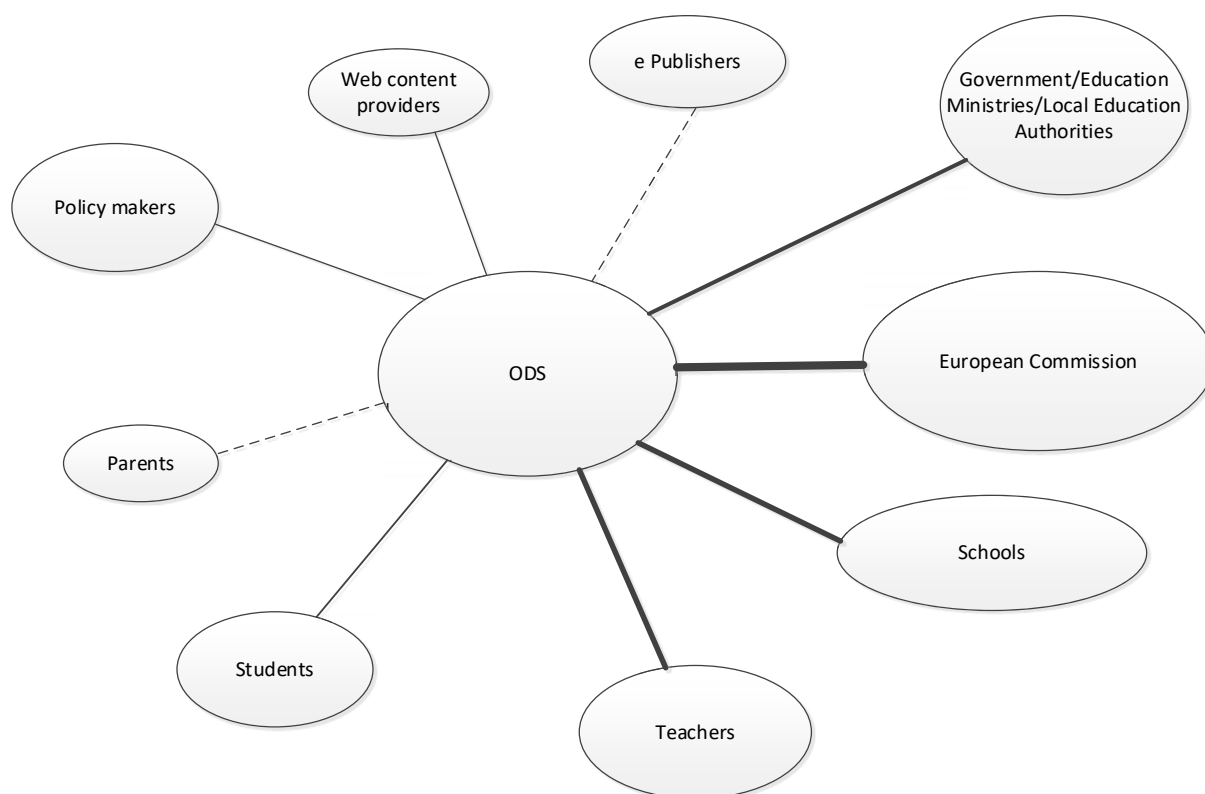
Figure 4. Relationship Diagram between the ODS service and its stakeholders

Stakeholders and collaborators identified interests, barriers, and motivation factors

The Table 1 below presents the identified stakeholder's interests barriers and motivations based on SWOT analysis results and user requirement surveys.

Table 1: Stakeholder's interests barriers, and motivation factors

Stakeholders and Collaborators	Main concerns and barriers	Main interests and motivation factors (What each stakeholders/collaborators want from ODS and what attracts them)
European commission	- Enhancing flexibility, efficiency, usability and specialisation by providing a Pan European Education system. Challenges associated with different educational and cultural barriers applied in different European countries. - Difficulty in dealing with many stakeholders' to address their individual requirements. - Challenges related to the massive adoption and diffusion of such web portal in the formal/informal, non-formal education, state/private education and lifelong learning education.	- The use of an E-learning portal, that will facilitate and enhance the sharing of educational material amongst all European schools aligned with EU educational policies and goals. - ODS is a portal that interconnects schools and teachers that helps them to co-improve: - There will be efficient dissemination and exploitation of the project's outcomes to all interested parties.
Government/Education Ministries and Policy makers	- Improving government's educational scheme for providing higher quality of education to increase the prosperous of human capital resource in the society. - Adopt the policies imposed by the EU - To make sure they are analysing the educational system properly and making the best decisions to improve it. - Difficulty of integrating different educational system and learning approaches applied across Europe - Challenges associated with different legislation schemes concerning education itself and the dissemination of educational materials in different European countries.	- To receive regular reports regarding educational system to update and improve their educational policies. - To ensure outcome of using this portal is aligned with EU/Local educational policies. - ODS is providing cutting edge learning tools to improve the educational system of the schools and learning outcome of students. - ODS portal is compatible with various educational systems of European countries. - ODS will provide policy makers with updated analytics and data from all schools. - ODS using its impact assessment tool will provide regular report to policy makers regarding its impact on schools, curricula and educational policies.
Schools	- To improve the EU/Local Government educational policies by satisfying the needs of their stakeholders (Students, Teachers, Parents and etc.) - Challenges related to the sustainability of updating portal. - To deal with the challenges will cause due to hard and soft structural differences (facilities and resources, etc.) that exists in state and private schools across the Europe. - Difficulties of building commitment and trust amongst schools to share their best practices regularly in their communities.	- To set up and share an efficient portal satisfying teachers' and pupil's needs and improve their educational outcome. - To ensure achieving continuous economic efficiency through the use of the ODS portal in their schools. - ODS provides a user-friendly learning portal which can satisfy the needs of users for different educational levels. - ODS will provide users continuous support.

Teachers	- To Provide high quality teaching and assessment for students using modern educational and impact tools aligned with school's regulations and policies. - Difficulty to convince them to get involved and get their long term commitment to the portal. - Time restraints applying changing the teaching paradigms will be problematic at early steps. - Difficulties to build a trust among teachers to share and spread their teaching materials and experiences. - Difficulty of having systematic control to avoid copyright infringements of materials on the ODS portal	- To use an integrated educational portal in order to facilitate and improve their teaching and assessment methods to provide a higher quality of educational services to their students. - To enhance their ability to update their knowledge and skills using and sharing their experiences. - ODS is an updated sources of educational materials, content and repositories through a single E-Portal. - ODS provides an efficient distant learning environment with user's friendly features and tools. - ODS provides an interconnected E-portal for teachers and tutors across the Europe to share their best practices, innovation and scenarios. - ODS provides continuous on-line training support for teachers. - ODS using its impact assessment tool can provide regular report to teacher for their impact on learners.
Students	- To Receive a high quality of education using modern and interesting methods and tools in an environment that is conducive to learning and to be successful in the real world and be prepared for higher education and working environments. - Time constraint applies for convincing and attracting students to use this portal. - Using this portal might be distracting to younger pupils. The learning activities can drive them more to the game side rather than help them focus on their learning	- To use a distant learning service in order to enhance their educational efficiency, motivation and interest to their courses. - To develop meaningful relationships with their teachers and peers. - To involve who the data collected from the ODS portal making decisions that affects themselves and their schools. - ODS is an efficient distant learning environment with user-friendly environment and fascinating features for students from different educational levels. - ODS provides updated educational material according to their interests supervised by their own teachers and schools and positively engage them. - ODS facilitates students studying method using modern tools and digital technologies and is compatible with common gadgets (Mobile phones, I Pads, tablet, etc.). - ODS provides students with continuous learning materials, scenarios and lessons.
Parents	- To make sure their children are receiving high quality of teaching resources and materials in a safe and world class educational environment under the supervision of qualified teachers and staff members - Difficulty to convince parents particularly in lower levels that using this portal will not distract their children from their study and will not waste their time.	- To increase their children's interest to their studies and enhance efficiency of their educational outcomes. - To make sure this portal will not distract their children from studies and materials uploaded in the portal are of high educational quality. - To receive regular reports from the school regarding efficiency of using ODS portal on their children's outcome. - ODS will bridge the gap among teachers and parents. - ODS can provide parents with a tool to personally monitor their children's activities.

Web Content Providers and E-Publishers	- To increase their profitability and market share by emerging to the new market with different groups of customers. - Large number of advertisements could be distractive for users. - Difficulty of convincing users to reserve the publishers' copyright. - Difficulty of persuading users to buy the e-materials legally. - Due to the large number of providers, updating process and integrating all content in the portal would be complex or lengthy.	- To achieve long term profitability - To be reassured about the low risk of copyright. - To use the portal to expand their commercial activity in the emerging open education market. - ODS provides a portal with a large group of users to sell or promote their products, tools, technology and services. - ODS could enhance their brand loyalty by getting involving in a project sponsored by EU. - ODS provides stakeholders a categorised group of customers to find the best marketing method for each target market.

Stakeholders and collaborators engagement strategy recommendations

In order to effectively engage its stakeholder's, an organization/financial entity should open up their decision processes in order to become more sensitive towards the motives, interests and expectations of its stakeholders/collaborators (Jensen et al., 2013).

Having created the profile of the key stakeholders/collaborators, analysed their main interests, motivation and the relationship among them and with the project/organisation, the next step should involve the creation of a tailored engagement strategy to address their requirements.

E-learning content providers, ICT organizations, Learning Content Management Systems providers, knowledge management technology firms, Learning providers as well as web content management firms and providers, can support the ODS portal by providing content under a form of a contract or formal cooperation in form of memorandum of understanding (MoU). This will enhance the effectiveness of the portal with more complete and updated content which will also provide trustworthiness and usability. As it was afore-mentioned, Web content providers will have the advantage of promoting and advertising of their content as well as financial benefits from premium content that the users will have to pay for in order to have access to the resources and exploit further the educational content distribution channel that the ODS portal will create.

On the other hand, e-publishers can provide their content to the portal either in the form of free content or premium content to the users with a fee. They will also have a great opportunity to expand their business against the traditional publishers. Similar to web content providers, and e-publishers have also the advantage of promoting and advertising their content as well as financial benefits from the premium content. They can exploit further the educational content distribution channel and the other services on the same wavelength that the ODS portal will create.

More specifically, Web-content providers and e-publishers have a general interest in increasing their profitability and market share by emerging onto the new market with

different groups of customers. While regarding their cooperation with the ODS portal will be interested to:

- Achieve long term profitability.
- Be reassured about the low risk of copyright.
- Use the portal to expand their commercial activity in the emerging massive open education market.

In order that the ODS consortium may engage these stakeholders in its activities and secure a long term cooperation and sustainability of the project, the ODS consortium is considering engagement strategies that derive directly from the aforementioned influence/interest analysis matrix (see Figure 4). As such, these strategies can be classified into two distinct groups, as it can be seen in the table below

Table 7: Engagement Strategies

Influence/ Interest Classification	Stakeholders	Engagement Strategies
"Players" High Interest & High Influence	EU, Governments / Education Ministries, Policy Makers	Provide an innovative OER portal with an active community of users, facilitating this way the change in behaviour regarding Open Education and Open Educational Resources Actively seek "collaboration" with these stakeholders so as to integrate their views and opinions but at the same time offer unique information about innovative OER content and information that could facilitate their policy making processes regarding OER adoption and Open Education "Empower" the stakeholders in this category to actively participate and proposed changes/enhancements/adaptations that may reflect the "local" dimension and/or culturally different parameter in the context of OER.
"Subjects" High Interest & Low Influence	Schools, Teachers, Parents, Students, e-Publishers, web-content, software and technology providers	To provide an active portal with a large community of users so that it creates a "network effect" for individual users to participate. "Empower" individual users to actively participate, contribute and propose changes for the continuous enhancement of the ODS portal To provide an active portal with a large community of users so that it creates an "appealing" online marketplace for commercial providers (content and technology) to sell or promote their products and services. To integrate analytical tools in the portal for content providers and publishers to obtain information and feedback (user analytics) about what customers are buying and determine how to adjust their technology, marketing and product mix to spur continued purchases. To introduce conversation and mapping tools for providers and publishers to discover what customers are saying about them, no matter if it is positive, negative or neutral. These tools will also let ODS clients to identify the most important influencers in the Web 2.0 realm. To promote the view that the ODS portal will enhance their brand strength and their customer loyalty since these providers will actually get involved in the outcomes of a project sponsored by EU and promote more these indolent to attract more customers. To provide copyright protection for the material broadcasted through it, and promote the content of the individual users/creators (i.e., teachers, etc) as well as content and technology providers. To provide membership which enable them to sell the e-learning resources, software, and tools which are not freely available but are cost effective.

Conclusion

This study found that the a key success factor for every eLearning portal and OER initiative in order to be sustainable and successful requires the identification of its key stakeholders and collaborators and address their needs, requirements and identify ways that they can overcome the barriers that they may have. Stakeholders, collaborators and customers have an important and decisive role in the success of any project and online portal, since their requirements, interests, motivations, and satisfaction are important factors for development and sustainability of the project. The identification and analysis of the key stakeholders, customers and collaborators has a key role for the success of the project implementation as well as in the design of the project business plan and marketing strategy (Bryson, 2004).

In the context of OER, sustainability is closely linked not only to the financial viability of the initiative, but also to the identification and analysis of the key stakeholders' needs and requirements as well as the ways to fulfil them. This has a significant impact on the growth and expansion of the project community and thus the sustainability of the project. Our analysis of the ODS portal, which aims to offer a pan-European, multilingual and innovative E-Learning service provides evidence that the identification, engagement and collaboration of stakeholders such as teachers, parents, students, webinar management service providers and e-publishers in relation to the portal's content, technology and software, is instrumental for the success and long term sustainability of the project.

The proposed stakeholder and collaborator analysis framework includes the most basic and important steps in the development of a stakeholder/collaborator analysis and engagement strategy, starting from the identification of the interests and motivations of the stakeholders, moving towards an analysis of their relationships with other projects and organisations, and concluding with the creation of a tailored strategy to exploit the best outcomes from them.

Finally, a comprehensive characterization of every stakeholder and their role in relation to the ODS portal will be used as the foundation of enhanced communication mechanisms among them, which will provide further benefits and will prove vital for the long-term sustainability and exploitation of the project's outcomes.

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