Open European Languages & Cultures Network

IO4. Research report: Quality Framework for Language OERs

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Abstract

According to both the Council of Europe and the European Union mobility is one of the cornerstones of European society. The lack of language competences is still one of the main barriers to participation in European education, training and youth programmes. With 4 million participants by 2020, Erasmus+ is a unique opportunity to study, train, gain work experience or volunteer abroad (EU, 2013). As languages are the heart of mutual understanding and comprehension, it is essential to promote language learning for Erasmus+ KA1 mobility participants.

The OPENLang Network project addresses the needs for linguistic skills and culture awareness of Erasmus+ KA1 mobility participants and the training needs for OERs of language teachers:

a) Erasmus+ KA1 mobility participants (HE students & staff, VET, Adult & School education staff, Youth learners, Youth Workers, Youth Entrepreneurs) that need to boost their language skills (24 EU) and cultural awareness including those who will not enroll in the OLS courses.
b) Volunteers language teachers who will support the Erasmus+ KA1 mobility participants offering their professional experience while receiving professional certified training on the creation, sharing and use of language OERs.

- The OPENLang Network project envisages to:
1) connect these 2 groups in an interactive collaborative environment (Web-based and mobile-based) that will support more efficiently their effort to raise language awareness of the target mobility of EU languages and to develop European intercultural knowledge covering all EU cultures.
2) foster the Open Education European multicultural and multilingual vision to all OPENLang Network members.

The research report on "Quality Framework for Language OERs" is the fourth intellectual output envisaged by the OPENLang Network project. The research

report aims to present first quality assurance guidelines that have been already developed for OERs by other experts. It describes how complex and challenging is the quality assurance of open educational resources (OERs) and the available options that educators and institutions have in order to evaluate the digital resources that they want to use, reuse, create or share. Quality assurance of OERs is not an easy process and requires a complex mix of quality tools. There are no common policies worldwide or even in Europe and this was an area of interest and of open dialogue for many years and continues to be. In the next section, a selection of known OER Quality Frameworks will be presented and finally the report will conclude with the presentation of the Quality Framework for Language OERs that has been developed by the consortium in order to address the needs of the OPENLang Network. An evaluation tool for OERs will be also presented with the aim to a) facilitate the online evaluation of the OERs by the language teachers who will wish to upload their language OERs to the OPENLang platform and b) to promote quality assurance practices.

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Erasmus+

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T1. Overview of existing quality assurance guidelines for OERs

1.1 Introduction

In the first section of this report, it will be described how complex and challenging is the quality assurance of open educational resources (OERs) and the available options that educators and institutions have in order to evaluate the digital resources that they want to use, reuse, create or share. Quality assurance of OERs is not an easy process and requires a complex mix of quality tools. There are no common policies worldwide or even in Europe and this was an area of interest and of open dialogue for many years and continues to be. In fact, research in this area shows that there is a variety of quality approaches, models, proposed or applied quality tools and key aspects that need to be taken under consideration in order to apply the existing quality approaches.

1.1.1 Definition of OERs

First, it is important to mention that the term Open Educational Resources (OER) was first coined by UNESCO at its 'Forum on the Impact of Open Courseware for Higher Education in Developing Countries' almost 20 years ago (UNESCO, 2002). The group adopted the phrase "open educational resources" to describe the new model of sharing educational materials and agreed on the following definition:

*"The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes." (UNESCO, 2002, p.24). T*hey have also added a second definition for the term: *"a universal educational resource available for the whole of humanity" (UNESCO, 2002, p.28) and* ten recommendations for how states can promote the use of OERs.

Since 2002 many more definitions have been offered. A definition that has been largely embraced is offered also by UNESCO that describes OERs as *'teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions' (UNESCO, 2017).*

The most recent definition (UNESCO, 2019) is more simple and describes OER as *"teaching, learning and research materials that make use of appropriate tools, such as open licensing, to permit their free reuse, continuous improvement and repurposing by others for educational purposes"* (UNESCO, 2019).

1.1.2 Defining "open"

In general, many researchers (OECD, 2007; Mulder, 2007; Wiley, 2010) have questioned what is meant by "open", "educational", and "resources" and explored their meaning. What was mostly argued was the meaning of "open" taking different interpretations such as "accessible to everyone", or "free of cost". Wiley (2010) for example argued that open means that a resource is available free of cost and that the copyright licensing and the related permissions are also free of cost. He described the four permissions as "4Rs" which allow 'Re-use', 'Redistribution', 'Revision' and 'Remixing' and give more rights to users. Geser (2007) has also described OERs "as liberally licensed for re-use and often free form restrictions to modify, combine and repurpose the content".

Many researchers (Wiley, 2007; Tuomi, 2006; Petrides & Nguyen, 2008; Andrade, Caine & Carneiro, 2011) highlighted also the importance of allowing the users to be able to download the source code or the original files in order to facilitate the reuse, adaptation or modification of the open educational content. Other researchers (dos Santos, 2008) criticize the dimension of openness especially in formal learning settings where institutions don't seem to "offer true possibilities for knowledge building [and] use/re-use by its potential audience". Other researchers also emphasise the importance of easy access to repositories with open content via interfaces that could allow navigation in multiple languages (OECD, 2007; Richter & Mcpherson, 2012; Pawlowski & Hoel, 2012). Openness is closely linked to sharing and for this it is suggested by researchers that tools for social media are included to facilitate the sharing of the resources (Jacobi & Van der Woert, 2012; Alevizou, 2012; Kanwar et al., 2010).

1.1.3 Defining "educational"

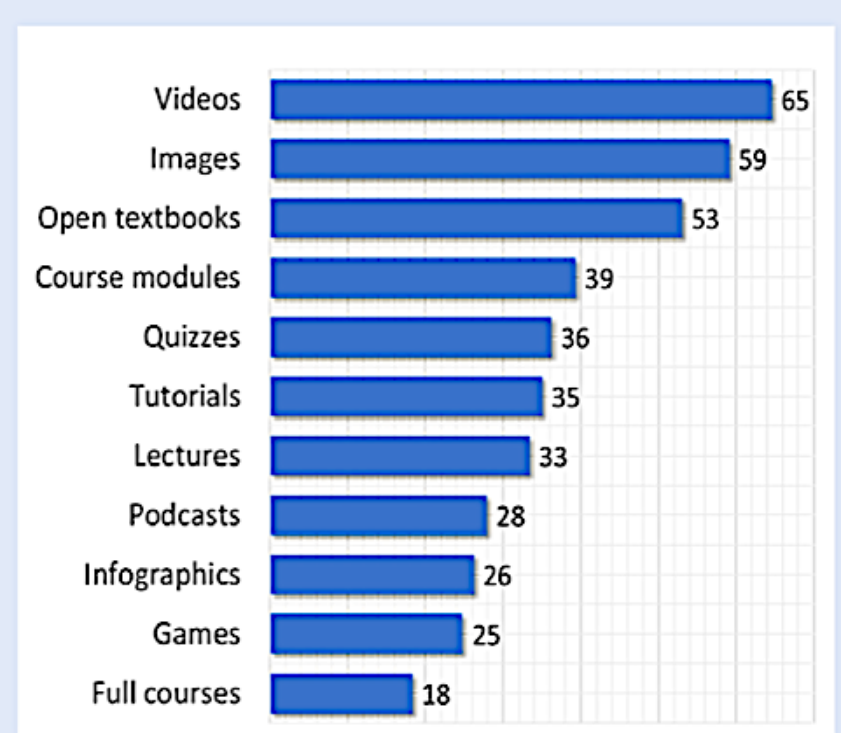
When it comes to the term "educational", it is easily understandable that we refer to teaching and learning materials that are freely available online for everyone to use, whether this person is an instructor, student or self-learner (Economides & Perifanou, 2018b). OERs were created originally, for uses in formal learning settings (Wenk, 2010) but have evolved to be applied to non-formal and informal settings as well. What is important is that OERs are produced to support learning and teaching and may even be created as part of learning and teaching processes. According to JISC's OER guide (Jisc, 2016, OERs) people involved in the OER movement come from different parts of the educational community including also marketing tools such as channels *iTunesU* and the *OpenCourseWare* Consortium as well as those supporting learning and teaching through technology and particularly those involved in the world of online learning and teaching repositories.

1.1.4 Defining "resources"

Besides the different interpretations of "openness" and the discussion about the efficient ways to facilitate real access to "open" content, another discussion that is still open is on the meaning of the term "resources". These may include "lecture materials", educational software (Wiley, 2007), educational courses, learning object repositories, learning management systems (Koohang & Harman, 2007). Downes (2013) describes OERs as not just as courseware but as content, capacity and tools.

According to the recent JRC EU report "Practical Guidelines on Open Education for Academics" (dos Santos, 2019) OERs are "*educational materials for teaching and learning in any format or media, as well as research outputs, data, and literary works which are free of charge (gratis), and openly licensed (libre), or in the public domain. Examples are: curricula, course materials, lesson plans, books and textbooks, videos, podcasts, multimedia applications, course work, assessment templates, photos, brochures, reports, research data, scientific papers, websites, blogs, and any other resource or tool that has been designed for teaching, learning and research and that has a visible open licence".*

UNESCO's (2019) latest report presents various types of OERs that educators used in 2015 and in what frequency, and those are mostly videos, images, and open textbooks (Figure 1).



Source: Adapted from de los Arcos et al. (2015). Available under CC BY at http://oro.open.ac.uk/47931/1/Educators_FINAL_OERRHData.pdf

Figure 1. Types of OERs and the frequency of their use by educators (UNESCO, 2019)

Ochoa and Duval (2008) classifies OERs in: a) "small granularity objects" such as a slide presentation or an image in encyclopaedia; b) "medium granularity objects" such as learning modules for online courses, and c) "large granularity" such as courses and web services. Weller (2010) proposes another interesting categorisation of OERs inspired by the content's creator:

a) **Organisationally-produced ('big'):** In this first category, OERs are those which are developed in the context of a project such as OpenLearn. Those are most of the times of high quality, contain explicit teaching aims and have a uniform format and style. Users can access them at the project's portal along with research and data for a specific period of time.

b) **User-generated ('little'):** In this category, OERs are most of the time low cost resources and are created by anyone, not only educators. They might be of poor quality and do not present the explicit educational aims. Usually they are shared on the internet via a variety of third-party sites and services. For example, *Slideshare*, a repository of PowerPoint presentations on all kinds of topics, is a well-known open database of user-generated OERs.

Another classification of OERs proposed in literature (Camilleri et al., 2014), is the individually-authored versus peer-produced resources:

a) *"Individually-authored OERs"*: They have been prepared by an author or a group of authors over a concrete period of time, and, on their completion, are published to the public.
b) *"Peer-produced OERs"*: Those are crowd-sourced or peer-produced OERs which are authored by a community, such as a wiki, or a community-forum. As such, the resource itself is constantly updated, the number of authors changes continuously as well as its versions. A characteristic example is Wikipedia which was updated over 60 times in the first 6 months of 2013, with more than 20 different authors contributing to the updates. (Camilleri et al., 2014).

1.1.5 Benefits and challenges of OERs

As it was mentioned before, since 2002 with the adoption of the phrase "open educational resources" to describe the new model of sharing educational materials an interesting discussion has started on OERs's definition, use, evaluation and quality assurance policies. The open dialogue continues despite the barriers that exist because the benefits for education and generally for the society are multiple.

OERs are about improving teaching and learning through allowing open access to learning materials that can be shared and adapted by others (Jordan & Weller, 2017). OERs help teachers find other teachers' resources and by this process they inform their own practice. In this way, it is clear that OERs can support the professional development of teachers and instructors by offering them adaptable educational resources, which they can revise and adjust to provide a better fit with the environment where they are working, and where adaptation can be part of the learning process. In fact, open access to OERs enables teachers to easily use someone else's resources in their teaching, rework other people's material, and even co-create (or remix) materials with others. OERs can also encourage both national and international collaboration between subject- experts and policy-makers to provide the best learning materials and to improve educational performance as in the area of language learning (Lane and McAndrew, 2010). In this case, sharing authentic language OERs is really important because this is exactly the input that language learners need in order to foster and practice a new language. For sure, the digital world has offered many more opportunities for collaboration and working together with other learners or teachers for co-creation or exchange of educational resources and practices. Geser (2007) points out his benefits of using open educational resources in education (p. 21):

- OERs offer a broader range of subjects and topics to choose from and allow for more flexibility in choosing material for teaching and learning.
- OERs leverage the educational value of resources through providing teacher's personal feedback, lessons learned, and suggestions for improvements.

- OERs provide learning communities, such as groups of teachers and learners, with easy-to- use tools to set up collaborative learning environments.
- OERs promote user-centred approaches in education and lifelong learning. Users are not only consumers of educational content but also create their own materials, develop e-portfolios, and share study results and experiences with peers.

Collections of OERs can be accessed in repositories of OERs. Those can be classified in two categories: a) Institutional and b) national or of other broad-scope repositories. The institutional OER repositories are usually funded initially by multiple budget sources. Usually the open content is accessible via the institutions' homepage but it can be searchable by search engines or meta-search engines. In the second category, there are the national educational repositories that can be subject oriented or not (*Wikiwijs* in The Netherlands, the *Norwegian Digital Learning Arena*, *Photodentro* in Greece, etc.). There are also repositories of broad-scope such as OER Commons that are not linked to any government and offer educational resources of all levels of education (dos Santos et al., 2016).

It is a fact that the use of OER repositories has not yet been widely adopted by learners and teachers as part of their daily practice (Dimitriades et al., 2009). Teachers usually work on their own, creating their own resources using the technologies they are most familiar with for their particular teaching context and student group. Rarely, they share resources in their small communities of teachers teaching similar courses, possibly at the same institution, and possibly do minimal reuse of materials. Even though there is no lack of interest by teachers in re-use of OERs, the technologies and communities around OERs don't facilitate this process because they don't provide the appropriate tools (Lane & McAndrew, 2010). In fact, there is a variety of barriers that seems to keep users away from re-use (cf. OECD 2007; Pawlowski & Zimmermann 2007; Davis et al. 2010), such as infrastructural access material availability, lack of interoperability of repositories and tools, legal permissions, technical capacity, cultural differences, lack of motivation, and lack of quality of the content. As far as academics are concerned, Atenas et al. (2014, 2015) present similar barriers to OER adoption such as "language barriers, low quality of resources, difficulty in finding content, time consuming, lack of adaptability of the resources, low relevance of the resources, licensing issues, lack of training and technological challenges". When educators share their work or ideas regarding the ways that they have used the OERs in their teaching practice it is really useful and time saving. Those are called Open Educational Practices (OEPs) and their aim is to 'improve quality and innovate education' (OPAL, 2011). UNESCO's recent report presents the discussion on the change of the OER policies and the focus areas of OER policies (UNESCO, 2019). Those include the following:

- Regulatory framework
- Policy on open licenses
- Inclusive and universal access
- OER repositories
- Quality assurance
- Capacity building in pedagogical use of OER
- Incentives for teachers' creation and sharing of OER
- Sustainable business models for producing, reusing and sharing OER
- OER research and evidence.

As it is clear from the introduction presented, there are many issues that need to be addressed in order educators and learners to become active users and (co-) creators of open educational content. One of the most important barriers that need to be overcome is quality assurance of

OERs. It is difficult for teachers to use educational material that they don't trust and it is discouraging for them not to know where to access good educational material or share their own. Same situation applies with learners who will not spend their time searching for hours for material of good quality. This is also very discouraging.

1.2 OERs Quality Assurance Challenge

The number and variety of educational resources available in the form of OERs is wide, so standards for selecting OERs are needed. OERs are dynamic resources because they can be adapted and further developed. So, it is important that the quality assurance procedures are used not to inhibit the process of continuous improvement (UNESCO 2019). That means that it's crucial for users to be able to find, access, use, re-use and share educational material of good quality. The 2012 Paris OER Declaration in article I encourages States to facilitate finding, retrieving and sharing of OERs. Encourage the development of user-friendly tools to locate and retrieve OERs that are specific and relevant to particular needs. Adopt appropriate open standards to ensure interoperability and to facilitate the use of OERs in diverse media. (UNESCO, 2012)

Camilleri et al. (2014) argues that quality is a confluence of the following concepts:

- *Efficacy:* by this we mean the fitness for purpose of the object / concept being assessed. Within the context of OER, this might include concepts such as ease-of-reuse or educational value.
- *Impact*: impact is a measure of the extent to which an object or concept proves effective. Impact is dependent on the nature of the object / concept itself, the context in which it is applied and the use to which it is put by the user.
- *Availability:* the concept of availability is a pre-condition for efficacy and impact to be achieved, and thus also forms part of the element of quality. In this sense, availability includes concepts such as transparency and ease-of-access.
- *Accuracy:* accuracy is a measure of (a) precision and (b) absence of errors, of a particular process or object.
- *Excellence:* excellence compares the quality of an object or concept to (a) its peers, and (b) to its quality-potential, i.e. the maximum theoretical quality potential it can reach.

The quality assurance of OERs via concrete quality objectives, standards and procedures is very important for creators and users. Society benefits from having access to credible open educational resources, courses and practices that are cheap or free of charge, accessible anytime and anywhere, and bridge formal and non-formal education. Learners can access and use open educational resources and open courses that are reliable and credible. Academics can be guided better in the creation and modification of their open content by specific quality objectives, standards and procedures. In this way, their open education practices can be recognised as education that meets quality standards, gaining further credibility. Institutions also gain credibility when they adopt their own quality objectives, standards and procedures for open education as they can succeed to offer high quality and a reliable alternative education system, complementary to existing traditional education offers and systems (dos Santos et al., 2019).

The quality of OER is voiced by educators as a significant concern OPAL (2010). In an OECD survey (Hylén, 2006), "lack of a reward system to encourage members" to devote time and energy to producing open content was the second most significant barrier identified in

production of OERs. In another research (dos Santos, 2008), it was found that the institutional discourses that often accompany OER initiatives attach little importance to "offering true possibilities for knowledge building [and] use/re-use by its potential audience". Other researchers mentioned the language problem that users face because the interface of most repositories don't allow navigation in multiple languages (OECD, 2007; Pawlowski & Hoel, 2012; Richter & Mcpherson, 201). Furthermore, it is also recommended that tools for social media are embedded in order to facilitate the sharing of the resources (Kanwar et al., 2010; Jacobi & Van der Woert, 2012; Alevizou, 2012). Additionally, it is mentioned several times in literature the need and the the importance of allowing the users to be able to download the source code or the original files in order to facilitate the reuse, adaptation or translation of the content (Wiley, 2007; Tuomi, 2006; Petrides & Nguyen, 2008; Andrade, Caine & Carneiro, 2011; Atenas & Havemann, 2014).

1.2.1 Categorizations of Quality assurance (QA) procedures and models

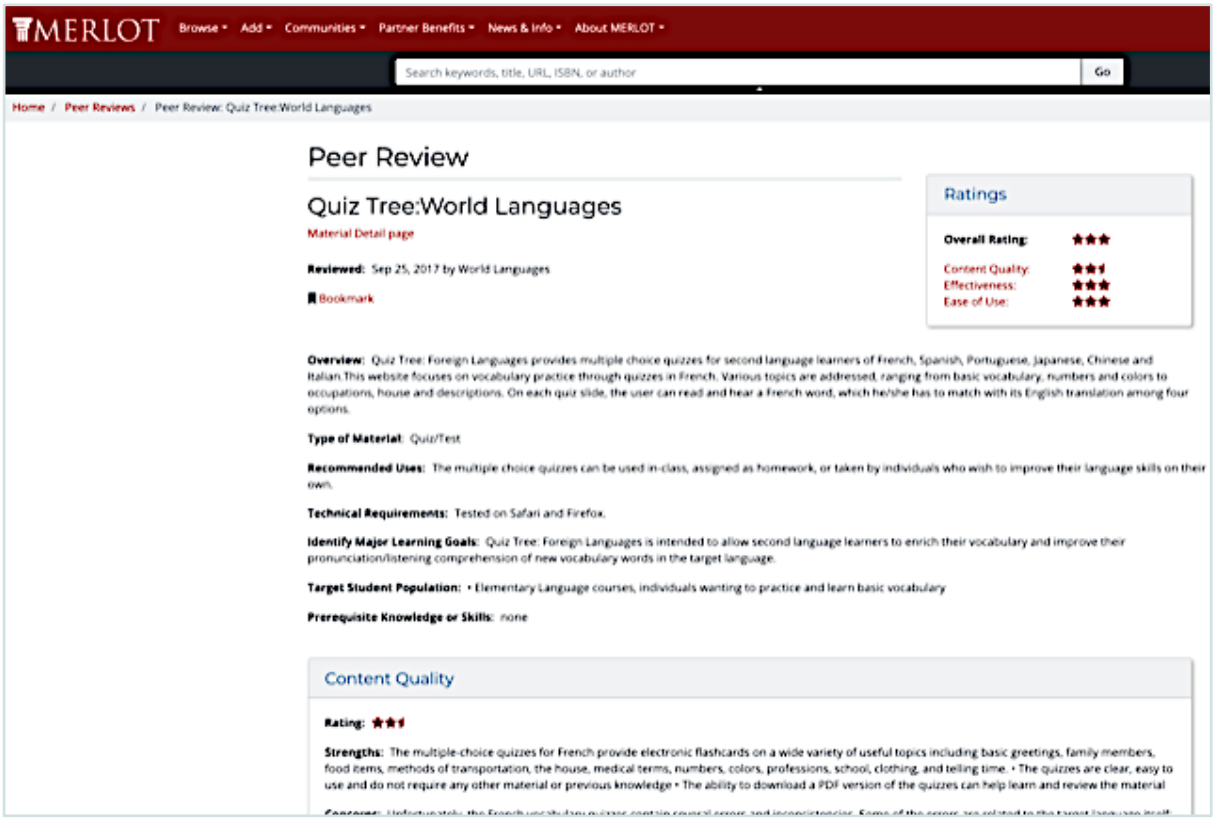
There are different types of quality procedures:
a) Top-down quality procedures that include highly controlled QA models (e.g. quality criteria and peer-review procedure set up by the consortium);
b) Bottom-up quality procedures that include contributor/user-driven models (e.g. user rating, comments and review) (Nie et al., 2013).

In top-down highly controlled QA models, the quality criteria and processes are clearly defined and articulated. For example, the Norwegian National Digital Learning Arena (NDLA) must fulfil a list of quality criteria defined by NDLA and must be in line with the quality criteria for digital learning materials set up by the Centre for ICT in Education. The selected criteria emphasize: 1) *the currency of content*; 2) the *relevance to curriculum*; 3) *the suitability for students' age;* 4) *the degree of using digital media; and 5) copyrighted cleared content, etc.* In addition, NDLA content must be in line with the POERUP initiative (Nie et al. 2013).

Furthermore, another important quality indicator is the *reputation* of the content provider. For example, usually learners try to find material in OER repositories of prestigious universities and institutions such as open courses offered by FutureLearn which involves 21 UK universities. Another quality indicator is the *classroom testing* as it is mentioned in the report for Open Education Initiatives (POERUP). For example, in the case of the Carnegie Mellon Open Learning Initiative their open resources are tested first in classrooms. Additionally, *peer reviewing* is widely used by many institutions and organisations as a means of assuring quality. In fact, peer review has been the gold standard for quality in the academic world. A representative example is the Curriki's and MERLOT's cases. Curriki is an online, free, open education service. It is an example of an open source development project that includes a growing repository of teacher-designed lectures, course syllabus, and learning materials protected by CC licences which are shared as part of the Open Source Initiative (OSI), primarily in support of K-12 education (Schrum and Levin, 2009). All educational materials that are provided by the *Curriki* community (teachers, professional educators, students, lifelong learners, and parents) are peer-reviewed for quality and adherence to standards by its experts.

MERLOT is another example of an organisation that applies peer review as a model of quality assurance but also user - rating. MERLOT is a free and open online library of over 92,000 free

and open educational resources, with over 37,000 with a Creative Commons license. It is administered and led by the California State University since 1997 and it does not host materials itself but it is instead a platform containing metadata linking to materials hosted elsewhere (over 500 higher education institutions represented in the system and campus partners within the MERLOT Consortium). Because of the growth of the OERs, now MERLOT includes open textbooks and Open journal articles in their review process. In addition to categories for Open Textbooks and Open Journals it is now possible to search for objects in the categories of Development Tools, Learning Objects Repositories and Social Networking. The website dedicated to language resources is the "MERLOT World Languages"[1]. The MERLOT Peer review process for learning and Teaching resources is well established (Figure 2). The materials in the repository are categorized by academic disciplines. MERLOT has over 20 Editorial boards, each run by an Editor and includes a group of Peer Reviewers. Reviewers are faculty who meet MERLOT standards and attend training "GRAPE (Getting Reviewers Accustomed to the Process of Evaluation) Camp". The editor assigns two peer reviewers to each item. They use their editorial board's review procedures, forms and evaluation standards to independently review the material. The editor evaluates these individual reviews and creates an integrated or composite peer-review report. The composite peer review is sent to the author(s) for feedback and permission to post the review. When permission is obtained, the composite peer review is posted on the MERLOT's website. The evaluation criteria include: *a) Quality of content; b) Potential effectiveness as a teaching tool; c) Ease of use*. A detailed description about the peer review process is provided on their website.
(http://info.merlot.org/merlothelp/MERLOT_Peer_Review_Information.htm)



[1] https://www.merlot.org/merlot/WorldLanguages.htm

Figure 2. Example of Peer review process in MERLOT OER database
https://www.merlot.org/merlot/viewCompositeReview.htm?id=1333020

Bottom-up quality procedures that include contributor/user-driven models (e.g. user rating, comments and review) on the other hand is a quite common evaluation practice in many OER repositories including language learning Repositories such as The *Language Box* (http://languagebox.ac.uk/) of the Open University of UK, and the *Ortolang Tandem* (http://sldr.org/voir_depot.php?lang=en&id=939&prefix=ortolang-).

Another example of a user-driver model is OER communities such as the OER community *Klascement* of Flemish teachers, with 50,000 users (2012 data). This is an educational portal site of the Flemish Ministry of Education and Training. Teachers and students who follow a teacher training course share all kinds of self-made "educational objects" (such as courses, lesson sheets, presentations, videos, photos, exercises and software). This OER community is based on a system that is similar to other social networks like Facebook where each user can create a user profile and can have his/her own web page and share open educational content that will be shared and assessed openly by the community's members (Boyd & Heer, 2006).

In their research Camilleri, Ehlers and Pawlowski (2014) presented a range of Quality Assurance (QA) models that they identified after the investigation of Quality Assurance (QA) processes that were adopted in more than 20 case studies related to open education projects. These depended on a number of factors:

- The type of institution and their learning and teaching culture.
- The balance of importance of the 'value' of teaching (in comparison to research activities in the institution).
- The degree to which OER activities were seen as research activities in their own right.
- The level of e-learning maturity of the institution.
- The extent to which they had engaged with OER work previously.

OPAL (2010) identified a range of Quality Assurance (QA) models adopted by 59 OER initiatives across Europe, along a spectrum from light weight, user-defined models to strictly controlled hierarchical models.

A classification divided all the examined quality assurance (QA) models in 3 categories:

1) *lightweight QA models:* In this category are included the common academic-driven approaches i.e. standard formats that academics use for producing content in their everyday practice. Examples: *EdShare project* (http://edshare.ac.uk/) is the OER digital repository solution from the University of Southampton and it supports school projects, collaborative networks, institutions or organisations. OERs are made available as simple assets (such as PowerPoint, Word, or PDF files), open-web sharing or institution-only sharing *according to academics' wishes.*

2) *user-defined QA models:* In this category peer-reviewing processes are used as means of ensuring quality. In some cases, there are multi-level reviews, or reviews against a set of pre-defined criteria. In other cases, quality assurance checks and processes are embedded in the workflow for production of OER, which also include annotations by experts which help the users through the learning materials. Podcampus is a podcasting platform for scientific and research contributions. Lectures and courses of interest are recorded and published as audio and video files. Producers are research institutions, academies and educational institutions from

all over Germany, Austria and Switzerland and the content is interesting for a more general audience outside of universities (Ehlers, 2013).

Another community-based QA model can be seen in the Community College Open Textbook - CCCOER/CCOT initiative (https://www.cccoer.org/) which enables educators to share reviews of materials, and also to look at and comment on the reviews of others. The CCOT reviews are done against a set of pre-defined criteria. These include sub-dimensions around 1) accuracy, 2) importance or significance, 3) pedagogical effectiveness, 4) completeness of documentation, 5) ease of use for teachers and learners, 6) inspirational/motivational for learners, and 7) robustness as a digital resource (Conole, 2012)

3) *strictly controlled hierarchical models:* There are many examples of cases of top- down controlled QA model with clearly identified roles (i.e. authors, editors, reviewers, technical support, etc.) and specific quality processes such as the *OpenLearn* initiative project supported by the Open University of UK.

The above examples confirm prior research (Camilleri et al., 2014) which presented the "trust-networks" who are involved in quality assurance of OERs. One is made up of the existing trust-networks in publishing and formal education, while the other is the 'open' network of users, reviewers and teachers who work together for quality improvement of resources, teaching and learning. Additionally, Conole (2013) categorised also QA models used in OER initiatives into three broad categories: individual-driven, peer- based, and QA clear criteria.

It is common that more than one QA approach is used in one initiative and the combination of several quality approaches could serve a more holistic and effective QA strategy in which all stakeholders could be involved (developers, users, institutions, etc.) in peer peer-review and quality-informing processes.

1.2.2 Research on quality assurance guidelines for OERs

There is a growing interest in exploring the area of quality assurance for OERs and Open education initiatives exploring quality criteria and quality assurance indicators (QAI) (Vuorikari, 2003; Rosewell & Ferreira, 2011; Pérez-Mateo et al. 2011; Clements & Pawlowski., 2012; McGill, 2012; Kawacki, 2009, 2014a, 2014b; Pulker & Calvi, 2013; Javiera & Havemann, 2013; Conole, 2013; Falconer et al., 2013; Hurt, 2013; Vlaidoiu & Constantinescu, 2013; Vlaidoiu, Constantinescu & Moise, 2013; Watson, 2013; Nie et al., 2013; Ossiannilsson et al., 2015, Moise et al., 2014; Camilleri et al., 2014, de Santos et al., 2016; Avila et al. 2016; Krajcso, 2016; Krajcso & 2017; Almendro & Silveira, 2018; Economides & Perifanou, 2018; Perez Paredes et al., 2018; Miao et al., 2019; Yuan & Recker, 2015, 2019). Many are the Quality Assurance (QA) models that have been identified in different researches.

Frydenberg (2002) has proposed nine QA criteria areas as domains of e-learning quality after an analysis of several QA dimensions in a number of quality models for e-learning. More concretely those are: *1) executive commitment; 2) technology infrastructure; 3) student service; 4) instructional design and 5) course development, 6) instruction and instructor services; 7) financial health; 8) program delivery; 9) legal and regulatory requirements and program evaluation* (in Ossiannilsson, 2012; Ossiannilsson & Landgren, 2012).

Moreover, Vuorikari (2003) proposed a five QA criteria model for evaluation of the European Commission Schoolnet OERs database by teachers: 1) appropriateness, 2) clarity, 3) completeness, 4) motivation, and 5) organisation. At least 20.000 resources have been validated by teachers in their classes. The European Schoolnet [2] built the Learning Resource Exchange[3] that is now the largest in Europe, and one of the largest in the world, with more than 200,000 resources (collected from 58 repository providers).

Additionally, as part of the *OER4Adult* project (http://oer4adults.org), Falconer et al. (2013) in the context of the Policies for OER Uptake - POERUP project (http://www.poerup.info/) identified a list of the most frequent QA indicators used by OER initiatives for adult learners. Those included 1) *user rating, 2) user reviews, 3) reputation of the institutional provider, 4) reputation of the funder, 5) reputation of the author, and 5) 'recommender' system*.

Furthermore, Kawaki (2014a, 2014b, 2014,c) at the Commonwealth Educational Media Centre for Asia (CEMCA, 2014) has created the TIPS QA Framework after thorough research in more than 40 frameworks of quality dimensions that he has discovered in the literature. He has collected a mass of 205 criteria related to OER quality and these 205 criteria constitute one of the most comprehensive set of quality assurance criteria for OER available to date. More than 200 OER experts and teachers around the world contributed to the production of a practical framework consisting of 38 key criteria. Through a grounded theory approach, these were distributed among the four dimensions of the TIP QA model: (T) teaching and learning processes; (I) information and material content; (P) presentation, product and format; and (S) system technical and technology. This model especially highlighted that good OER should ensure discoverability through metadata, support peer assessment via social tagging and be based on open software, where possible. All key criteria could be helpful for teachers and easily applied as a rubric to assess or improve existing OER by re-users (Miao et al., 2019). Furthermore, McGill (2012) in the context of the Academy UKOER Programme (2009-2012) proposed the following five criteria areas for determining the quality of OERs: 1) Accuracy, 2) Reputation of Author / Institution, 3) Standard of Technical Production, 4) Accessibility, and 5) Fitness of Purpose. This framework was supported by the institution-group HEA and JISC.

Leicester University (2010), in the context of the OTTER (open transferable and technology-enabled educational resources) Project, developed the CORRE framework which proposed five QA criteria: *1) content, 2) openness, 3) reuse, 4) repurpose,* and *5) evidence* (Figure 3). A key aspect of the CORRE framework is the gathering of evidence regarding the use of OER in teaching and learning (Nikoi et al., 2011). It included the "evidence" as criterion in order to emphasize that the resource must be trackable, and must be validated by users. In the development of CORRE, was used as a mechanism for gathering both quantitative and qualitative evidence on OER use. In this way, researchers managed to gather information about the context in which a need arose and about what difference an OER made. Furthermore, the researchers used triangulated methods of gathering data designed to understand user needs and contextual factors in order to assess the impact of OER on teaching and learning at Leicester. The evidence has shown that staff were happy to use OER as long as they could be aligned with their teaching objectives (Nikoi et al., 2011).

[2] http://lre.eun.org

[3] http://lreforschools.eun.org/web/guest/travelwell-?-all

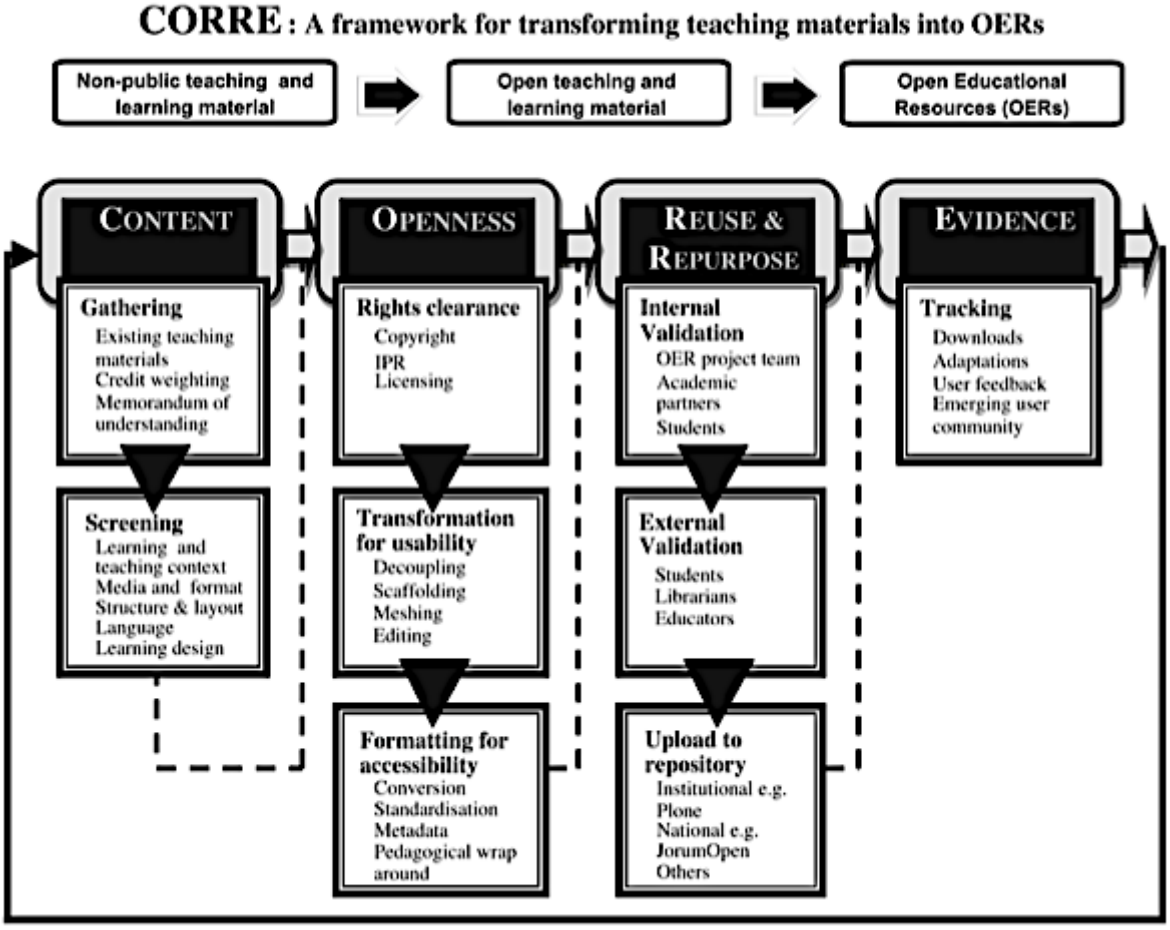


Figure 3. The Content–Openness–Reuse/Repurpose–Evidence (CORRE) framework for transforming teaching materials into OERs (Nikoi et al., 2011)

McGill (2012) in their JISC- TIGER (Transforming Interpersonal Groups through Educational Resources) project proposed a QA model of seven criteria: 1) input, 2) reviewing, 3) copyright, 4) technical, 5) validation, 6) feedback, and 7) evaluation. These criteria are very similar to those adopted by Leicester University (2010) which is a partner with DeMontford University and Northampton University in this JISC project.

JISC has also published the *The JISC Open Educational Resources infoKit quality considerations*[4] (Lou McGill, published: 9 December 2010, Updated: 17 September 2014). This guide contains a range of detailed criteria for consideration. Some key criteria (modified by *OPENLearn*[5]):

1) Content: Can the content be described as follows? Relevant, accurate, appropriate level of detail, objective, current and jargon-free.

[4] https://www.jisc.ac.uk/guides/open-educational-resources

[5] https://www.open.edu/openlearn/education/creating-open-educational-resources/content-section-4.2

2) Reputation: reputation of the author/institution with a list of references if appropriate.
3) Non-commercial: Free of advertising.
4) FIT for purpose: Does it fit my chosen pedagogy? Learning outcomes are stated and match with the learner's needs.
5) Engaging and interactive.
6) Levels defined: Set at the appropriate level, with any prerequisite skills/ understandings stated.
7) Time defined: The time required to study is stated and equates to the importance of the learning outcomes achieved.
8) Usability: How does it measure up to usability/ accessibility standards? Easy-to-use and well presented, with clear navigation.
9) Accessibility: Accessible for users with disabilities and conforms to accessibility guidance e.g. the UK Equality and Human Rights Commission's general web accessibility guidance.
10) Re-usability: How genuinely re-usable is it? A standalone resource that can be reused in different contexts.
11) Interoperability: Robust and functional, and works on different browsers/ platforms.
12) Authorship/ Rights/ Licences: Rights are fully documented, e.g. does it carry a clear Creative Commons or other rights declaration? Is it OK to re-use it? Are there any conditions?

Another QA model is *The Achieve OER Rubric* (Achieve, 2011) that is offered to users of the OER Commons repository in the USA in order for them to evaluate the OER resources they find in the database. Achieve has developed eight rubrics in collaboration with leaders from the OER community based on specific QA criteria which are classified in eight dimensions: 1) degree of alignment to standards (in this case, Common Core State Standards); 2) quality of explanation of the subject matter; 3) utility of materials designed to support teaching; 4) quality of assessment materials; 5) quality of technological interactivity; 6) quality of instructional and practice exercises; 7) opportunities for deeper learning; and 8) assurance of accessibility (Figure 4). The official site [6] includes a handbook, videos and set of presentation slides that give instructions on how to apply the rubrics and use the online tool, as well as examples of what different ratings mean under each rubric.

[6] https://www.achieve.org/achieve-oer-rubrics-training-materials

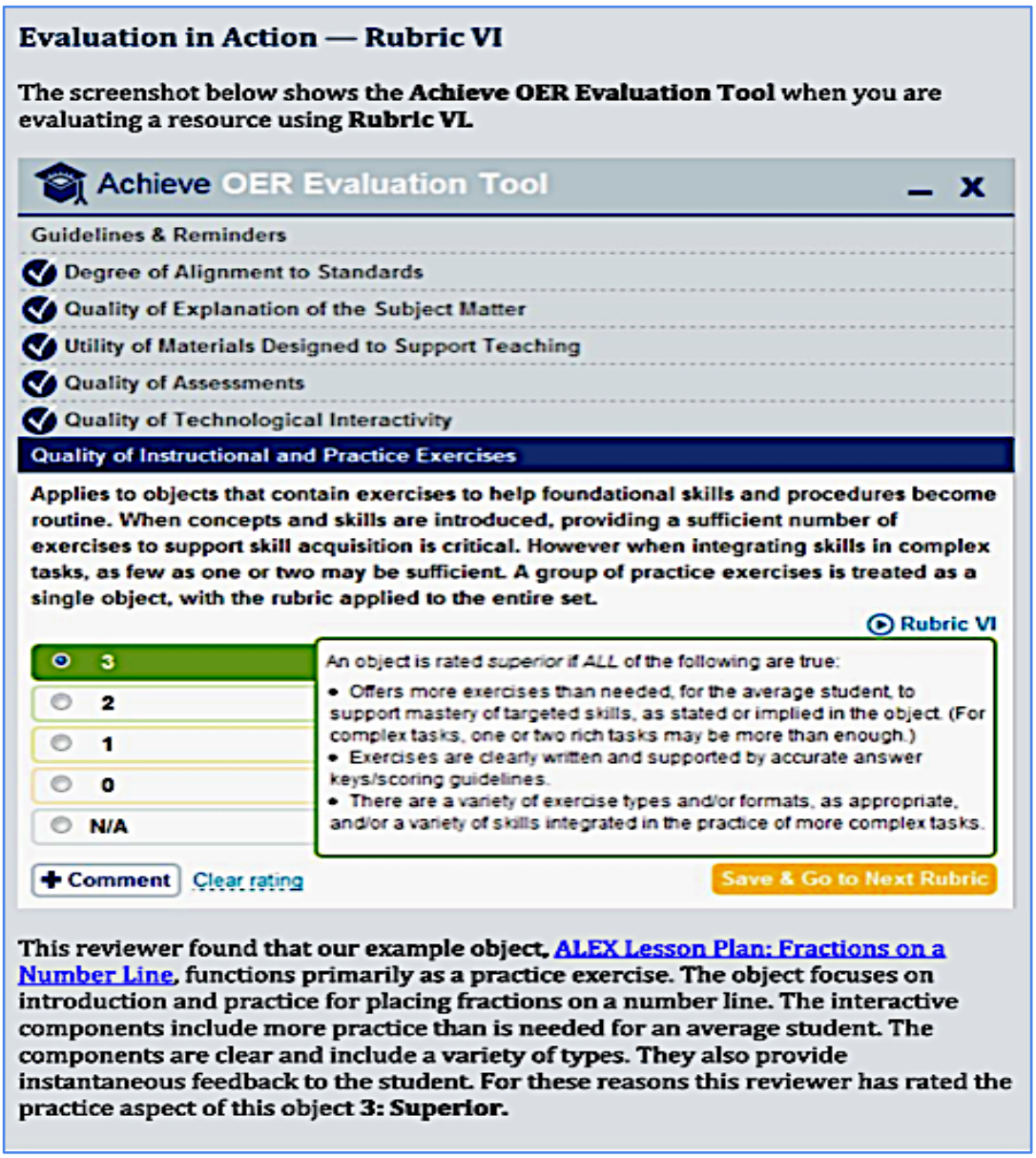


Figure 4. Example of evaluation in action Rubric VI, *Achieve OER Evaluation Tool Handbook*

Additionally, the "Open Textbook Review Criteria" is another QA quality model for OERs which was developed by the *BCcampus* [7]of the University of British Columbia and supported by the *Open Textbook Network*[8] and the University of Minnesota [9] and it was adapted from the American Library Association Choice Selection Policy. It proposes the following QA criteria: *1) Comprehensiveness; 2) Content Accuracy; 3) Relevance Longevity; 4) Clarity Consistency; 5) Modularity; 6) Organization Structure Flow; 7) Interface; 8) Grammatical Errors; 9) Cultural Relevance* (https://open.bccampus.ca/bc-open-textbooks-review-criteria/). This QA model is adopted by other OER databases such as Saylor.org in order to evaluate their resources but also by many other universities. The BC campus also offers tools to facilitate the evaluation

[7] https://open.bccampus.ca/
[8] https://open.umn.edu/otn/
[9] https://open.umn.edu/opentextbooks/reviews/rubric

process made by all the users such as the *Self-publishing guide*, the *OER Student Toolkit,* the *Faculty OER toolkit* and the *Accessibility toolkit*[10].

A different framework from the others is *The OERTrust Framework* (Almendro & Silveira, 2018) which is a framework for OER validation and testing process, that takes under consideration both versioning and remixing features (Figure 5). *OERTrust* is based on the principles of validation and testing that come from the Software Engineering area and relies on fuzzy logic to define the importance and influence of different tests to each kind of OER. It considers 3 basic QA dimensions and proposes a set of 17 different QA tests and each type of test is directed to the verification of certain types and characteristics of OER such as usability test, user acceptance test, performance test, etc.

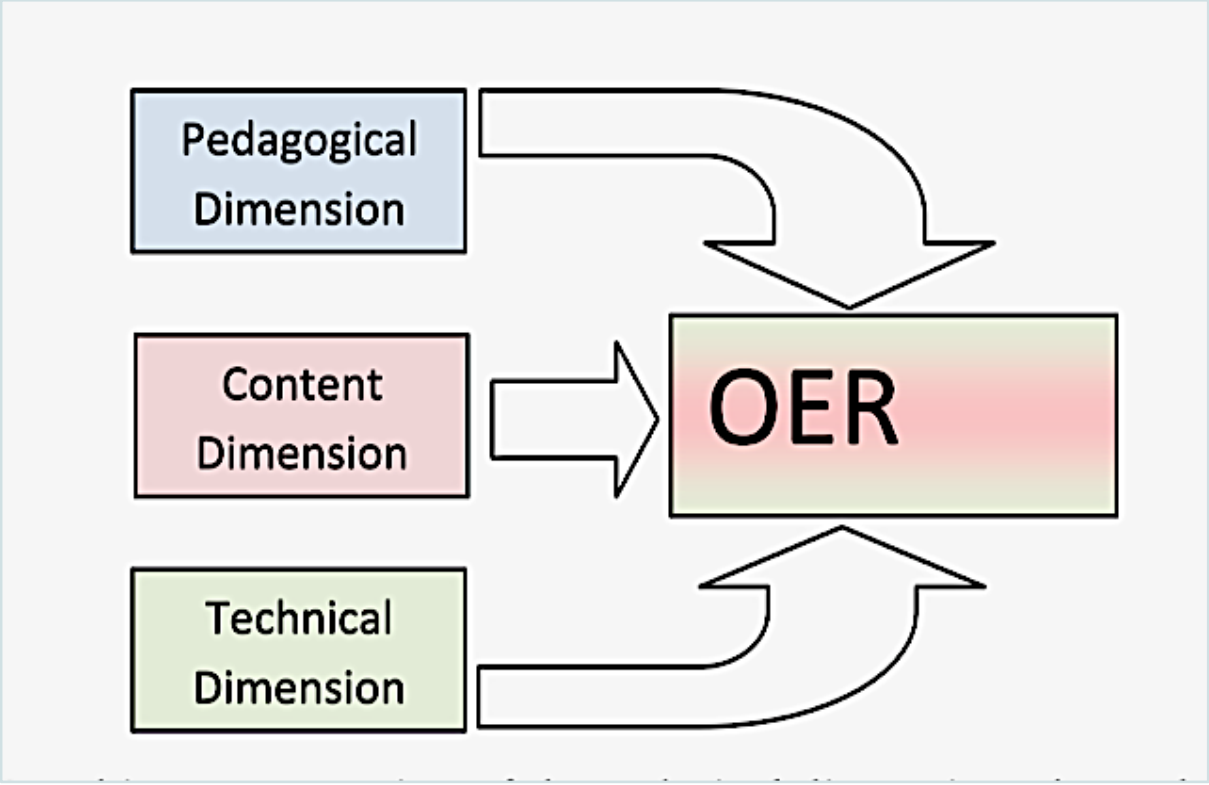


Figure 5. Graphic representation of the technical dimension, the pedagogical dimension and content dimension (Almendro & Silveira, 2018).

The multi-award winning *"OpenLearn"* OERs repository (https://www.open.edu/openlearn/) of the The Open University of UK attracts more than 10 million visitors each year from around the World[11]. It is of high quality and users trust it. This initiative is a good example of a top-down controlled QA model as it offers clearly articulated quality processes and identified roles (authors, editors, technical support, quality assurers, etc.). It proposes the following eight QA criteria for creating open educational resources or evaluating a good OER (Figure 6):

[10] https://open.umn.edu/otn/
[11] https://en.wikipedia.org/wiki/OpenLearn

1) findable – it can be in multiple locations
2) clearly described
3) clearly licensed (normally through Creative Commons) from a source you trust
4) easy to modify
5) free-standing – it does not assume knowledge of other resources
6) free of copyright content
7) being used by/recommended by people like you
8) imperfect – it just needs to work for you.

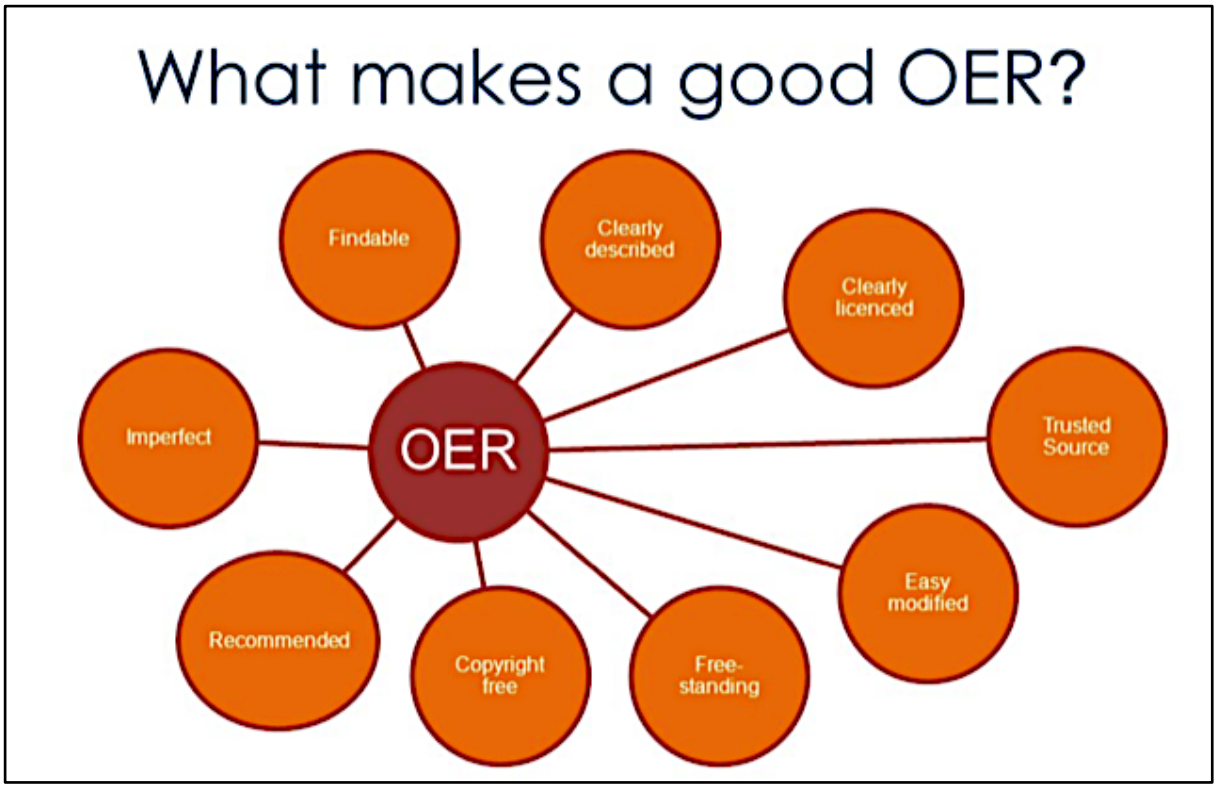


Figure 6. Open University, OpenLearn, Creating OERs [12]

Another interesting QA framework for the OERs is *The Model for Co- Creation and Evaluation of Inclusive and Accessible Open Educational Resources* (IA-OERs) towards the perspective of the IMS caliper analytics framework (Avila et al., 2016). The model was applied by 72 teachers of primary and secondary schools from different European countries and specialized in fields such as design, pedagogy, informatics, and psycho-pedagogy, who co-created and evaluated IA-OERs. The evaluation of the IA-OERs (CO-CREARIA in Spanish) covered two aspects: Web accessibility and quality and it is based on the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) methodology. The following Table 1 presents in detail the QA criteria as far as the quality of OERs is concerned.

[12] https://www.open.edu/openlearn/education/creating-open-educational-resources/content-section-3

Question	Criteria
1. Content quality	Veracity, accuracy, balanced ideas, and appropriate level of detail.
2. Learning goal alignment	Learning goal alignment regarding to: activities, assessments, and learner characteristics.
3. Feedback and adaptation	Adaptive content or feedback according learner inputs or learning styles.
4. Motivation	Ability to motivate and engage learners.
5. Presentation design	Design of auditory and visual information for enhanced learning and efficient mental processing.
6. Usability	Ease of navigation, predictability, and interface help features.
7. Reusability	Capacity to be used in different learning settings and with diverse learners.
8. Standards compliance	Compliance of international standards and specifications.

Table 1. Quality Evaluation questions (IA-OERs) (Avila et al., 2016).

Another interesting framework is the *OPEN FASUCICESA-CPT* (Find, Access, Store, Use, Create, Interact, Collaborate, Evaluate, Share, Abandon – Cost Place Time) Framework which evaluates the level of Openness of OERs and MOOCs. (Economides & Perifanou, 2018). This framework describes the extent to which a User is free to Act Openly (freely) on an OER. In addition, it considers the freedom from Cost, Place and Time (Figure 7).

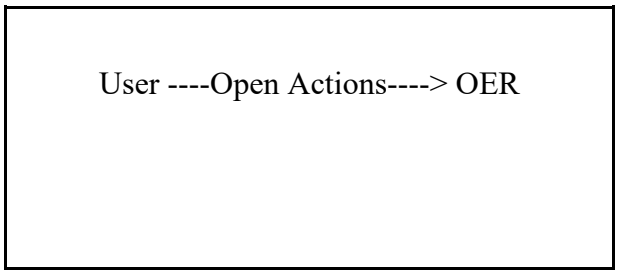


Figure 7. User performs Open Actions on an OER.

This framework enables users to evaluate the extent to which the user can openly (freely) Find, Access, Store, Use, Create, Interact, Collaborate, Evaluate, Share, Abandon an OER taking also under consideration the extent to which there is openness (freedom) from: 1) Cost, 2) Place, 3)Time.

1.2.3 QA criteria or frameworks in Language Learning context

There are also few cases of QA models proposed to language educators and learners for the selection of language OERs or for using specific language OER databases.

Pavlenko et al. (2019) recently proposed a set of QA criteria for the selection of OERs for language teachers and learners. The authors indicated that free online resources could be selected based on the following criteria:

a) the resource should be convenient for an individual and independent *usage*;

b) the resource should be available at any *time*;

c) the resource should be *user-friendly* and *easy to navigate*;

d) the resource should be able to *enhance the greater number of the components of a foreign language;*

e) preferably, the resource should have *a mobile app*;

f) preferably, the resource should be *available online as well as offline*.

Krajcso (2016) has also proposed a QA model for OERs in the context of Language Learning based on literature review. In the context of OERs she includes learning objects, tools and LMS. She classified all the criteria in the following 4 main categories which may partly overlap each other: 1) *Content;* 2) *Methodology;* 3) *Design;* 4) *Tech.* More analytically:

Content: The content must be chosen on the basis of:

A. context of learning (educational or professional context);
B. target group (its specific conditions, interests, knowledge, etc.);
C. educational purpose;
D. media and tools should be oriented towards learning.

Methodology: The methodology applied should focus on:

- goal;
- task;
- content;
- specifications of the learner;
- context.

Design:

- user-centric;
- appropriate and didactically meaningful chosen (oriented towards educational purposes, context, learners' specifications and content);
- functional, logic and focused;
- consistent, coherent and complementary;
- integrated in a learning motivating way;
- ergonomic (e.g. colour contrasts are pleasant);
- aesthetic (attractive to the learners);
- high-quality;
- not in any way harmful to anybody;
- the written or oral text is well readable, audible;
- appealing and clear layout.

Tech:

- functionality;
- intuitive usage, the user should feel a certainty by using ICT;

- support (information on different technical possibilities, user guidelines, contact);
- clear, consistent and user-friendly regarding structure, terminology of the tools and their use (e.g. navigation);
- continuity regarding learning objects, tools, LMS;
- user-friendly surface (as simple as possible);
- possibilities of individual, cooperative, synchronous and asynchronous learning/work on content (e.g. groupware);
- different communication channels (chat, mailing list, video conferencing, news-groups);
- possibilities for upload, store, edit, reuse and transfer of different learning materials;
- possibilities for learning assessment, automatic documentation of achieved goals.

Another case is the Quality Assurance model of OER Repository COERLL - The Center for Open Educational Resources & Language Learning.[13] [14] COERLL resources can be used in the classroom to help students meet the state and national proficiency standards. It provides form templates and models and activities as examples of how to integrate the resources into lesson plans that reflect the standards offering a full open training course (https://utexas.instructure.com/courses/1097558). They support that peer review is important because it is one way to verify that open educational resources are high quality and have been vetted by others in the field. It is a way of showing that OER development is a valid scholarly pursuit. For this reason, COERLL doesn't have any specific process or criteria for a peer reviewer of language learning materials to follow. What they recommend is that the language OER creators come up with their own process and find their own peer reviewers among their community of language educator colleagues. They recommend that language teachers turn to professional networks to find peer reviewers (Willey, 2008). COERLL has been peer-reviewed by the MERLOT reviewers' team and also by the users and got the distinction "MERLOT classic".

[13] https://www.coerll.utexas.edu/coerll/oer
[14] https://utexas.instructure.com/courses/1097558

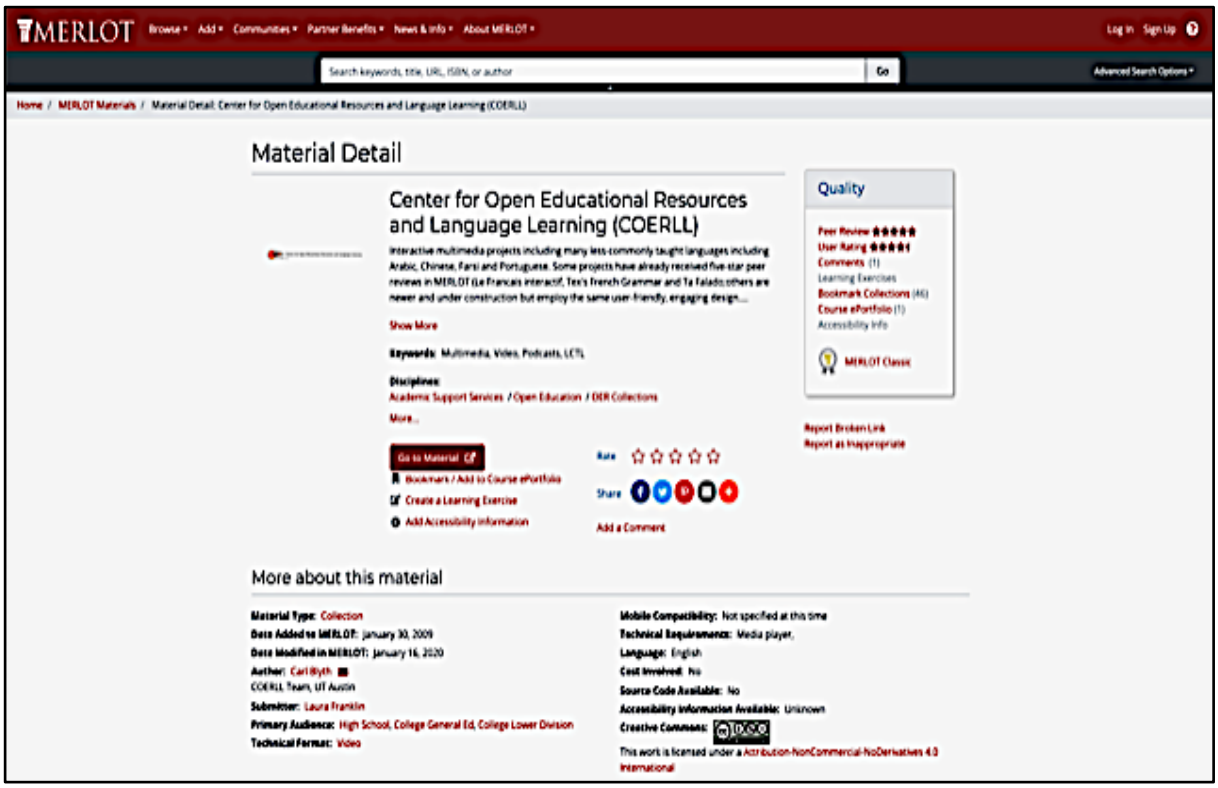


Figure 8. COERLL's evaluation by MERLOT[15]

Other similar cases described earlier are the QA models of peer review adopted by system MERLOT, CURRIKI, and KLASCEMENT.

The European Center of Modern Language (ECML) offers the inventory of freely available online tools and open educational resources for language teaching and learning developed by the ICT-REV project[16]. The inventory contains a list of tools and OERs that have been evaluated with specific criteria in mind (Figure 9). More concretely, the four QA criteria are the following:

1) *Added value:* What is the potential of the tool for achieving learning objectives?
2) *Usability:* How easy is the tool to use and to adapt to your teaching context?
3) *Interactivity:* What possibilities does this tool offer for communication and collaboration amongst learners?
4) *Technical requirements:* In order to use the tool, what are the important technical aspects to consider in terms of compatibility of operating systems, equipment, browsers, etc.?

These criteria have been developed by teachers for teachers and provide essential information so that all language teachers can select appropriate applications and use them with their learners. They can search the inventory through the use of filters or keywords. All evaluated tools are freeware or have a free version, and many of them are presented with specific

[15] https://www.merlot.org/merlot/viewMaterial.htm?id=363999

[16] https://ict-rev.ecml.at/

examples, suggested and tested by teachers, on how any language teacher could use them in his/her classroom. New tools are added regularly.

Figure 9. "The Inventory of ICT tools and OERs" (ICT-REV project, ECML)[17]

The Inventory platform also offers an advanced search engine to find specific tools (that can support language teachers) such as type of interaction, skills, content, principal functions (Figure 10). Teachers can rate, leave their comments about the OERs and they can also share their own material that will be reviewed by the ECML team in order to be published on the platform. It is clear that this is a QA model of a top down and bottom up approach.

[17] https://www.ecml.at/ECML-Programme/Programme2012-2015/ICT-REVandmoreDOTS/ICT/tabid/1906/Default.aspx

Figure 10. The search engine filters of
"The Inventory of ICT tools and OERs" (ICT-REV project, ECML)

Another model of quality assurance indicators for openness of language OERs is the ORTOLANG QA model. ORTOLANG as it is also aforementioned is a French Infrastructure for Open Resources and TOols for LANGuage that aims to construct a network including a repository of language data (corpora, lexicons, dictionaries etc.) and readily available, well-documented tools for language processing.

Their approach is to promote the use of the language OERs published in their platform while ensuring mandatory legal protections (copyrights, intellectual property, license and distribution rights). They have adopted a QA model of 4 levels of openness of their OERs:

(a) *This First Variety Of Resource,* of which the depositors must have all the rights (copyrights and editor rights) isn't restricted. The access to their sources can be done by simple download and doesn't require accepting a licence. The resource can be downloaded, re-used, transmitted, modified without restriction.
(b) *Downloadable Resources after accepting an "open resource" licence*: Their sources are downloadable after accepting a free software or «CreativeCommons» licence: free use for research and teaching, bibliographic referencing and mentioning the depositor and the host. site required, no redistribution to third parties, no business.
(c) *Resources Under rights, accessible only via specific software.* This third mode only provides right of use via the web. This access can be entirely open, as it is the case for TLFi[18]. It can also be filtered (by subscription - free or not): This is typically what is implemented with FRANTEXT, which mainly contains text under copyright and editor rights for use Limited To Research And Teaching.
(d) *Resources Under Rights only accessible by convention.* This last Mode applies resources which can be developed by an editorial or industrial partner, nevertheless within the framework of specific partnership, it enables resource sharing.

Based on the literature review and the selected examples presented, it is clear that there is a big variety of frameworks that propose QA indicators for OERs or evaluation criteria for different types of OERs (i.e. open learning objects, e-courses, e-learning tools, etc). They also offer specific evaluation tools that can address QA needs of different groups such as from the institution perspective, the learner's perspective, the teacher's perspective, etc. It is also clear that there are not many tools of quality assurance (QA) guidelines for OERs that were created specifically for the evaluation of language OERs. The following Table 2 presents all the OERs quality frameworks and models that were identified during our research based on our selection criteria.

OERs QUALITY FRAMEWORK/MODELS			**Foreign Language Context**
1.	TIPS Framework -Version 2. -The Commonwealth Educational Media Centre for Asia	Kawacki (2014)	x
2.	Quality Assurance model for Language OERs	Krajcso (2016)	√
3.	Quality Assurance model for OER Repositories	Atenas, Havemann (2013)	x
4.	Quality Assurance model of OER Repository COERLL - The Center for Open Educational Resources & Language Learning	Wiley (2008)	√
5.	The socio-constructivist quality model (QORE)	Vloidou & Constantinescu (2013)	x

[18] www.atilf.fr/tlfi

6.	MASECO multi-agent system	Vladoiu & Constantinescu (2014)	x
7.	Learner Generated Content (LGC) Quality Framework	Pérez-Mateo et al. (2012)	x
8.	The Achieve OER Rubric of OER Commons repository in the USA	Achieve (2011)	x
9.	Peer review MERLOT Model, The Multimedia Educational Resource for Learning and Online Teaching, https://www.merlot.org/merlot/WorldLanguages.htm	California State University. (1997)	√
10.	TIGER Transforming Interpersonal Groups through Educational Resources	JISC (2011)	x
11.	The European Schoolnet OERs/OEPs QA Model	Vuorikari (2003)	x
12.	QA Model for UKOER Programme (2009-2012), JISC/HE Academy The JISC Open Educational Resources infoKit	McGill (2012)	x
13.	Open Transferable Technology-enabled Educational Resources (OTTER) project Project“ OER mix framework” OTTER Project	Leicester University, (2010), Nikoi & Armellini (2012)	x
14.	Classification of a collection of 20 QA model cases	Camilleri & Tannhäuser (2012)	x
15.	Essential Quality Standards 2.0 for online courses.	Alberta University (2014)	x
16.	The OER Evaluation Metric (OEREM)	Hurt et al. (2014)	x
17.	Learning Object Review Instrument (LORI),	Belfer et. al. (2002, 2007)	x
18.	OPEN FASUCICESA - CPT Framework	Economides & Perifanou (2018)	x
19.	The OERTrust Framework	Almendro & Silveira (2018)	x
20.	K-12 OER quality assurance factors.	Kimmons (2015)	x

21.	Community-based QA model can be seen in the Community College Open Textbook - CCCOER/CCOT initiative https://www.cccoer.org/	Conole (2012)	x
22.	Model for Co-Creation and Evaluation of Inclusive and Accessible Open Educational Resources (IA-OERs)	Garzon et al. (2016)	x
23.	QA criteria for free online resources in foreign language context	Pavlenko et al. (2019)	x
24.	"Open Textbook Review Criteria"	Bcampus by British Columbia University, University of Minnesota	x
25.	"OpenLearn" QA Criteria	Open University	x
26.	QA Model of the OERs database "Curriki"	Non -profit organisation: Sun Microsystems (McNealy, 2004)	x
27.	QA Model of the Language OERs database "ORTOLANG" (Open Resources and Tools for Language)	ORTOLANG (EQUIPEX project, 2012), Pierrel et al. (2016)	√
28.	QA Model of the Language OERs database "KLASCEMENT" of Flemish teachers	Flemish Ministry of Education and Training (1998)	√
29.	QA Model of OERs database by "OER4Adult" Project	Nie et.al (2013)	x
30.	QA Model of e-learning quality based on an analysis of several dimensions in a number of quality models for e-learning.	Frydenberg (2002)	x
31.	OER4Adult project (http://oer4adults.org) in the context of the Policies for OER Uptake - POERUP project	Falconer et al. (2013)	x

Table 2. OERs Quality Frameworks/Models

T2. Selection of known OER Quality frameworks/ Criteria

2.1 Introduction

In this section we aim to present the research methodology that the consortium has adopted in order to define the main quality assurance criteria for language OERs which will form the base for design of OPENLang Quality Framework for OERs.

2.2 Research Methodology

In order to select the OER's Quality frameworks/Models that fit to our purpose we have defined the following specific criteria:

1) *Institutions'/organisation's reputation:* QA frameworks or models of OERs provided/adopted by OER databases of well-known and prestigious universities and organisations were preferred;
2) *Popularity:* QA frameworks or models of OERs cited by many authors in literature; number of users and creators that have applied these QA criteria;
3) *Validity/Compliant to Standards:* QA frameworks or models of OERs which have used quality criteria and processes which are clearly defined and articulated, such as Classroom testing;
4) *Clear description of QA criteria or dimensions:* QA criteria and processes are clearly defined and articulated, simple and easy to understand;
5) *Easy to use:* QA criteria and processes are simple and easy to be implemented/adopted by the users or creators;
6) *Language Learning subject oriented:* QA criteria and processes designed or applied specifically for language OERs.

We have combined two research methods: A literature review & a desktop-based research. We define literature research as the research that is focused on acquiring theoretical knowledge about a concept or topic, whereas we use desk research in order to gather facts and existing research data that help to answer your research question.

First, we selected specific keywords/search terms. We focused on terms from our scope of work and theoretical framework. More concretely, we have used one keyword or several keywords in combination i.e. *OER, Open education, QA processes frameworks, models, indicators criteria, quality in OER databases, QA in OER rubrics, QA OER guides, toolkits, OERs quality and projects, initiatives, networks,* etc. We have identified first a number of research papers which were systematically organised in the reference manager *Mendeley*.

Then, we searched for several relevant sources that could contain useful information/data. First, we searched for a list of projects that focused on the topic of Open Education, OERs, Open Education Practices (OEPs), Open Databases, Quality in Open Education, etc.

Following this step, we identified a list of known OER databases and, then, we explored each one in order to identify the QA model that each OER database proposed to users and creators. One interesting research finding at this stage was that only a few QA models were very popular and were adopted by many universities, such as the cases of the "*Achieve"* and the *"Open Textbook Review Criteria" QA models for OERs*. A research finding that was also interesting, was the lack of interactivity between users and the open resources. Even though many OER databases were popular and provided tools for communication, interaction and review features i.e, rating, commenting, etc. there was little feedback provided by the users on the shared OERs.

Our next step was to select the relevant information that best suited our scope of work and for that reason we created 2 tables. In the first table-rubric we have included all the QA frameworks and models that we have identified in our research based on the six (6) concrete criteria that we have defined. We have identified and selected 31 QA frameworks as presented above in Table 2 that fulfilled at least three (3) of the abovementioned evaluation criteria. Then, we tried to identify if there were any QA models or frameworks that were created or were adopted exclusively for language OERs.

The following step was to create another Table 3 (Check Appendix 1) in which we listed twenty six (26) clear QA criteria/indicators for OERs provided by the selected QA models and frameworks for OERs.

The last step was to gather more than 200 QA criteria/indicators and to continue with the process of data analysis. Based on their concept/meaning, emerged the following five (5) different thematic clusters: 1) *Content* (Fig. 11)*;* 2) *Pedagogy* (Fig. 12)*;* 3) *Design* (Fig. 13); 4) *Usability* (Fig. 14); 5) *Openness* (Fig. 15); 6) *Technology* (Fig. 16).

1. Content

Figure 11. Thematic cluster 1: *Content*

2. Pedagogy

Figure 12. Thematic cluster 2: *Pedagogy*

3. Design

Figure 13. Thematic cluster 3: Design

4. Usability

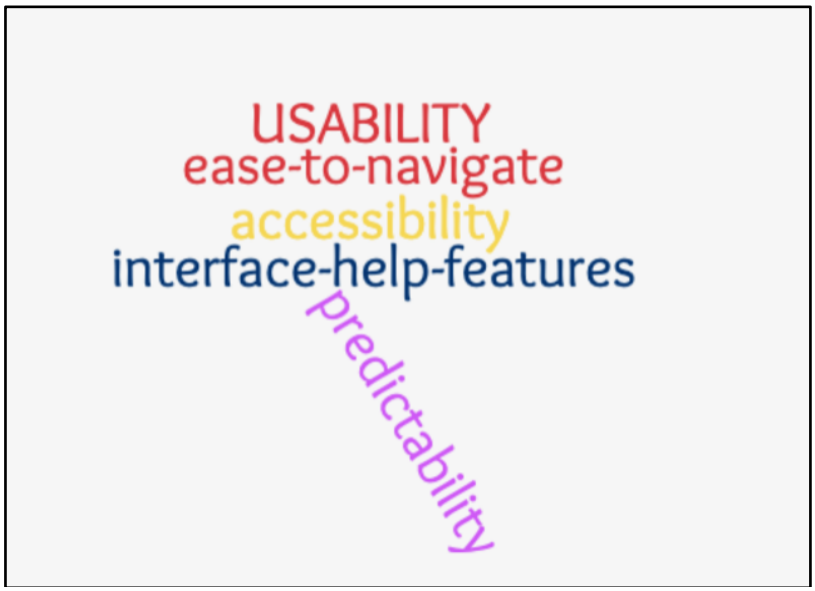


Figure 14. Thematic cluster 4: Usability

5.Openness

Figure 15. Thematic cluster 5: Openness

6.Technology

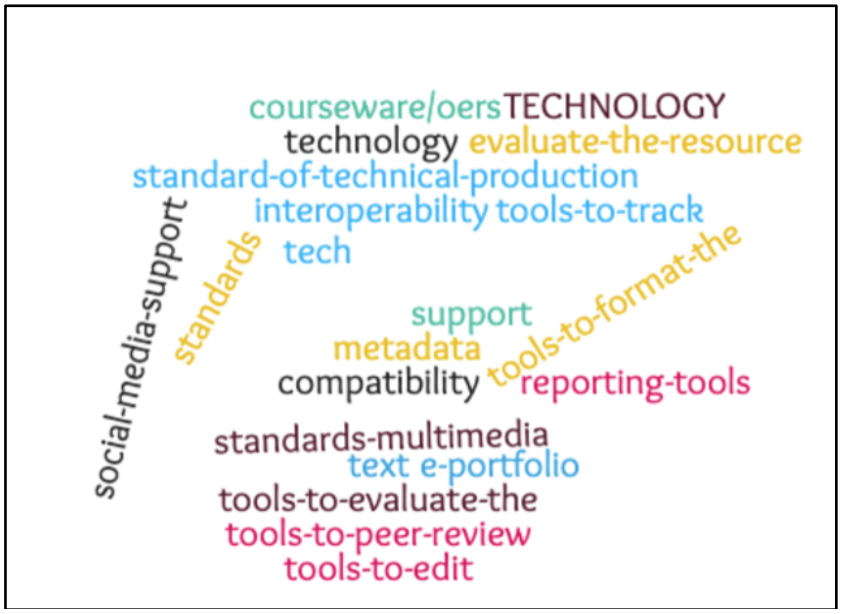


Figure 16. Thematic cluster 6: Technology

After the first stage of the data analysis, we chose the most representative words that described in the most clear and simple way the specific QA criteria excluding the less used words. Based on these research findings and the literature and desktop review findings, we have created a QA framework for Language OERs.

T3. Creation of the OPENLang Quality Framework and the Quality Tool for Language OERs

3.1 Introduction

In this section we will present the OPENLang Quality Assurance (QA) Framework for Language OERs which we developed based on our literature and desktop research data analysis. We have also created the OPENLang OERs Evaluation Tool which has the form of a rubric and aims to enable language teachers to evaluate the language OERs that either want to use, create or share with other language teachers in the OPENLang Network community and other OERs databases or communities. This framework and the OPENLang OERs Evaluation Tool will be also integrated into the toolkit that will be produced later in the project and it will be used as training material during the training MOOC for Language teachers but also as a self directed training for language teachers after the lifetime of the project.

3.2 The OPENLang Quality Framework for Language OERs

Our initial research motivation to explore the area of quality assurance (QA) of language OERs emerged mostly by the need to ensure the quality of the OERs that language teachers as members of the OPENLang Network community will share or create. The OPENLang Network is supported technically by the Knowledge Media Institute (KMI) and scientifically by all members of this consortium. It envisages to become a powerful community of language teachers that will share quality language OERs in order to support each others teaching work but also to offer open language learning material of high quality to the Erasmus+ mobility learners who need to study and practice different european languages and explore different european cultures.

Literature and desktop research revealed that there are no common European policies regarding the QA of language OERs. In fact, there is a variety of QA approaches, either for OERs and databases of OERs or generally for online distance courses of massive or smaller scale or for E-learning (courses, materials). It is clear, that there is very limited research (Pulker & Calvi, 2013, Economides & Perifanou, 2018; Pavlenko et al., 2019) on quality criteria of thematic OERs such as language OERs which address specific pedagogical needs.

Another issue that has emerged from our literature and desktop research is that despite the promised benefits of OERs, there is little evidence of OERs use, sharing or adoption by teachers. In fact, teachers hesitate to share their teaching material in OERs repositories even though it is common to share their teaching material and practices with their colleagues at school or at university. There is though a part of teachers who prefer to use materials they have created themselves for several reasons such as: a) it's time demanding to repurpose third party

materials; b) there is lack of trust in others' materials (Tomlinson, 2011); and c) there is always the fear of 'plagiarism'. Teachers feel uncomfortable about the idea that the materials they use in their classroom may have been seen somewhere else by their students (Lane & McAndrew, 2010).

These reasons apply also to open educational online materials. There is though evidence that OERs are used in teaching and learning practice, but it is not so visible to those outside the classrooms. White & Manton (2011) use the metaphor of an iceberg to explain that the majority of reuse takes place in contexts that are not publicly visible and this hidden part represents the vast majority of teaching and learning activity that takes place at the level of individual practice. On the other hand, the top of the iceberg represents the visible production and use of licensed resources by institutions.

In the language learning context, recent research (Perifanou et al, 2015) has shown that language teachers or language learners face extra barriers if they want to find language OERs. They need to browse specific directories to access OERs of good quality, but many resources do not appear in such directories, especially those for less spoken languages. Usually, the high quality material is offered only in the most common European Languages (i.e. EN, GE, FR, SP) with exception for less common European languages. To that end, the Erasmus+ KA2 LangMOOC project developed open massive language courses for less spoken languages i.e. Italian, Greek and Norwegian. There are also other initiatives that support European languages OERs and open repositories for languages (i.e. *Linkedup project-Online Repository for Language OER, Langoer, FAVOR,* etc.). Another barrier that language teachers often face when they search for teaching resources is that many OER repositories don't provide a variety of metadata. Due to this fact, the system of the repositories fails to track and provide easily the educational resource that teachers search for. Finally, the fact that licenses are seldom specified in OER databases doesn't help anyone use or reuse educational resources.

OERs' movement philosophy supports that the exchange of open educational content can open opportunities for collaboration on adapting content in local languages (UNESCO, 2019). According to Tuomi, 2013, OERs enable new forms of collaboration and material development, thus transforming social interactions, methods of production, and the possibilities for individual development and participation. Borthwick and Gallagher-Brett (2014) observed language teachers who took part in the *FAVOR* (Finding a Voice through Open Resources) project funded by *JISC*. Teachers created new OERs and reflected on existing teaching resources as open content online resources collaboratively with other teachers. The research revealed that the most motivating aspect for the teachers was the social and collaborative nature of open working. Beaven (2014) found that teachers who engage with OERs for language teaching show confidence in judging the content of a resource and can repurpose learning activities effectively to fit the course they are teaching, rather than trying to adopt fixed resources that do not suit their teaching styles or goals.

This short literature analysis reflects an important problem: OERs are not yet immersed largely in the learning and teaching process yet and quality language OERs are still not easy to find to use because QA policies are not clear and language teachers they are not yet well trained to use, share and repurpose their teaching material.

We hope that language teachers will join the OPENLang Network community and will take the opportunity to explore how important is the value of collaboration, co-creation, sharing and repurposing open language learning material of high quality. The OPENLang OERs

Quality Framework and the Quality Tool for Language OERs as well as our OER toolkit will be freely accessible to all the language teachers who will join our community and our OER training courses. More information about the OERs framework and the quality tool are presented in the following subsections.

3.2 Research motivation behind the creation of the OPENLang Quality Framework and the Quality Tool for Language OERs

The OPENLang Quality Framework for Language OERs was inspired by several frameworks (i.e. Achieve, 2011; Kawacki, 2014 Economides & Perifanou, 2018; Krajcso, 2016, etc.). Its main components emerged by the process of collecting and grouping more than 200 quality assurance (QA) criteria proposed by almost 30 QA frameworks and models mainly for OERs as was described in the previous subsection.

The outcome of this research process was the development of the OPENLang Quality Framework for Language OERs (Figure 17) which consists of 6 different dimensions: 1) Content; 2) Pedagogy; 3) Design; 4) Usability; 5) Openness; and 6) Technology.

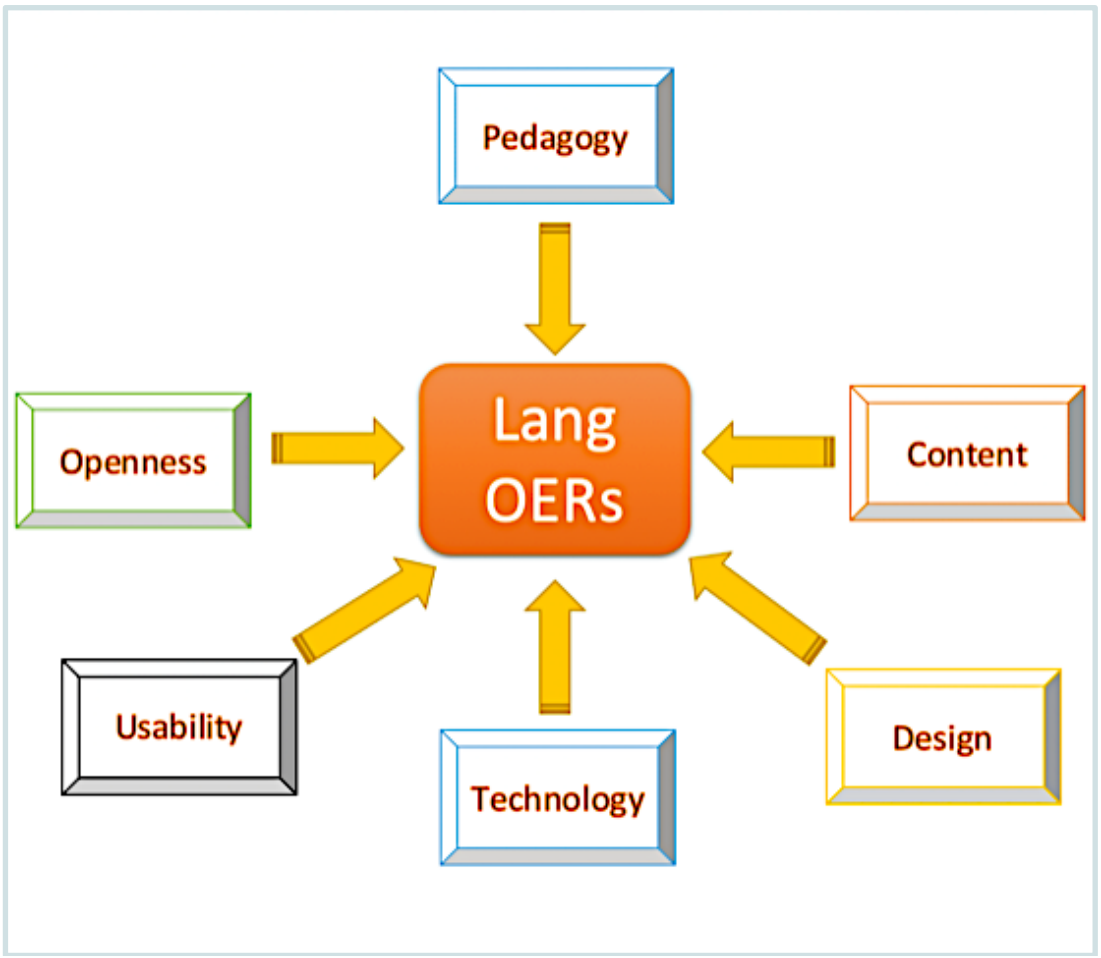


Figure 17. OPENLang Quality framework for Language OERs

3.2.1 First Dimension: CONTENT

The first dimension of the OPENLang Quality framework for Language OERs consists of important quality criteria which are connected to the basic characteristics that a language teacher must control before he/she selects the language resources for his/her lessons. The teaching material should fit the linguistic purpose, address the specific learning needs of his/her learners in regards to their target language, their language proficiency, their linguistic and intercultural skills, etc. Furthermore, the content should have basic quality credentials. Teachers should check who is the producer and the provider of the resource and they should make sure that they are credible and they can offer material of good quality that is accurate and correct. Moreover, it is important to choose teaching material that is current and updated, interesting and motivating and for sure authentic and practical. Teachers should make sure that they understand the licenses that are offered in order to be able to update and reuse the teaching resources. It is also useful if the teaching material is connected to relative resources (quizzes, games, etc.).

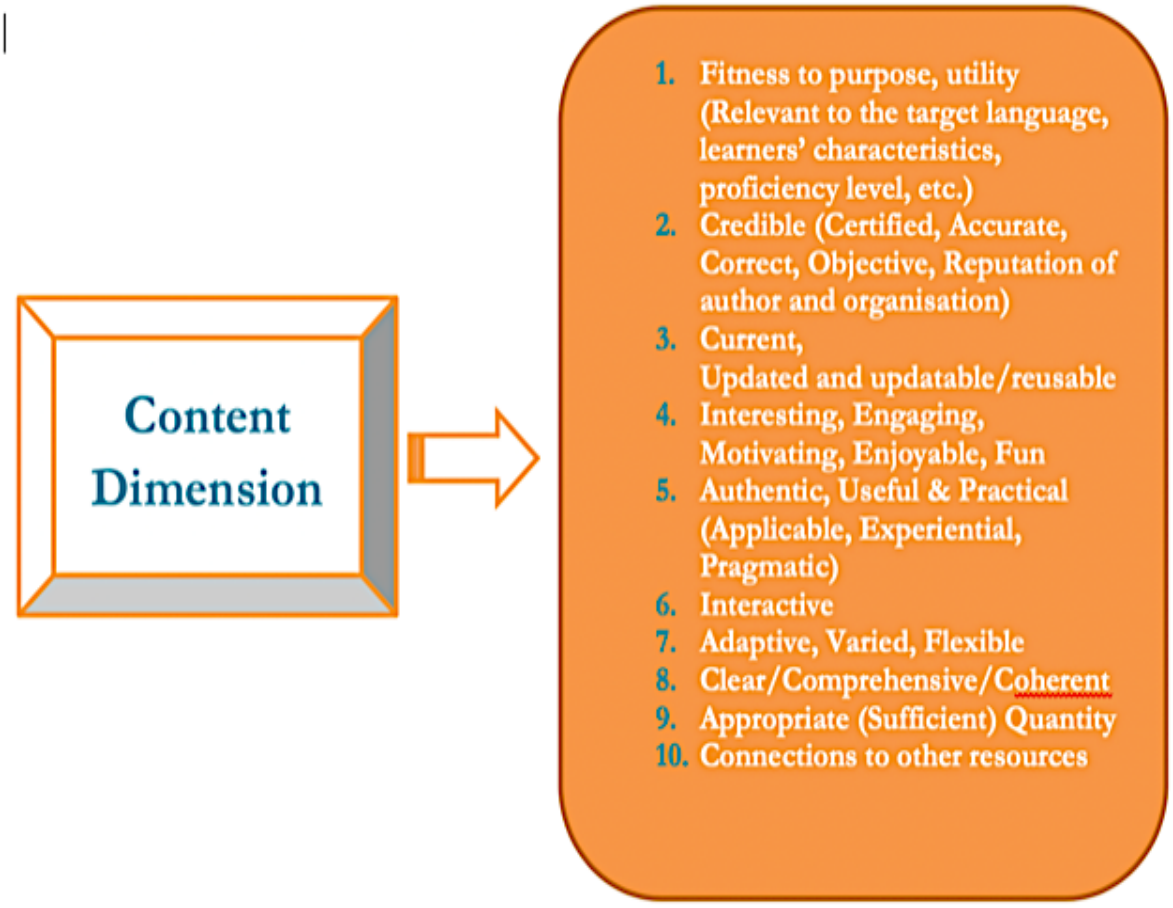


Figure 18. Content Dimension of the OPENLang Quality framework for Language OERs

3.2.2 Second Dimension: PEDAGOGY

The second dimension of the OPENLang Quality framework for Language OERs is pedagogy (Figure 19) and it is one of the most important QA dimensions. An authentic, motivating and adaptable OER can be a valuable teaching tool because it can enable teachers to create highly interactive language activities by adopting interesting teaching methodologies such as game-based learning, task-based learning, role-playing. Generally, the selection of the teaching material should be pedagogy-driven and should intrigue language teachers' creativity and learners' motivation. If the OER is not a learning object, i.e. a grammar activity, but an entire language course, teachers should pay attention to the type of interactions which are supported by the course because high interaction is imperative for a language learning course. Furthermore, it is important to reflect on the type of skills (speaking, writing, reading and listening) which are enhanced and advanced by the OER without forgetting the good activities for grammar and vocabulary are also very important especially for beginners; The flexibility of assessment (peer review, self- assessment, teacher- assessment) is also an important characteristic that need to be controlled in advance by the teacher before adopting an online course but also for an open resource. An automated quiz is helpful to a learner who wants to practice grammar or vocabulary and a wiki- based activity is a good option for peer review activity.

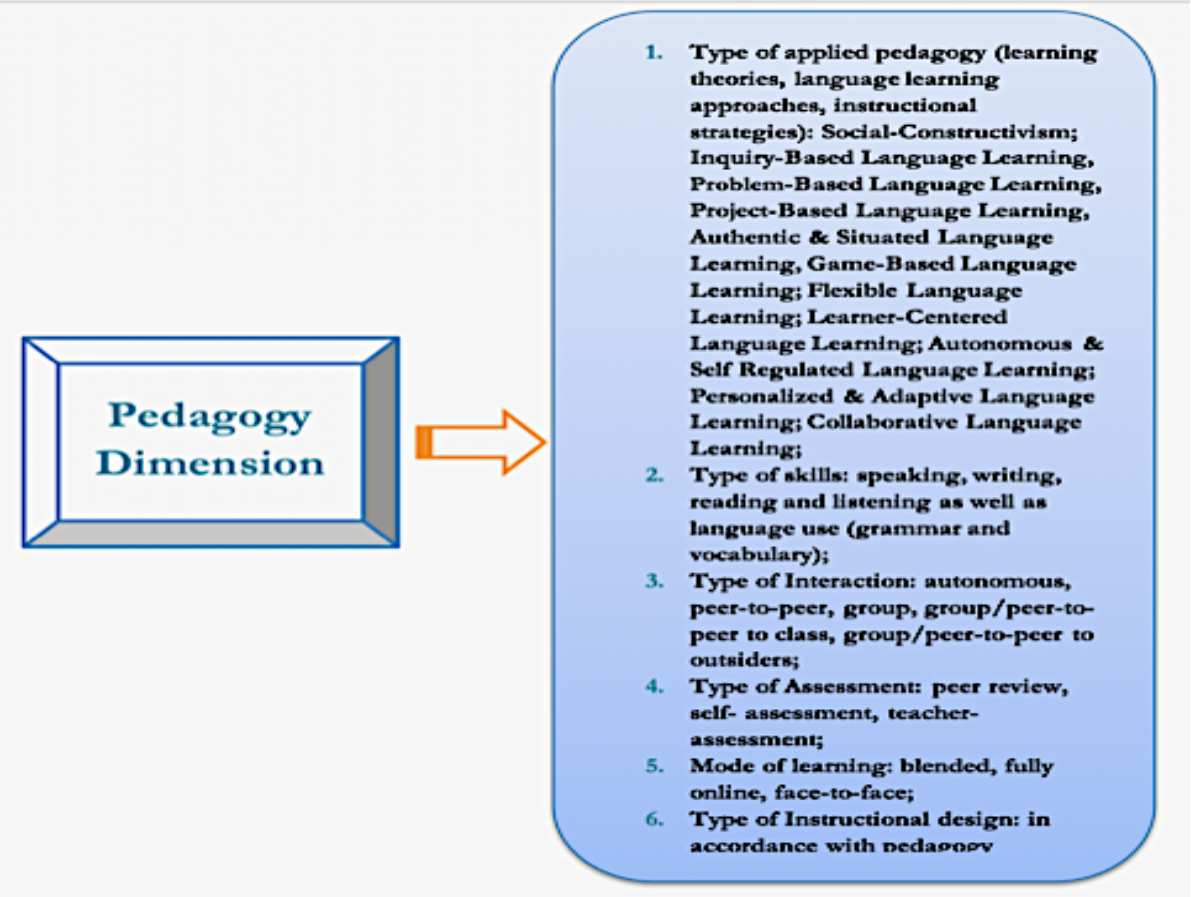


Figure 19. Pedagogy Dimension of the OPENLang Quality framework for Language OERs

3.2.3 Third Dimension: DESIGN

The third dimension of the OPENLang Quality framework for Language OERs is the design (Figure 20). When the aesthetics and the organization of the material or of an online environment is of good quality this can facilitate a lot the language learning and teaching process. The simplest it is, the fastest anyone can understand it. Interactivity and Augmented, Virtual, Immersive & Mixed Reality are characteristics that learners choose often in order to simulate the real time communication.

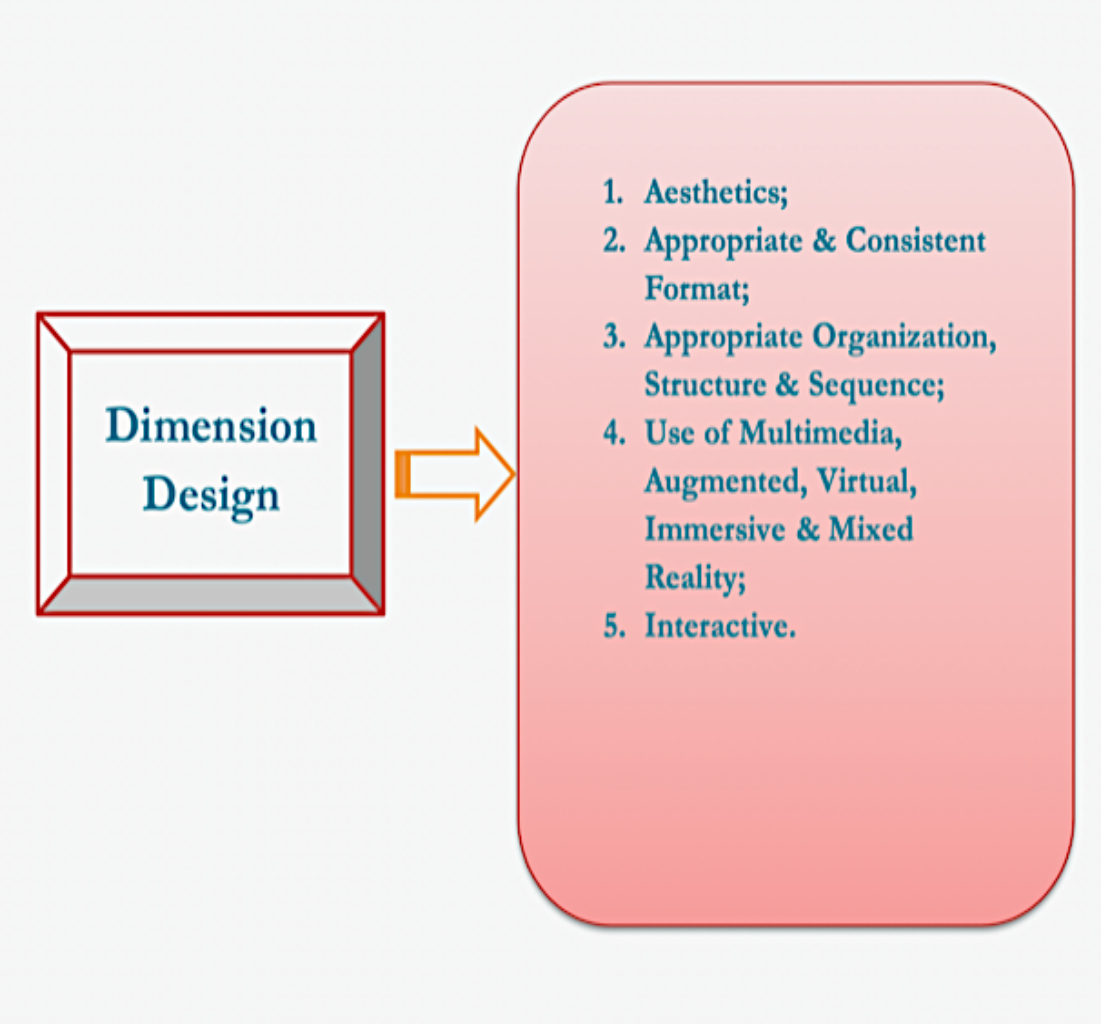


Figure 20. Design Dimension of the OPENLang Quality framework for Language OERs

3.2.4 Fourth Dimension: USABILITY

The OPENLang Quality framework for Language OERs proposes "usability" (Figure 21) as the fourth important quality factor in order to choose an OER. It is quite clear that if a teacher cannot easily access an OER, cannot save it or modify it, it doesn't give him/her many options to use in the teaching practice.

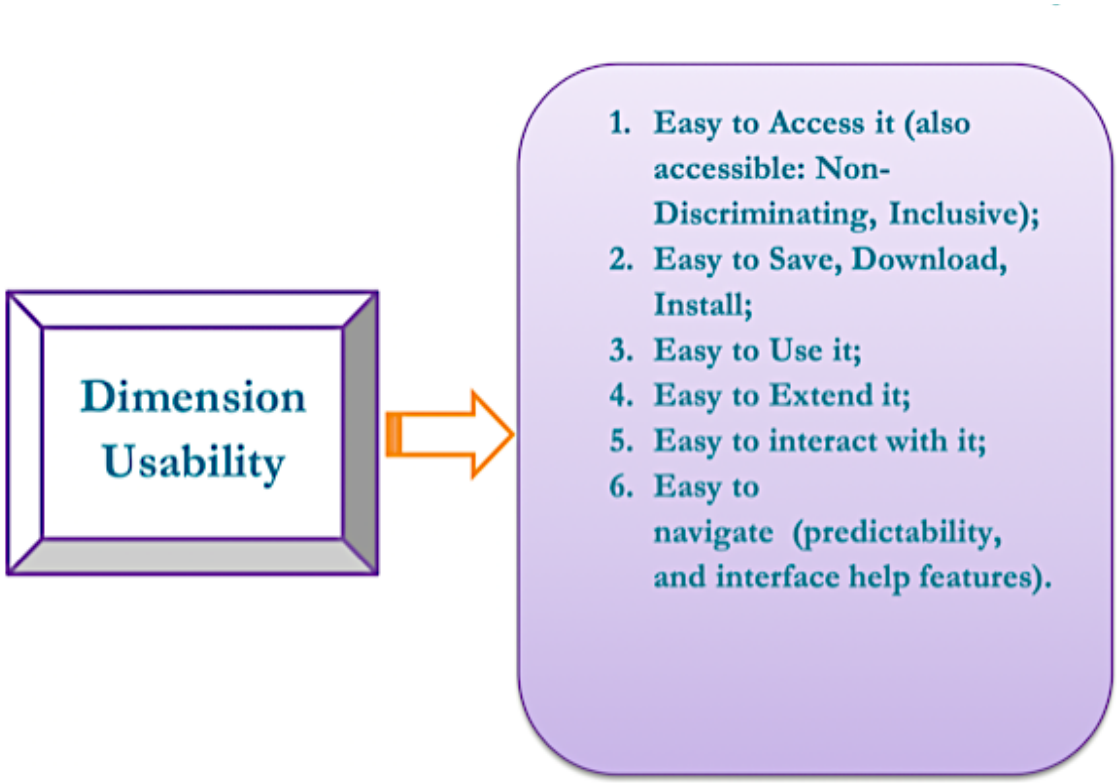


Figure 21. Usability Dimension of the OPENLang Quality framework for Language OERs

3.2.5 Fifth Dimension: OPENNESS

"Openness" (Figure 22) is a really crucial criterion for choosing the right OER. According to the OPENLang Quality framework for Language OERs openness encompasses many interpretations and for that reason, we have adopted to our framework many of the characteristics of the OPEN FASUCICESA - CPT Framework (Economides & Perifanou, 2018) which was proposed by the authors in a recent study. An answer to the following question can identify easily the level of openness of an OER. "How much Free is a user to1) Find, 2)

Access, 3) Store, 4) Use, 5) Create, 6) Interact, 7) Collaborate, 8) Evaluate, 9) Share, 10) Abandon the OER at no Cost, from any Place, at any Time?

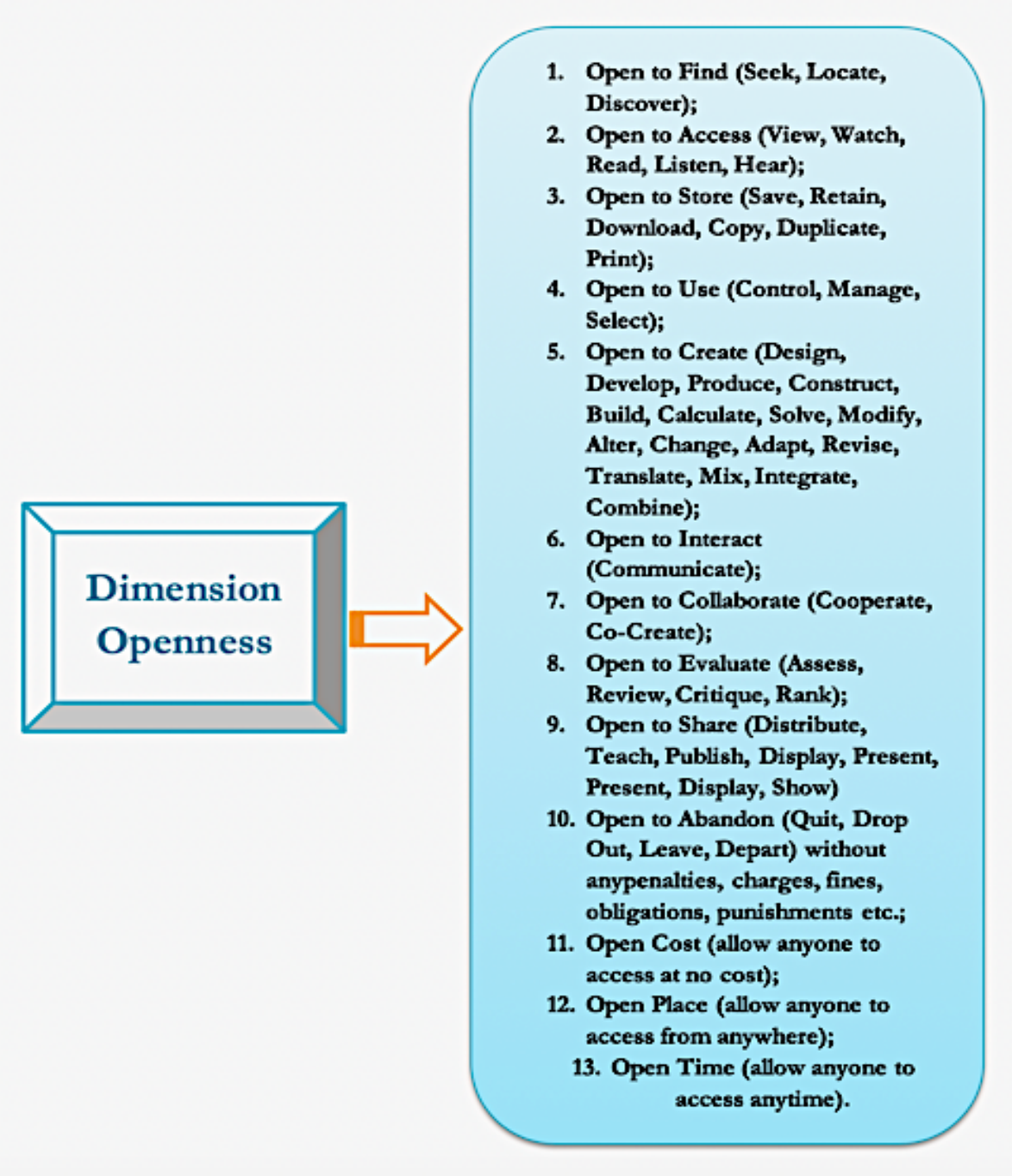


Figure 22. Openness Dimension of the OPENLang Quality framework for Language OERs

3.2.6 Sixth Dimension: TECHNOLOGY

The technological dimension (Figure 23) comprises a set of criteria that need to be considered before teachers choose any type of OER. Safety and security issues are first in line. Furthermore, if there is a need for extra software and other technologies in order to use an OER,

it is useful to know it beforehand. Interoperability, is also a necessary criterion that needs to be taken under consideration because most of the students use their mobiles more than their computers. In general, the technological affordances of a tool or a platform vary a lot, so it is good for teachers to explore many options before making any decisions. The level of the platform's customization and adaptability is a necessary information for any teacher who wants to choose the right tool or resource for his/her language lessons. Functionalities that support synchronous and asynchronous communication, searches via metadata and peer review are also important criteria for evaluating any educational resource from a technological perspective.

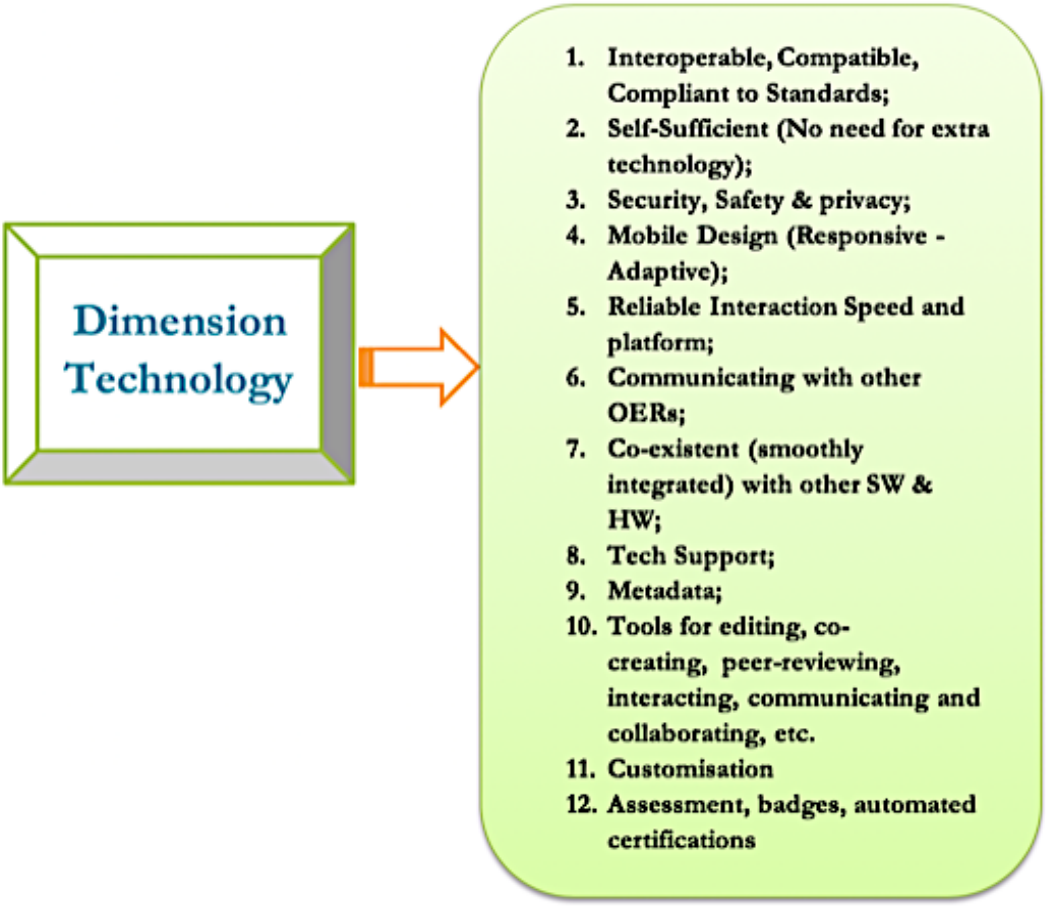


Figure 23. Technology Dimension of the OPENLang Quality framework for Language OERs

3.3. OPENLang Quality Tool for Language OERs

In this last section and more concretely at the Appendix II it is available the "OPENLang OERs Evaluation Tool" which has the form of a rubric and aims to enable language teachers to evaluate the language OERs that either want to use, create or share with other language teachers in the OPENLang Network community and other OERs databases or communities.

Based on this framework, it has been created the "OPENLang OERs Evaluation Tool" which has the form of a rubric and aims to enable language teachers to evaluate the language OERs that they want to use, create or share with other language teachers in the OPENLang Network community or in other OER databases or communities. Language educators that use this rubric can give a score from 0 (zero) to 3 (three) to each of the evaluation criteria that are grouped in six (6) evaluation dimensions (content, pedagogy, design, usability, openness and technology).

The "OPENLang OER Evaluation Checklist" is a complimentary evaluation tool that has the format of a simple checkbox and can be used by language educators, designers, librarians and learners who wish to do a complete & efficient quality control of any language OER they want to use. This evaluation tool can be used also as a guide by those who wish to create their own language OERs.

INFO: How to use the "OPENLang OER Evaluation Checklist": You can fill out your scores in the following rubric; score 1 (=somewhat disagree), 2 (=somewhat agree) or 3 (=stongly agree), to each statement presented in each of the following categories. In case the score you wish to give is 0 (strongly disagree) you don't tick any of the three boxes.

Below it is presented the updated version of the "OPENLang OER Evaluation Checklist" that is also included in the 3rd week's MOOC material, as well as in the OER for language teachers e-toolkit. This evaluation checklist is also used in the OPENLang Network's service "Suggest and share a language OER". When users upload their OERs on the platform they can use a more simple version of the following checklist to evaluate their OERs.

OPENLang OER Evaluation Checklist

1. CONTENT	SCORE 1-2-3		
❑ The Lang OER fits the educational purpose (e.g. target language, students' proficiency level);			
❑ The Lang OER is credible (Certified, accurate, correct, objective, good reputation of author and organization);			
❑ The Lang OER is current, updated and updatable/reusable;			
❑ The Lang OER is authentic, useful & practical, (Applicable, experiential, pragmatic);			
❑ The Lang OER is interactive;			
❑ The Lang OER is adaptive, varied & flexible;			
❑ The Lang OER is clear/comprehensive/coherent;			
❑ The Lang OER's quantity is appropriate/sufficient;			
❑ The Lang OER is interlinked with other resources.			

2. PEDAGOGY	SCORE		
❑ The Lang OER's Applied Pedagogy aligns with appropriate Language learning theories, approaches & instructional strategies. (e.g., inquiry-based language learning, problem-based language learning, project-based language learning, authentic & situated language learning, game-based language learning; flexible language learning; learner-centered language learning; autonomous & self-regulated language learning; personalized & adaptive language learning; collaborative language learning);			
❑ The Lang OER helps the language learner to practice one or most of the basic language skills (i.e., speaking, writing, reading and listening) and/or to understand the use of the language (grammar and vocabulary);			
❑ The Lang OER supports one or more different types of interaction (autonomous, peer-to-peer, group, group/peer-to-peer to class, group/peer-to-peer to outsiders);			
❑ The Lang OER proposes one or more types of assessment (peer review, self- assessment, teacher- assessment);			
❑ The Lang OER offers information about the mode of learning (i.e., blended, fully online, face-to-face).			

3. DESIGN	SCORE		
❑ The Lang OER's design has nice aesthetics;			
❑ The Lang OER's design has appropriate & consistent format;			
❑ The Lang OER 's design uses the appropriate Multimedia (i.e., video & audio of high quality), Augmented, Virtual, Immersive &/or Mixed Reality.			

4. USABILITY	SCORE		
❑ The Lang OER is easy to access/accessible;			
❑ The Lang OER is easy to save, download, and install;			
❑ The Lang OER is easy to use it;			
❑ The Lang OER is easy to extend it;			
❑ The Lang OER is easy to interact with it;			
❑ The Lang OER is easy to navigate (i.e., predictability, interface help features)			
❑ The Lang OER is inclusive and non-discriminating.			

5. OPENNESS	SCORE		
❑ The Lang OER is open to find (Seek, locate, discover);			
❑ The Lang OER is open to access (view, watch, read, listen, hear);			
❑ The Lang OER is open to store (Save, retain, download, copy, duplicate, print);			
❑ The Lang OER is open to use (Control, manage, select);			
❑ The Lang OER is open to create (Design, develop, produce, construct, modify, alter, change, adapt, revise, translate, mix, integrate, combine);			
❑ The Lang OER is open to Interact (Communicate);			
❑ The Lang OER is open to Collaborate (Cooperate, Co-Create);			
❑ The Lang OER is open to Evaluate (Assess, review, critique, rank);			
❑ The Lang OER is open to Share (Distribute, teach, publish, display, show)			
❑ The Lang OER is open to abandon (free to quit, drop out, leave, depart) without any penalties, charges, fines, obligations, punishments etc.;			
❑ The Lang OER is at open at cost restrictions (allows anyone to participate at no cost);			
❑ The Lang OER is an open place (allows anyone to participate from anywhere);			
❑ The Lang OER is open to time restrictions (allows anyone to participate anytime).			
6. TECHNOLOGY	**SCORE**		
❑ The Lang OER is interoperable & compatible;			
❑ The Lang OER is compliant to Standards;			
❑ The Lang OER is self-sufficient (No need for extra technology);			
❑ The Lang OER offers security, safety & privacy;			
❑ The Lang OER offers mobile design (Responsive - Adaptive);			
❑ The Lang OER offers a good platform with reliable Interaction speed;			
❑ The Lang OER is interconnected with other OERs;			
❑ The Lang OER is co-existent (smoothly integrated) with other SW & HW;			
❑ The Lang OER offers tech support;			
❑ The Lang OER offers metadata;			
❑ The Lang OER offers Tools for editing, co-creating, peer reviewing, interacting, communicating & collaborating, etc.;			
❑ The Lang OER offers customization services;			
❑ The Lang OER offers assessment, badges, &/or automated certifications.			

Figure: "OPENLang OER Evaluation Checklist" (Perifanou & Economides, 2020)

Publications

In the framework of the research conducted in this Intellectual Output we have published the following scientific articles, one journal paper and one conference paper.

1) Two publications Perifanou, M. & Economides, A. A. (2022a). Measuring quality, popularity, demand and usage of repositories of open educational resources (ROER): A study on thirteen popular ROER. Open Learning: The Journal of Open and Distance Learning. DOI: 10.1080/02680513.2022.2033114 Outputs 2, 4, 5, 6

2) Perifanou, M., & Economides, A.A. (2022b). The OPENLang Network quality assurance framework for language OER. In: Proceedings of the 16th annual International Technology, Education and Development Conference (INTED) 2022, 7-8 March. IATED. Outputs 4, 5, 7

Conclusions

This report has described how complex and challenging is the quality assurance of open educational resources (OERs) and the available options that educators and institutions have in order to evaluate the digital resources that they want to use, reuse, create or share. Quality assurance of OERs is not an easy process and requires a complex mix of quality tools. There are no common policies worldwide or even in Europe and this is an area of interest and of open dialogue for many years and continues to be. In fact, research in this area shows that there is a variety of quality approaches, models, proposed or applied quality tools and key aspects that need to be taken under consideration in order to apply the existing quality approaches.

This short literature analysis reflects an important problem: OERs are not yet immersed largely in the learning and teaching process yet and quality language OERs are still not easy to find to use because QA policies are not clear and language teachers they are not yet well trained to use, share and repurpose their teaching material.

We hope that language teachers will join the OPENLang Network community and will take the opportunity to explore how important is the value of collaboration, co-creation, sharing and repurposing open language learning material of high quality. The OPENLang OERs Quality Framework, the Quality Tool for Language OERs as well as our OPENLang OER toolkit for Language Teachers will be freely accessible to all the language teachers who will join our community and our OER training courses.

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APPENDIX I: OERs Quality Assurance Frameworks: Criteria Classification

	OERs QUALITY FRAMEWORK/ QUALITY CRITERIA	DESCRIPTION QA INDICATORS/CRITERIA	TARGET GROUP
1.	TIPS Framework - Version 2. -The Commonwealth Educational Media Centre for Asia (Kawacki, 2014)	Quality Assurance Guidelines for Open Educational Resources: A set of guidelines for product quality and the process of elaborating an OER called TIPS - Teaching and learning Process-framework based on 65 criteria. This framework has four dimensions: 1) Teaching and learning processes; 2) Information and material content; 3) Presentation, product and format; 4) Systems, techniques and technology. Translated in many languages. Key dimensions for quality of OERs 1) Fitness for Purpose. 2) Cost Efficiency. 3) Transformative Learning. This model especially emphasizes that good OER should ensure discoverability through metadata, ensure peer assessment through social tagging and be based on open software, where possible.	Teachers
2.	Krajcso,(2016)	Quality criteria for designing online learning materials with regard to: 1) Content; 2) Methodology; 3)	Foreign Language Teachers

		Design; 4) Technic.	
3.	Quality Assurance model for OER Repositories (Atenas & Havemann, 2013)	This model proposes a set of 4 themes-groups of indicators of quality assurance (IQA) that should optimise access and participation, supporting users in searching, retrieving and selecting content, as well as in making content available. IQA THEMES: 1. searching, 2. sharing, 3. reusing, 4. collaborating. IQA: Featured resources, User evaluation tools, Peer review, Authorship, Keywords, Metadata, support, Design, Social Media support, Creative Commons Licences, Source Code or Original Files.	Institutions

4.	Quality Assurance model of OER Repository COERLL - The Center for Open Educational Resources & Language Learning	(COERLL) is one of 16 National Foreign Language Resource Centers (LRC's) funded by the U.S. Department of Education. Inspired by the 4 Themes of indicators of quality assurance (IQA) by Atenas, & Havemann (2013), COERLL has developed the following QualityAssurance model: 1) Availability of language content – does the repository have at least some content for language learning, and is it easy to find? 2) Tools for vetting – does the platform provide for peer reviews or some other vetting/editorial process to assure teachers access to quality content? 3) Ease of remixing – does the platform encourage teachers to edit materials and personalize them for their students? 4) Licensing information – are licenses clearly marked? Do licenses allow for fair attribution, sharing, and remixing of content? Are Creative Commons licenses encouraged? 5) Metadata quality – does metadata facilitate searches using different criteria (e.g. languages, proficiency level, etc.)? 6) Any other qualities that create an engaging and creative space for sharing materials and ideas, such as tools to help teachers communicate and interact with each other.	Language teachers/learners
5.	The socio-constructivist quality model (QORE) (Vloidou, & Constantinescu, 2013)	A Case-Based Framework for Quality-Based Recommending Open Courseware and Open Educational Resources. (QORE) includes 70 criteria grouped in four categories: 1) content,	Learners, instructors, faculty, educational institutions, developers, and quality assurance experts

		2) instructional design, 3) technology, 4) courseware evaluation. The evaluation is done from an educational point of view.	
6.	MASECO multi-agent system (Vladoiu & Constantinescu, 2014)	A multi-agent system for evaluation and classification of open educational resources and open courseware (called MASECO) based on the socio-constructivist quality model. MASECO supports learners and instructors in their quest for the most appropriate educational resource that fulfills properly their educational needs in a given context. It has three main components: 1) an OER/OCW Management System, which is built on top of a database management system, and which manages both OERs and OCW (storing and updating information related to the OER and the OCW included in the system), 2) a Classification Agent that classify OERs and OCW using various classifiers, 3) a Communication Agent, which manages the communication between agents and between the system and the environment. QA CRITERIA: 1) Content related; 2) Instructional design; 3) Technology related; 4) Courseware evaluation.	Learners, instructors, developers, evaluators, faculty, institutions, consortiums, quality assurance experts
7.	Learner Generated Content (LGC) Quality Framework (Pérez-Mateo et al., 2012)	Criteria supporting the quality of the creation of content by those learners working together in an online environment. They organized the quality criteria into three categories: 1. content, 2. format and 3. process.	Online learners
8.	The Achieve OER Rubric (Achieve, 2011)	It includes eight dimensions: 1) degree of alignment to standards (in this case, Common Core State	Experts for peer- or expert-review processes

		Standards); 2) quality of explanation of the subject matter; 3) utility of materials designed to support teaching; 4) quality of assessment materials; 5) quality of technological interactivity; 6) quality of instructional and practice exercises; 7) opportunities for deeper learning; 8) assurance of accessibility. Such evaluation systems can be used periodically by experts for peer- or expert-review processes (see Box 5.5 on the peer-review procedure used by MERLOT) or can be built into repository systems to encourage user-based assessments. For instance, the Achieve OER Rubric is offered to users of the OER Commons repository in the USA for them to evaluate the OER resources they find in the database.	
9.	Community-based QA model, Community College Open Textbook - CCCOER/CCOT initiative	https://www.cccoer.org/ The project pays faculty members to review open textbooks, as does a similar effort at the University of British Columbia (Canada). The 10 criteria were 1) Comprehensiveness, 2) Accuracy, 3) Relevance/Longevity, 4) Clarity, 5) Consistency, 6) Modularity, 7) Organization,8) Interface, 9) Grammar, and 10) Cultural Relevance.	Fischer et al. (2017)
10.	MERLOT Model, The Multimedia Educational Resource for Learning and Online Teaching, California State University. (1997)	The Multimedia Educational Resource for Learning and Online Teaching, uses a peer- review-based system of quality assurance. MERLOT does not host materials itself but is instead a platform containing metadata linking to	Experts for peer- or expert-review processes

		materials hosted elsewhere. The materials in the repository are categorized by academic disciplines. The peer-review process is led by an editor and includes editorial board members and peer reviewers. The editor assigns two peer reviewers to each item. They use their editorial board's review procedures, forms and evaluation standards to independently review the material. The editor evaluates these individual reviews and creates an integrated or composite peer-review report. The composite peer review is sent to the author(s) for feedback and permission to post the review. When permission is obtained, the composite peer review is posted on the MERLOT website	
11.	TIGER Transforming Interpersonal Groups through Educational Resources, (MGill, 2012) The University of Northampton	TIGER project proposes seven QA criteria: 1) input, 2) reviewing, 3) copyright, 4) technical, 5) validation, 6) feedback, 7) evaluation.	Teachers, learners
12.	The European Schoolnet MODEL, (Vuorikari, 2003)	The European Schoolnet has built a learning resource exchange http://lre.eun.org that is now the largest in Europe, and one of the largest in the world, The criteria used: 1) appropriateness, 2) clarity, 3) completeness, 4) motivation, 5) organisation. LEVEL:1 Quality Criteria for	Teachers

		repositories; LEVEL:2 Quality Criteria for teachers; LEVEL:3 Quality Criteria where each resource has been pre-validated for quality for reuse by school teachers. http://lreforschools.eun.org/web/guest/travelwell-?-all .	
13.	McGill (2012) JISC/HE Academy UKOER Programme (2009-2012)	This Quality Assurance model gives five criteria areas for determining the quality of OERs: 1) Accuracy, 2) Reputation of Author / Institution, 3) Standard of Technical Production, 4) Accessibility, 5) Fitness of Purpose. This framework is advocated by the institution-group HEA and JISC. They only recently give consideration to the students and the OER being fit for use. https://openeducationalresources.pbworks.com/w/page/24838291/Open%20Educational%20Resources%20Programme	Academics
14.	Open Transferable Technology-enabled Educational Resources (OTTER) project, Leicester University, (2010)	The OTTER project enables the production and release of high-quality open educational resources (OERs) drawn from teaching materials delivered at the University of Leicester. OTTER gives five criteria: 1) content, 2) openness, 3) reuse, 4) repurpose, 5) evidence (the resource must be trackable, and must be validated by users) The main goal is to transform	Teachers/Learners

		publicly usable teaching materials into high-quality OERs. While they say that quality is decided by the user, the framework is intended for the author to build in quality. It is based on CORRE framework: Content–Openness–Reuse/Repurpose–Evidence (CORRE) that is a framework for evaluating and transforming teaching materials into open educational resources.	
15.	"OER mix framework" OTTER Project, (Nikoi & Armellini, 2012)	From the OTTER project it was developed the "OER mix framework" : examines adopters' 1) Purpose, 2) Process, 3) Product, 4) Policy (the 4 Ps). The framework deals with the creation of OER and what variables influence the OER product that is shared with others. It suggests that different mixes of the four Ps can generate different approaches to OER.	Institutions/Academics
16.	Camilleri & Tannhäuser (2012)	Eight QA dimensions as technical criteria and two as pedagogical criteria: 1) Compatibility with a Standard, 2) Flexibility and Expandability, 3) Customization and Inclusiveness, 4) Autonomy of the users during the interaction with the multimedia resources, 5) Comprehensibility of the graphic interface, 6) Comprehensibility of learning contents, 7) Motivation, engagement and attractiveness of the OER modules and/or learning resources, 8) Availability of reporting	Institutions, instructional designers, teachers

		tools (e-Portfolio), 9) Cognitive: Interaction between the OER and Learner, 10) Didactic: Instructional Design of the OER.	
16.	Essential Quality Standards 2.0 for online courses, (Alberta University, 2014)	Alberta University gives seven quality assurance criteria: 1) web design standards, 2) course information standards, 3) writing standards, 4) resources standards, 5) organization standards, 6) pedagogy standards, 7) technology standards multimedia.	
17.	The OER Evaluation Matrix (OEREM) (Hurt et al., 2014)	The OER Evaluation Matrix OEREM defined four parameters that students felt as important to judge the quality of resources. 1) Who is the author? 2)What is the relevance of points made? 3) When was the OER produced? 4) Why has the OER been produced?	Learners, Teachers
18.	Learning Object Review Instrument (LORI), (Belfer et. al., 2002, 2007)	The Learning Object Review Instrument (LORI) is used to evaluate the quality of e-learning resources. LORI is an online form consisting of rubrics, rating scales and comment fields. The instrument is defined along nine dimensions: 1) Content Quality: Veracity, accuracy, balanced presentation of ideas, and appropriate level of detail. 2) Learning Goal Alignment: Alignment among learning goals, activities, assessments, and learner characteristics. 3) Feedback and Adaptation: Adaptive content or feedback	Learners, Teachers

		driven by differential learner input or learner modelling. 4) Motivation: Ability to motivate, and stimulate the interest or curiosity of, an identified population of learners. 5) Presentation Design: Design of visual and auditory information for enhanced learning and efficient mental processing. 6) Interaction Usability: Ease of navigation, predictability of the user interface, and the quality of UI help features. 7) Accessibility: Support for learners with disabilities. 8) Reusability: Ability to port between different courses or learning contexts without modification. 9) Standards Compliance Adherence to international standards and specifications..	
19.	OER K-12 OER quality assurance factors. Kimmons, 2015)	K-12 OER quality assurance factors: 1)Accuracy: Accuracy of Content (e.g., accurate information); 2) Aesthetics: Aesthetics (e.g., cover, colour usage); 3) Alignment: Standards Alignment 4) Conciseness: Conciseness (e.g., unnecessary content is removed); 5) Formatting: Formatting of Text (e.g., font size, spacing); 6) Media: Quality of Images and other Media; 7) Readability: Readability of Content (e.g., grade level appropriateness); 8) Resources: Connections to other Meaningful Resources (e.g., Internet resources); 9) Supplements: Supplementary Materials (e.g. teacher's guide, equation references);	Teachers, K-12 practitioners, researchers, decision-makers

		10) Timeliness: Timeliness of Content information Open KA2 textbooks and the open/adapted textbooks were tested.	
21.	Model for Co-Creation and Evaluation of Inclusive and Accessible Open Educational Resources (IA-OERs) (Garzon et al., 2016)	A model to co-create and evaluate Inclusive and Accessible Open Educational Resources (IA-OERs). Criteria for Evaluation: 1) Content: Veracity, accuracy, balanced ideas, and appropriate level of detail. 2) Learning goal alignment: regarding activities, assignments and learner characteristics. 3) Feedback and adaptation: Adaptive content or feedback learner inputs or learning styles. 4) Motivation Ability to motivate and engage learners. 5) Presentation design: Design of auditory and visual information for enhanced learning and efficient mental processing. 6) Ease of navigation, predictability, and interface help features. 7) Capacity to be used in different learning settings and with diverse learners. 8) Compliance of international standards and specifications. This is a flexible model in which the teacher is one of the main actors in the co-creation and evaluation of IA-OERs, and therefore activities and contents of the training process are designed to address the needs and preferences of all students.	Teachers

22.	The *OERTrust* Framework (Douglas et al., 2018)	The *OERTrust.* framework for QA of OERs is being designed under a three-dimensional approach, namely following the: 1) pedagogical dimensions, 2) content dimensions, 3) technical dimensions (Any type of small OER, it should be classified according to its main characteristic: Software, Image, Audio, Questionnaires, Simulation, Animation, Games, Software, Theoretical Text / Hypertext or Video). *OERTrust* aims to support the categorization of quality criteria in OER tests. Although the framework is initially aimed at the context of tests and quality of small OER, its application can be extended to large OER.	Developers, Institutions, researchers
23.	OPEN FASUCICESA - CPT Framework (Economides & Perifanou, 2018)	OPEN FASUCICESA - CPT Framework tests the Openness of MOOCs and OERs and proposes 3 dimensions a) Cost; b) Place; c) Time; and 10 criteria. How much Free is a user to 1) Find, 2) Access, 3) Store, 4) Use, 5) Create, 6) Interact, 7) Collaborate, 8) Evaluate, 9) Share, 10) Abandon the OER or the MOOC at no Cost, from any Place, at any Time?	Educators, learners, instructional designers, policy makers
24.	(Pavlenko et al., 2019)	The enhancement of a foreign language competence: free online resources, mobile apps, and other opportunities QA criteria: a) the resource should be convenient for an individual and independent usage;	Language teachers, Learners

		b) the resource should be available at any time; c) the resource should be user-friendly and easy to navigate; d) the resource should be able to enhance the greater number of the components of a foreign language; e) preferably, the resource should have a mobile app; f) preferably, the resource should be available online as well as offline.	
25.	QA Model of ICT-REV project, ECML	The European Center of Modern Language (ECML) offers the inventory of freely available online tools and open educational resources for language teaching and learning developed by the ICT-REV project (https://ict-rev.ecml.at/). The inventory contains a list of tools and OERs that have been evaluated with the following QA criteria in mind: *1) Added value:* What is the potential of the tool for achieving learning objectives? *2) Usability:* How easy is the tool to use and to adapt to your teaching context? *3) Interactivity:* What possibilities does this tool offer for communication and collaboration amongst learners? 4*) Technical requirements:* In order to use the tool, what are the important technical aspects to consider in terms of compatibility of operating systems, equipment, browsers, etc.? These criteria have been developed by teachers for teachers.	Language teachers, teachers

26.	E-Learning Quality Model (Frydenberg, 2002).	Frydenberg (2002) has proposed nine QA criteria areas as domains of e-learning quality after an analysis of several QA dimensions in a number of quality models for e-learning. More concretely those are: *1) executive commitment; 2) technology infrastructure; 3) student service; 4) instructional design and 5) course development, 6) instruction and instructor services; 7) financial health; 8) program delivery; 9) legal and regulatory requirements and program evaluation* (in Ossiannilsson, 2012).	Instructional designers, teachers, institutions.

Table 3. OERs Quality Assurance Frameworks: Criteria Classification

APPENDIX II: The OPENlang Network OERs Quality Tool

Dimension	Criteria	OERs Evaluation (√/X)			
		0	1	2	3
1.CONTENT	❑ Fitness to purpose, utility (Relevant to the target language, learners' characteristics, proficiency level, etc.)				
	❑ Credible (Certified, Accurate, Correct, Objective, Reputation of author and organisation)				
	❑ Current, Updated and updatable/reusable				
	❑ Interesting, Engaging, Motivating, Enjoyable, Fun				
	❑ Authentic, Useful & Practical (Applicable, Experiential, Pragmatic)				
	❑ Interactive				
	❑ Adaptive, Varied, Flexible				
	❑ Clear/Comprehensive/coherent				

	❑ Appropriate (Sufficient) Quantity				
	❑ Connections to other resources				
2.PEDAGOGY	❑ Type of applied pedagogy: learning theories, language learning approaches, instructional strategies, inquiry-based language learning, problem-based language learning, project-based language learning, authentic & situated language learning, game-based language learning; flexible language learning; learner-centered language learning; autonomous & self regulated language learning; personalized & adaptive language learning; collaborative language learning.				
	❑ Type of skills: speaking, writing, reading and listening as well as language use (grammar and vocabulary);				
	❑ Type of Interaction: autonomous, peer-to-peer, group, group/peer-to-peer to class, group/peer-to-peer to outsiders; ❑ Type of Assessment: peer review, self- assessment, teacher- assessment;				

	❑ Mode of learning: blended, fully online, face-to-face;				
3.DESIGN	❑ Aesthetics;				
	❑ Appropriate & Consistent Format;				
	❑ Appropriate Organization, Structure & Sequence;				
	❑ Use of Multimedia, Augmented, Virtual, Immersive & Mixed Reality;				
	❑ Interactive				
4. USABILITY	❑ Easy to Access it (also accessible:				
	❑ Non-Discriminating, Inclusive);				
	❑ Easy to Save, Download, Install;				
	❑ Easy to Use it;				
	❑ Easy to Extend it;				
	❑ Easy to interact with it;				
	❑ Easy to navigate (predictability, interface help features)				

5.OPENNESS	❑ Open to Find (Seek, Locate, Discover);				
	❑ Open to Access (View, Watch, Read, Listen, Hear);				
	❑ Open to Store (Save, Retain, Download, Copy, Duplicate, Print);				
	❑ Open to Use (Control, Manage, Select);				
	❑ Open to Create (Design, Develop, Produce, Construct, Build, Calculate, Solve, Modify, Alter, Change, Adapt, Revise, Translate, Mix, Integrate, Combine);				
	❑ Open to Interact (Communicate);				
	❑ Open to Collaborate (Cooperate, Co-Create);				
	❑ Open to Evaluate (Assess, Review, Critique, Rank);				
	❑ Open to Share (Distribute, Teach, Publish, Display, Present, Present, Display, Show)				
	❑ Open to Abandon (Quit, Drop Out, Leave, Depart) without any penalties, charges, fines, obligations, punishments etc.;				
	❑ Open Cost (allow anyone to participate at no cost);				
	❑ Open Place (allow anyone to participate from anywhere);				
	❑ Open Time (allow anyone to participate anytime				

6. TECH	❑ Interoperable, Compatible,				
	❑ Compliant to Standards;				
	❑ Self-Sufficient (No need for extra technology);				
	❑ Security, Safety & privacy;				
	❑ Mobile Design (Responsive - Adaptive);				
	❑ Reliable Interaction Speed and platform;				
	❑ Communicating with other OERs;				
	❑ Co-existent (smoothly integrated) with other SW & HW;				
	❑ Tech Support;				
	❑ Metadata;				
	❑ Tools for editing, co-creating, peer-reviewing, interacting, communicating and collaborating, etc.;				
	❑ Customisation ;				
	❑ Assessment, badges, automated certifications				
Levels: 0 =Not available; 1=Partially available; 2=Largely available; 3=Fully available					

Table 4. The OPENLang Network OERs Quality Tool (Version 1)

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