

Strategic support for OER value proposition

Policy and strategy report no. 1



enc^ore+



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Introduction

The aim of this report is to explore how stronger relationships between higher education and business can address barriers to mainstream adoption and development of innovative and sustainable models and policies for Open Educational Practices (OEP). In this report, we explore how educational institutions and business interests can work together to better leverage the potential of Open Educational Resources (OER) in the service of OEPs. The report provides an overview of existing literature and research in the field of OER and presents a series of business models and approaches to supporting the development of OER, as well as their policies and practices. The issue of sustainability and longevity of OER materials, content and communities is discussed and three case studies are presented to illustrate different business models for supporting capability development, knowledge exchange and Communities of Practice. The report concludes with recommendations and provides some points to consider for organisations interested in developing business models, policies and practices to support the development of sustainable OER and in promoting OEP. The term OEP is used in this report as an umbrella concept reflecting the wider goals of creating more open educational and organisational cultures that support more diverse, equitable and inclusive approaches to teaching, learning and assessment (Cronin, 2017, p.1). Seminal and commonly accepted definitions of key concepts are provided as part of the report.

Report aims

The report has four main aims:

1. To identify and collect value propositions from those market actors who are offering value-added services around OER and OEP in Europe.
2. To analyse the business value propositions and derive open business dimensions from them.
3. To investigate different business models which include OER and OEP.
4. To analyse our findings and present case studies which illustrate open business models in action.

Report structure

The report is structured in four sections:

- Section 1: Contexts from the policy and strategy literature
- Section 2: OER value propositions
- Section 3: Case studies of open business models in action
- Section 4: Conclusions and recommendations

Report methodology

This report followed a mixed methods design (Creswell, 2014) using qualitative and quantitative methods of inquiry. This approach involved an analysis of existing published literature supported by data collection through expert interviews and purposely selected case studies focusing on different types of business models and examples of OER in practice. The study is framed by the following overarching research questions:

1. How are organisations offering value-added services around OER and OEP in Europe?
2. What are the potential and existing business models which integrate OER and OEP in Europe?

Ethical approval for the study was granted by the Dublin City University Research Ethics Committee (DCUREC/2022/041). More specifically, three data collection methods were adopted: desk based research of the policy and strategy literature, case study semi-structured interviews, and content analysis of OER websites, repositories and grey literature. Further details of the methodology are included in each section of the report below.

About the Encore project

ENCORE+ responds to the priorities of opening up and modernising the European education and training sector through a coordinated European OER ecosystem. OER are “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).

ENCORE+ brings together meaningful and focused human networks; technological solutions for sharing and discovering OER; policy reviews; quality criteria; and generating business models which draw on the affordances of OER to support innovation. ENCORE+ supports uptake of OER through business and academia by formulating value propositions for OER usage for education, training and business.

ENCORE+ directly addresses several European and international policy priorities:

- Stimulating innovation in businesses through learning and training innovation
- Reducing barriers to education affording learners the opportunity to up-skill or re-skill at a lower or nearly no cost, and in a flexible way
- Supporting the modernisation of higher education in Europe, including digitalisation
- Bridging non-formal and formal education by advancing recognition of open learning.

Section 1: Contexts from the policy and strategy literature

1.1 Open policy and strategy

Open Education is an umbrella term or movement with many dimensions that share a common viewpoint “everyone should have the freedom to use, customize, improve and redistribute educational resources without constraint” (Cape Town Open Education Declaration, 2012). Openness comes in many forms and encompasses a number of interrelated practices, terms and approaches in the higher education context (Costello, Huijser, Marshall, 2019). These include OER underpinned by Creative Commons licensing and open teaching and learning practices. While Open Education has been a feature of educational research and practice for almost 30 years, its adoption has been fragmented and still remains on the margins (Farrell, et al., 2021; Zawacki-Richter, et al., 2020).

There are a number of key concepts that underpin the literature and practice of Open Education, they are defined in Table 1 below:

Open Education: Key concepts and definitions	
Open Education Resources (OER)	“Teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open licence that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions”. (UNESCO, 2019)
Open Education Practices (OEP)	“A broad descriptor of practices that include the creation, use, and reuse of open educational resources (OER) as well as open pedagogies and open sharing of teaching practices” (Cronin, 2017, p.1).
Open Education Policy	“Open Education policies are written or unwritten guidelines, regulations and strategies which seek to foster the development and implementation of Open Educational Practices, including the creation and use of Open Educational Resources. Through such policies, governments, institutions and other organisations allocate resources and orchestrate activities in order to increase access to educational opportunity, as well as promote educational quality, efficiency and innovation.” (Atenas, Havemann, Neumann, Stefanelli, 2020).

Table 1. Open Education: Key concepts and definitions

International organisations such as UNESCO have played an important role in advancing policy on Open Education around the globe. The UNESCO Recommendation on OER (2019) was a significant international policy development in the area of Open Education. The Recommendation outlines five areas of action:

1. Building the capacity of stakeholders to create, access, re-use, adapt and redistribute OER;
2. Developing supportive policy for OER;
3. Encouraging effective, inclusive and equitable access to quality OER;
4. Nurturing the creation of sustainability models for OER; and
5. Promoting and reinforcing international cooperation in OER.

Advantages of OER include the facility for users, for example students, to avail of learning materials at little or no cost, which meets the strategic objective of enhancing equality and access to education which has been identified as one of the Sustainable Development Goals. Engaging with openness in higher education directly links to the United Nations (UN) Sustainable Development Goal 4 - Quality Education, as open education can democratise and increase access to education and knowledge (Farrell et al., 2021; UNESCO, 2019).

European Policy Context

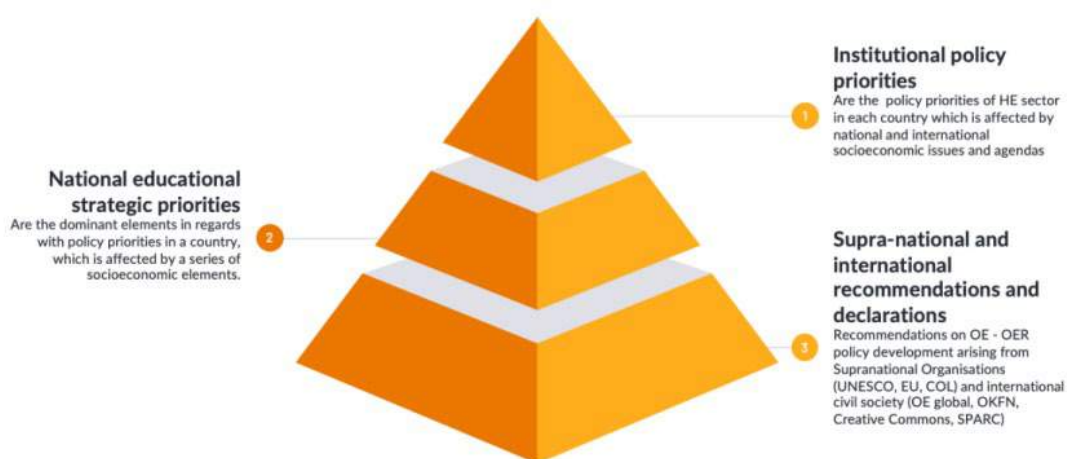
In the European context, the OpenEdu Framework (Dos Santos et al, 2017) published by the European Commission provides a policy framework to support higher education institutions to engage with Open Education and included an EU-wide study on Open Education policies in all the 28 Member States. In recognising that Open Education is a multifaceted movement, they propose four typologies of policies, namely: (i) OER specific policies; (ii) general ICT policies; (iii) comprehensive strategic educational policies; and (iv) policies designed as national plans. On a positive note, this study indicated that the majority of EU Member States were engaged in policy driven activities in the area of Open Education. On the other hand, it found that there is still a long way to go and that a more systematic and strategically coordinated EU-wide approach is required to raise awareness and further support the development of OER and Open Education policies at national level.

A recent study conducted by the European Universities Association (Gaebel, Zhang, Stoeber Morrisroe, 2021, p. 21) of digital teaching and learning in European HEIs found that “just under one half of institutions reported offering some form of open learning (48%)”. However, they also found that Open Education policy at the institutional level was hampered by concerns about intellectual property and copyright issues.

Atenas, Havemann, Neumann, and Stefanelli (2020) conducted a review of Open Education policies and identified key elements of policy and best practices for the development of publicly funded OER. This includes: fair usage of copyright material; inclusive design of materials to enhance access to resources from diverse users; accreditation and recognition of learner competence and course completion; and mechanisms to reward and encourage educators to integrate OER into teaching and learning programmes and practices. The indicators identified by Atenas et al. (2020) highlight the importance of promoting openness and collaboration between stakeholders (e.g. policymakers, institutions, educators and users) underpinned by transparent processes for assessing, selecting and procuring technologies, sustainable infrastructures and clear policies around data usage, privacy and storage. In summary, coherence between government policy and education strategies and practices is key to the development of sustainable, accessible, high quality OER which offer a direct benefit and valuable learning experience for the user.

Atenas & Havemann (2022) highlighted the importance of alignment between institutional, national and international policy in relation to Open Education policy. The OER Policy Pyramid depicted in this figure 1 illustrates the interconnected nature of policy development. Furthermore, they emphasised that the policy making process is often more impactful than the end result, and that collaboration and inclusion of a wide range of stakeholders in the policy co-creation will result in a more impactful policy. They write:

“A fundamental principle of co-creation is participation, in which every stakeholder has a place and a voice, in order to develop policy through dialogue and engagement across all phases of the policy cycle” (Atenas et. al., 2022, p. 7).



Atenas & Havemann (2021) - OE policy pyramid

Figure 1. OE policy pyramid (Atenas et al., 2022)

In summary, the process of policy development is crucial to developing impactful policies and this process needs to be inclusive of all stakeholders to promote critical dialogue, especially if we want to go beyond purely symbolic policies. It is essential that, in order to support the mainstreaming of OER, governments, educational institutions, community agencies, business and industry groups, and other major stakeholders are active partners in policy development.

1.2 Snapshot of current European policy context

In order to gain a snapshot of the current European policy and strategy context, we conducted desk research using the [OER world map](#). The OER world map was created to document the global Open Education movement and functioned as a repository and a social network. Unfortunately, it ceased to exist in April 2022.

A search of the OER world map in April 2022 using the categories “policy” “strategy” and “legislation” and “higher education” found 58 entries for Europe. 50% of the documents were strategy, 20% were legislation and 29% were policy documents, as shown in Figure 2.

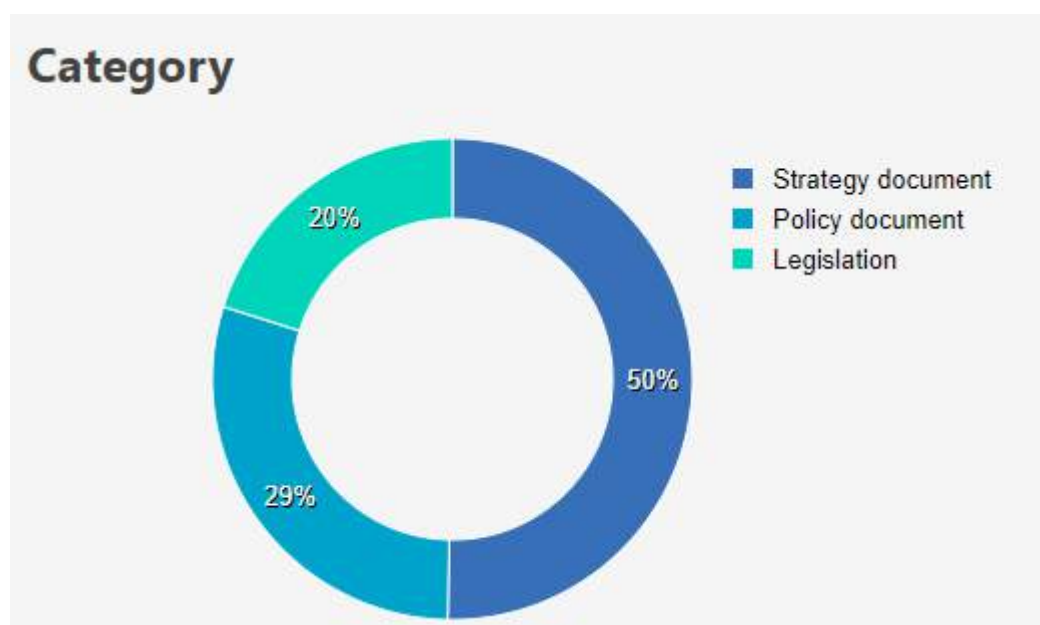


Figure 2. OER world map: European policy, strategy search results.

Of the 58 entries found, 65% were Dedicated Open Education and OER policies (see Figure 3), while less focus was on ICT policy and labour market policy.

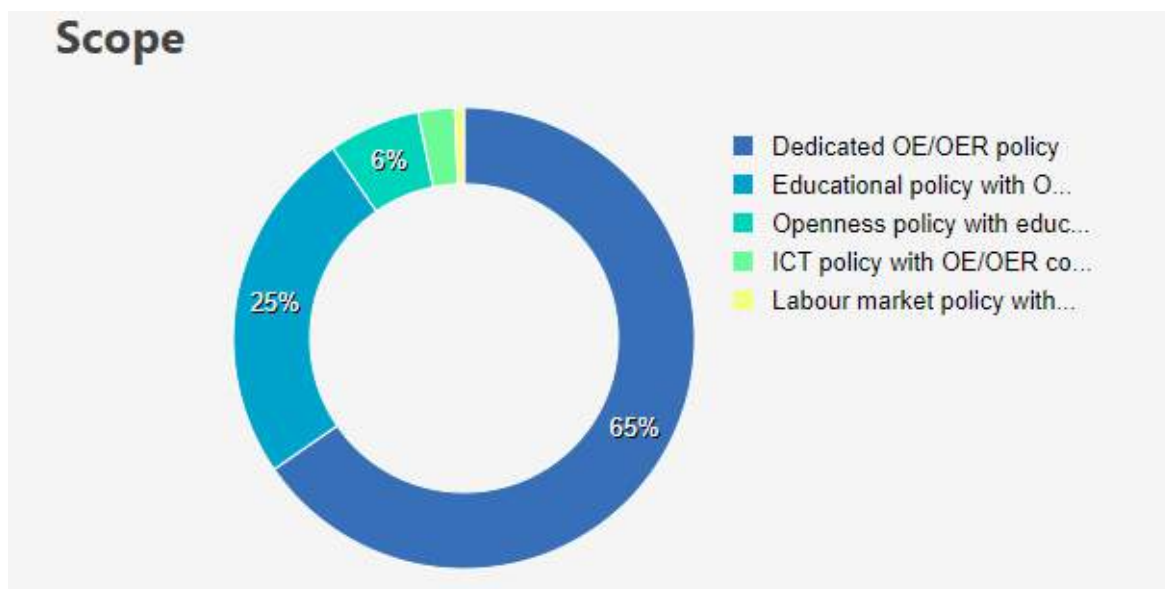


Figure 3. OER World Map Scope of Open Education Policies

Figure 4 shows that the majority of the 58 entries were at institutional level (46%), followed by State (29%) and National (17%).

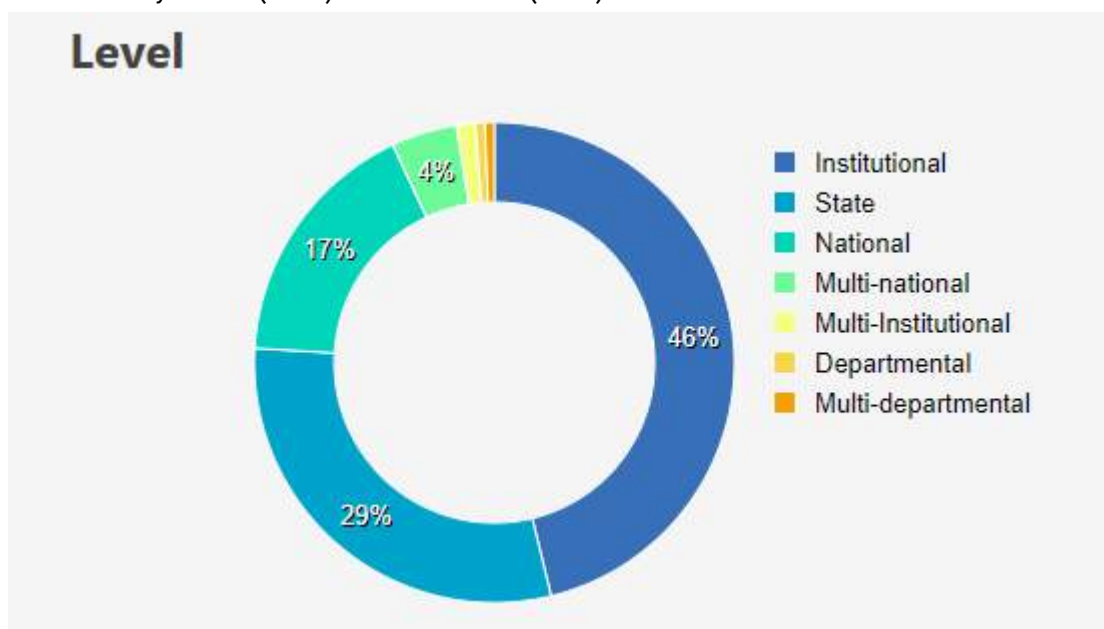


Figure 4. OER World Map: Level of Open Policy/Strategy

The majority of the policy and strategy documents found were in English (73%), followed by German (19%), as shown in Figure 5.

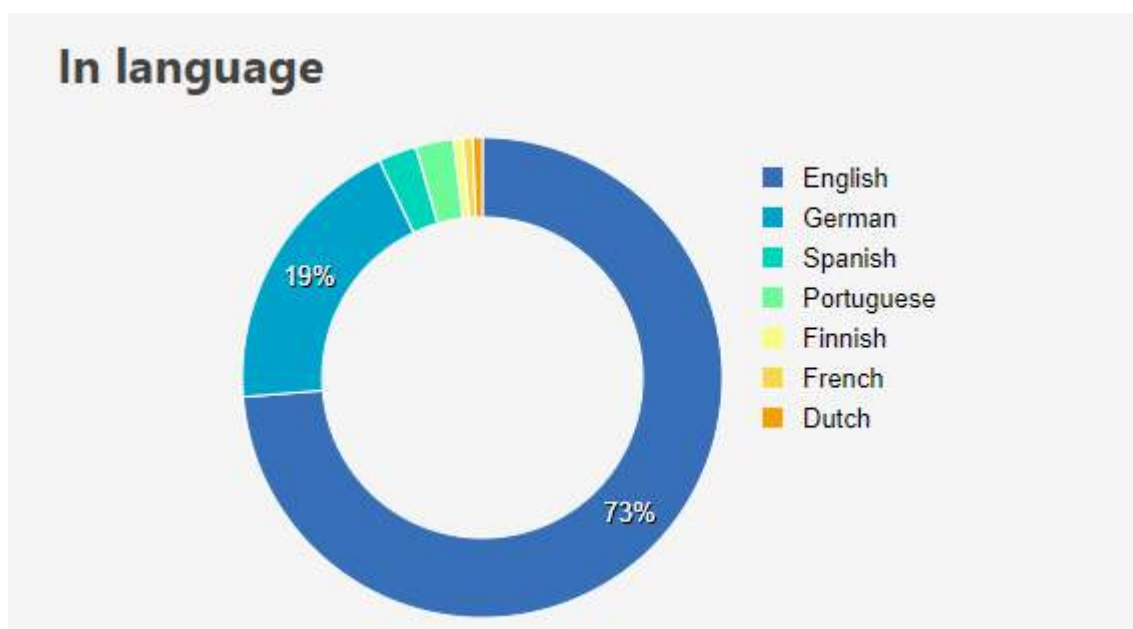


Figure 5. OER World Map: Language of Policy and Strategy documents

What does this tell us?

From this snapshot of the European policy and strategy landscape drawing on data from the OER world map, we can draw the following conclusions:

1. The majority of the policy and strategy documents are written in English.
2. The scope of the majority of the policy and strategy documents are at the micro level of the institution.

Whilst the OER World Map provides a valuable resource, it fails to provide information on the different types of consultation processes adopted in policy development. This snapshot indicates that policy development is progressing well at the institutional micro level but that at the meso and macro level is progressing more slowly.

1.3 The Business Context

Awareness of OEP and OER is quite low generally, but even more so in the business context (Ehlers & Kunze, 2021; COL; 2017; Hoosen, et. al, 2019). In addition to a lack of awareness of OER, the BizMooc project (2019) reported that many companies do not yet trust the concept of OER. Giving away content for free does not appear to resonate well with the business goal of making a profit, yet for businesses, OER and openness are unrealised market opportunities and have potential as new forms of value proposition. According to Darwish (2019, p. 3855) openness is “a premium business value that creates edupreneurship opportunities within the digital age.” Ehlers & Kunze (2021, p.22) found that those businesses that were engaging in OER were motivated to

engage for a number of reasons, including that “OER helped to market and disseminate their organisations’ ideas and that the sharing of education resources created by their organisation enhances their organisational reputation”.

There are a number of strategic reasons why businesses might engage in open business models, there are business opportunities such as revenue generation through certification, advertising, operational efficiencies, increased access to global markets, and increased potential for scaling up online offerings (Burd et. al. 2015 cited in Farrow, 2022).

A related question concerning the growth of the EdTech sector is to what extent have businesses adopted, borrowed or reappropriated the language of openness to advance their own business agenda? As Bali, et al. (2020) argue in a critical text, to some extent open education has been infiltrated by corporate interests. However, we need to be careful not to demonise all of these 'open' business activities as the influence they have on higher education is not all bad. Indeed, there are several examples of businesses embracing an ethos of openness and in so doing making a significant contribution to higher education.

One of the major barriers to large scale adoption of OER and OEP has been the challenge of developing sustainable business models. In the meantime, a number of developments using emerging technologies have taken place in the OER domain. Similarly, to keep up with this rapid development, the number of institutional OER policies is growing as well. Therefore, the OER ecosystem and its possible sustainability strategies are different today from just a decade ago (Tlili et al., 2020). If we truly want to create a European OER ecosystem we must address the challenges of financial sustainability (Annand, 2015).

A related issue is the flawed concept of “free” which permeates the philosophy of openness. While these principles are important concepts, there is ‘no such thing as a free lunch’. Somebody pays. Whether it is the OER enthusiast who gives their time to create resources, or the public funded university who provides open infrastructure, or the business that uses a freemium model to offer layered access to OER (Annand, 2015; Downes, 2007; Farrell, 2022). A more accurate term is “free to use”, which means a resource that is openly licensed using Creative Commons Licensing (CCL) that facilitates the open sharing and reuse of OER which David Wiley (2017) describes as the [5 Rs of OER](#):

1. “Retain - make, own, and control a copy of the resource.
2. Revise - edit, adapt, and modify your copy of the resource.

3. Remix - combine your original or revised copy of the resource with other existing material to create something new.
4. Reuse - use your original, revised, or remixed copy of the resource publicly.
5. Redistribute - share copies of your original, revised, or remixed copy of the resource with others”.

Linked to the fallacy of free is that “the most significant barriers to increased OER production and use appear to be financial” (Annand, 2015). In order to create a sustainable OER ecosystem a financial model to support this ecosystem is needed (de Langen, 2018). Although the goal of Open Education is not financial, revenue is needed to sustain the mission, as Konkol et al., (2021, p.8) argue “the paradox is that generating revenue out of OER is not intended, but ignoring income can make OER unsustainable”.

1.4 Key business concepts related to Open

In this next section, we explore key business concepts related to open and how they relate to business models for OER and OEP, see Table 2 below for an overview of key concepts.

Key business concepts related to Open	
Business model	“A business model describes the rationale of how an organisation creates, delivers, and captures value” (Osterwalder & Pigneur, 2010, p. 14).
Value proposition	“The defining factor which results in a customer choosing one product or service over another which can be influenced by different features or aspects of product or service deemed valuable to the customer. Examples of value propositions include innovation or newness of the offering, brand recognition, design, performance, cost, ease of use and personalisation or customisation of features to meet the needs of different users”. (Periera, 2020).
Business strategy	“Raymond Miles and Charles Snow suggest that business strategies generally fall into one of four categories: prospector, defender, analyser and reactor, with the first two being the two extremes on a continuum” (Orr, Weller, Farrow, 2018).
Business model canvas	The Business Model Canvas is a framework for documenting or conceptualising business models. The

	core components of the business model developed include value propositions, key resources, partner network, cost structure, revenue streams and customer relationships, to identify strategies to maximise value for customers (Osterwalder & Pigneur, 2010).
Freemium	“It stands for business models, mainly Web-based, that blend free basic services with paid premium services. The freemium model is characterised by a large user base benefiting from a free, no-strings-attached offer. Most of these users never become paying customers; only a small portion, usually less than 10 percent of all users, subscribe to the paid premium services. This small base of paying users subsidizes the free users” (Osterwalder, 2010, p. 96).

Table 2. Key business concepts related to open

One key approach to analysing business strategy is the Business Model Canvas approach (Osterwalder & Pigneur, 2010), and the open version: [The Open Business Model Canvas](#). This approach, created by Osterwalder & Pigneur (2010), enables the analysis of a business model based on nine basic building blocks that articulate the company's strategy and revenue models:

1. Customer segments
2. Value proposition
3. Channels
4. Customer relationships
5. Revenue streams
6. Key resources
7. Key activities
8. Key partnerships
9. Cost structure

The connections between business strategy, business models and OER and OEP are explored in the next section.

1.5 Business models and Open Education

In this section, we will explore the current research related to business models for Open Education and OERs.

In Table 3 below the key literature related to open business models from 2007 to 2021 is collated and the business models described in each article are detailed. A number of

patterns are evident in the evolution of the open business model concepts over this 14-year period. In answer to the challenge of creating sustainable business models for OER to support wider proliferation, scholars have developed a growing number of models which address the issue of revenue generation and financial sustainability and have moved from models focused on government, institution and philanthropic support to those that incorporate revenue generation such as the Freemium and membership models.

Key literature related to Open Business Models	
Source	Business models
Konkol, M., Jager-Ringoir, K. & Zurita-Milla, R. (2021): Open Educational Resources – Basic concepts, challenges, and business models. Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente. DOI: 10.5281/zenodo.4789124	<ul style="list-style-type: none"> ● Freemium ● Governmental Model ● Institutional Model ● Online Programme Model ● Substitution Model ● Community based ● Donations Model ● Membership Model ● Sponsorship/Advertising Model ● Data Exploitation Model ● Dual-Mode University ● Author pays Model
Tlili, A., Nascimbeni, F., Burgos D., Zhang, X., Huang, R., Chang, T., (2020) The evolution of sustainability models for Open Educational Resources: insights from the literature and experts, <i>Interactive Learning Environments</i> , DOI: 10.1080/10494820.2020.1839507	<ul style="list-style-type: none"> ● Institutional Model ● Membership Model ● Governmental Model ● Endowment/Donations Model ● Sponsorship/Advertising Model ● Segmentation Model ● Data Exploitation Model ● By producing OER on demand ● By relying on OER authors ● Community based
Darwish, H. (2019). Open educational resources (OER) Edupreneurship business models for different stakeholders. <i>Education and Information Technologies</i> , 24(6), 3855-	<ul style="list-style-type: none"> ● OER static edupreneurship business model ● OER interactive edupreneurship business model ● OER dynamic edupreneurship business model ● OER edupreneurship transformative

<p>3886.doi:https://doi.org/10.1007/s10639-019-09962-8</p>	<p>business model</p>
<p>Okoli, C., & Wang, N. (2016). Business Models for Online Education and Open Educational Resources. SSRN Working Paper Series. Retrieved from http://ssrn.com/abstract=2577676</p>	<ul style="list-style-type: none"> ● Endowment/Donations Model ● Online Programme ● Community based ● Sponsorship/Advertising Model ● Platformization ● Endowment/Donations Model ● Segmentation Model
<p>Orr, D., M. Rimini and D. van Damme (2015), <i>Open Educational Resources: A Catalyst for Innovation, Educational Research and Innovation</i>, OECD Publishing, Paris, https://doi.org/10.1787/9789264247543-en.</p>	<ul style="list-style-type: none"> ● Community based ● Freemium/revenue based ● Endowment/Donations Model
<p>de Langen, F. (2013). Strategies for sustainable business models for open educational resources. <i>The International Review of Research in Open and Distributed Learning</i>, 14(2), 53-66. https://doi.org/10.19173/irrodl.v14i2.1533</p>	<ul style="list-style-type: none"> ● Freemium/revenue based ● Governmental model ● Endowment/Donations Model ● Platformization ● Community based
<p>Stacey, P. (2013). Government support for open educational resources: Policy, funding, and strategies. <i>The International Review of Research in Open and Distributed Learning</i>, 14(2), 67-80. https://doi.org/10.19173/irrodl.v14i2.1537</p>	<ul style="list-style-type: none"> ● Governmental model
<p>Downes, S. (2007). Models for Sustainable Open Educational Resources. <i>Interdisciplinary Journal of E-Learning and Learning Objects</i>, 3(1), 29-44. Informing Science Institute.</p>	<ul style="list-style-type: none"> ● Endowment ● Donations Model ● Membership Model ● Conversion Model ● Contributor-Pay Model ● Sponsorship Model ● Institutional Model ● Governmental Model ● Partnerships and exchanges

Table 3. Key literature related to Open Business Models

Okoli and Wang (2016) identified different business models for OER which emphasise various approaches to funding, remuneration for content creators and terms of usage (e.g. for students and learners). Examples include corporate or government sponsorship to develop open learning resources, which are often free to students or funded via student tuition, sometimes content creators receive remuneration for developing resources and in other cases, they may contribute time or expertise to the project on a voluntary basis. Other business models for OER identified by Okoli and Wang (2016) include revenue generation via paid membership, where members contribute and share, for example educational materials and resources, often paying a subscription to benefit from membership of the group. In some cases, a “freemium” option is part of the offering to users, namely part of a course is provided to users at no cost, but payment is required for enhanced access to additional products, courses or services (Okoli and Wang, 2016). According to Phillips et al (2021), students value OER which are easy to use, and which can be adapted for different educational courses and content. Phillips et al (2021) recommend further evaluation of OER based on feedback from academic staff and students on the utility of online and open materials within teaching, learning and assessment activities.

According to Kesting (2021), business models can offer a way to capture information, for example “a holistic unit of analysis” (Kesting, 2021 p.27) which can contribute to a greater understanding of the various activities and processes within an organisation and help to identify strategies to improve productivity and innovation. While there are many different business models for organisations to choose from, according to McFarlane (2017), a unique feature of the business model canvas developed by Osterwalder and Pigneur (2010) is the use of a chart which provides a way to visualise the core activities of the company. The core components of the business model developed by Osterwalder and Pigneur (2010) include value propositions, key resources, partner network, cost structure, revenue streams and customer relationships, to identify strategies to maximise value for customers.

The Business Canvas Model (Osterwalder & Pigneur, 2010) has been adapted for use in different organisations, including not-for-profit sector (Sanderse, de Langen, & Perez Salgado, 2020) including Higher Education Institutions (HEIs) to identify opportunities to support student learning and development (Phillips et al., 2021). De Langan (2011) identified a shift in emphasis in business models which “focus on inside-out to outside-in” (de Langan, 2011 p216). This suggests a shift in focus on internal organisational activities and resources which enhance customer satisfaction for the end user of the OER (e.g. the student) to consider the needs and requirements of the funding body, for example the government, who are often providing the capital to develop the online

open learning materials (de Langan, 2011). De Langan (2011) recommends that the interests and capabilities of different stakeholders are considered when making a business case for developing OER. He suggests considering the motives of the government body to support OER projects and also evaluating the capabilities and expertise of OER providers to develop unique and high-quality educational offerings “which can improve national learning, be shared by other organisations and improve the quality of education and raise the level of education of the labour force” (de Langan, 2011, p.217). In summary, de Langan (2011) recommends the need for business cases to demonstrate how OER adds value to an organisation and fits with overall aims, strategic goals and activities of the company.

Bringing together this literature, Farrow (2022) as part of the Encore project has developed a typology of OER business models, as shown in Table 4.

OER Business Model Typology		
Category	Business Model	Description
Externally funded	<i>Donations Model</i>	The Donations model involves donations from, e.g., foundations, society, industry, government, or non-governmental agencies.
	<i>Governmental Model</i>	In the Governmental model, national and international governmental agencies provide funding for creating OER.
	<i>Sponsorship/Advertising Model</i>	The Sponsorship/Advertising model relies on generating revenue by exposing students to commercial messages.
Internally funded	<i>Institutional Model</i>	The Institutional model sees higher education providers set aside some part of their budget for OER programmes.
	<i>Substitutions Model</i>	The Substitution model sees cost savings from redundant services (e.g. obsolete systems) being redirected towards OER programmes.
	<i>Author pays Model</i>	Publishers generate revenue by charging content creators (as in the case of article processing charges, for instance)
Community	<i>Community</i>	In the Community-based model, the members

funded	<i>based</i>	of an OER community or network collaboratively create and use OER. Revenue can be generated by hosting the required infrastructure or charging for related activity.
	<i>Membership Model</i>	The Membership model relies on organisations contributing to the education provider with money, services, and goods in exchange for privileges such as early access to roadmap decisions and code releases.
	<i>Platformization</i>	Facilitates interactions between stakeholders; subsidises the participation of each side; requires understanding of mutual needs.
Higher Education Service Models	<i>Data Exploitation Model</i>	The Selling data model generates revenue by selling data about the activities of those using a learning environment (which can be used to try and improve learning, link candidates to jobs, or promote products).
	<i>Dual-Mode University</i>	Use of OER in an online course (e.g. MOOC) to develop a distance learning or virtual university operation.
	<i>Freemium</i>	The selling course experience model or “Freemium” model where educational materials (e.g., slides, texts, data) are offered for free. Sustainability here is derived from income streams offered alongside this, such as answering questions, giving feedback on submissions, supervising research and examination, and certification.
	<i>Online Programme</i>	The Online Programme model is realised by extending presence-based education to online or blended courses (including Massive Open Online Courses).
	<i>Segmentation Model</i>	Revenue is generated by commercialising a service relating to OER (such as printing open textbooks; providing assessment or certification of learning)

Table 4. OER Business Model Typology (Farrow, 2022).

1.6 Open Business Models in detail

In this section we explore the typology of open business models in more detail.

Externally funded

In the externally funded category of open business models there are three types:

- Donations Model
- Governmental Model
- Sponsorship/Advertising Model

Donations Model

The donations model involves philanthropic funding to support OER development, infrastructure and projects. An example of the donations model is Wikipedia which operates based on community donations (Downes, 2007). A further example of this model is the work of the William and Flora Hewlett Foundation who have supported OER as a strategic focus for the last twenty years through their grant scheme (DeBarger & Casserly, 2021). There are sustainability weaknesses with the donations model, many valuable projects have ceased to exist once funding has been removed such as the OER World Map (Okoli & Wang, 2016).

Governmental Model

In the governmental model, national governments and international organisations fund OER initiatives (Okoli and Wang, 2016). An example of the governmental model is the [Commonwealth of Learning](#) which is funded by several Commonwealth countries to promote open and distance education (Col.org, n.d). A further example is the [Irish National Forum for the Enhancement of Teaching and Learning in Higher Education](#) National Resource Hub which is government funded to promote the quality in higher education, their resource hub serves to bring together all of the resources created by seed funding, you can read more about the National Forum resource hub in the case study in section three. The governmental model also has sustainability weaknesses as once the project funding ends they often cannot continue (Konkol et al., 2021; Okoli & Wang, 2015).

Sponsorship/Advertising Model

The sponsorship or advertising model involves layering advertisements targeting students on top of the learning experience platform so that “paid advertising is placed on OER content. The students do not have to pay” (Okoli & Wang, 2016, p.30). An example of the advertising model is [Academic Earth](#), which curates online courses developed by HEIs and generates revenue by advertising certain programmes on behalf

of institutions who in turn compensate Academic Earth for student referrals (Academic Earth, n.d). There are number of drawbacks related to the advertising model; firstly, the ethics of advertising are incompatible with the philosophy of open education; secondly, the relationship with the advertising business could impact on academic freedom (Konkol et al., 2021; Tlili et al., 2020).

Internally funded

Institutional Model

The institutional model sees HEIs directly funding OER programmes aligning with their own strategic priorities for OEPs. An example of the institutional model is the Universidad Internacional de La Rioja (UNIR) [policy on Open Education](#). In line with their Open Education policy, UNIR offers a proportion of their online study materials openly and free to access as OERs. You can read more about UNIR's approach in section 3 of this report in the case study. One of the key challenges with the institutional model is economic sustainability, as OER are offered to users as free to use, institutions bear the cost to create and maintain the resources (Tlili et al., 2020).

Substitutions Model

The substitution model works by replacing an existing aspect of the educational system such as textbooks, platform, virtual learning environment with an OER or open alternative (Konkol et al., 2021). An example of this model is the use of open textbooks instead of traditional textbooks which can facilitate cost savings for students, this approach has been widely adopted in the USA and Canada (Costello, Bolger, Soverino, Brown, 2019). An Irish institution [NUI Galway](#) has adopted this model and has introduced the Pressbooks platform to support staff to create open textbooks to support the student learning experience.

Author pays Model

In the author pays model, content creators are charged by business for value added publishing services such as editing, hosting, and design services (Konkol et al., 2021). This is similar to author processing fees charged by academic journals. However, as [Farrow \(2022\)](#) points out "In the case of OER, however, there is often minimal need for a third party publisher. Furthermore, the issue of who pays remains but with the added consideration of needing to pay a publisher".

Community funded

Community Based Model

In the community-based model, members of a community who act as creators and collaboratively create and use OER, this can also be called a "prosumer model" (Okoli

and Wang, 2016). The community could have a core team which acts as a distributor, whereby revenue could be generated by hosting the required infrastructure or charging for value added services (Farrow, 2022; Okoli & Wang, 2016). The community based model is based on the premise that members share and exchange OER freely, one weakness with this model is that members are not always willing to share or reuse the content of others (Tlili et al., 2020). Furthermore, the community based model requires resources, leadership and a clear strategy in order to be sustainable in the long term.

Membership Model

The Membership model is a for-fee community that institutions join in order to gain access to privileges such as early access to roadmap decisions and code releases (Downes, 2007; Farrow, 2022). An example of the membership model is the [Open Education Network](#) which supports the [Open Textbook library](#). Members get access to additional resources, support and training programmes.

Platformization

This model involves an OER platform or community building up a quality repository of OER and developing a trusted reputation which attracts other OER producers to link their resources or avail of the services, revenue is generated by asking producers for a contribution to the costs (De Langen, 2013). [Lumen Learning](#) is an example of an organisation using a platforming business model as one strand of its strategy.

Higher Education Service Models

Data Exploitation Model

The data exploitation model involves selling student data from the learning platform to third parties, which could be used to promote products or services (Konkol et al., 2021). There are a number of issues with this business model, there are GDPR data protection concerns with regard to data handled in Europe. Furthermore, the ethics of selling student data is not compatible with the philosophy of open education and OER (Tlili et al., 2020). A number of MOOC platforms have adopted this business model and “despite the generous provision of free learning, it seems clear from the reviewed policies that user consent is employed to gain significant insight into individuals' personal data” (Khalil et al., 2018, p. 75).

Dual-Mode University Model

The Dual-Mode University Model involves the use of OER in an online course or MOOC to develop a distance learning or virtual university operation in tandem with traditional in-person delivery (Farrow, 2022). An example of this business model is the partnership between [Dublin City University](#) and [Futurelearn](#), which facilitates the development and delivery of short online courses and microcredentials through the Futurelearn platform and is a differentiated offering to the campus-based undergraduate and postgraduate programmes.

Freemium

The freemium business model is an increasingly common model in the area of web-based products and services and educational technology, it involves users getting access to a basic service for free which is funded by the same product being offered with more features as a premium service (Farrow, 2022; Orr et. al. 2015; Osterwalder, 2010). In the higher education context, the selling course experience model or “Freemium” model is where educational content is offered for free and additional services are offered at a cost such as certification, assessment, and teaching support. An example of the freemium model is the Futurelearn provision of free course access for a limited period of time and then paid access indefinitely. There are a number of challenges related to the freemium business model; firstly, the model is inconsistent with the philosophy of OEP, secondly, the level of infrastructure needed to implement the freemium model may present a barrier to Open projects and services (Tlili et al., 2020).

Online Programme Model

The Online Programme model is similar to the Dual Mode model described above, with one difference as it is enacted by extending presence-based education to online or blended courses. An example of this model is the [MIT OpenCourseWare project](#) which shares video content from their campus based programmes.

Segmentation Model

The segmentation business model mainly relates to open textbooks, revenue is generated by commercialising a service relating to OER such as printing and selling low cost open textbooks to replace proprietary textbooks (Farrow, 2022; Konkol et al., 2021). An example of the segmentation business model is [Openstax](#), who “publish high-quality, peer-reviewed, openly licensed college textbooks that are absolutely free online and low cost in print” (Openstax, n.d).

Darwish's OER-based Edupreneurship business models

One of the most useful recent publications on OER business models is Darwish's (2019) *Open educational resources (OER) Edupreneurship business models for different stakeholders*. In this article, Darwish (2019, p. 3855) proposes a business model typology for educational entrepreneurship (edupreneurship) for OER. Darwish's OER based Edupreneurship typology identifies four different business models:

- The static model
- The interactive model,
- The dynamic model and
- The transformative model.

These models are detailed in Table 5 below:

Model	Definition & providers motivations	Technical requirement, organisation & management	Revenue streams & issues
<i>Static</i>	<p>This model is content-based (content aggregation vs curation) for supplementary use (e.g. repositories, libraries & courseware)</p> <p>Motivations of provider: Making educational material available for free &/or creating relationships with the educational community</p>	<p>open-source platform (e.g. ATutor & WordPress blogs)</p> <p>Organisation: Classification & categorization model, search engine for updating</p> <p>Management: DIY, system development</p>	<p>Revenue: None, Donation, subsidising model</p> <p>Issue: Members participation is not sustainable and updated</p> <p>Lack of committed members</p>

		Community production, collaboration & sharing.	
<i>Interactive</i>	<p>IMM Courses/ products for self-study & blended learning (xMOOCs, Edutainment & Games)</p> <p>Motivations of provider: Production-based Industry/Business</p>	<p>Platform with interactive learning environment such as OpenMOOC multimedia authoring software and audio/video production equipment</p> <p>Organisation: On-site studio production, IMM learning theory and approaches, AI scenarios</p> <p>Management: Meetings with institutions & agreeing on the business model or models</p>	<p>Revenue: Based on level of interaction and optimization of user experience</p> <p>Issues: Updating material isn't feasible, production for different platforms</p>

<p><i>Dynamic</i></p>	<p>Online courses/ blended learning</p> <p>Motivations of provider: Distance & Online learning (Online learning environment. cMOOC)</p>	<p>LMS; Moodle & Joomla LMS</p> <p>Organisation: University centre</p> <p>Management: Regulations & Policies for online degree</p>	<p>Revenue: Units of courses, Online degree Accomplishment/ degree</p> <p>Issues: Quality of learner participating content, Workload of instructor</p>
<p><i>Transformative</i></p>	<p>Service-based/Career-based Courses/</p> <p>Motivations of provider: Tailoring projects/ On job training</p>	<p>Platform with interactive learning environment such as Second life/ game development environments MOOCs/Object Oriented software and audio/video communication channels</p> <p>Organisation: scheduled, Real time online communication</p> <p>Management: Recruitments/ Needs Analyses of the market & industry/</p>	<p>Revenue: Platforming/ Brokerage Model: Marketplace Exchange Efficiency/ service-network</p> <p>Issues: Outsource parties commitment</p>

		transdisciplinary team management/ intermediating contracts between institutions & industry	
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Table 5. Darwish’s (2019) OER-based Edupreneurship business models

1.7 OER Business Models Summary

When looking at these models, it is important to consider that they are generally composed of three aspects. First, the way OER are financed, noting that the various financial models shape the resulting services but are also the element of a business model which needs refining as services go through various stages of maturity, and that non-economic ways to sustain OER, such as tenure decisions and teacher professional development practice, can have an influence in the decisions by universities on which OER sustainability model, or combination of models, to adopt. Second, the service model adopted, noting that often there may be several tiers to a “market” – the primary group/community on which the service is closely modelled and also possibly secondary markets that the service can serve. Third, the role of suppliers and consumers, that can often be from the same sector, community or group, noting that the groups that are contributing may not actually be consuming; consumers may also be suppliers but not necessarily (McGill et al., 2008).

1.8 Conceptual framework

The following conceptual framework outlines three (micro, meso and macro) layers of analysis to understand how different organisations support the development and dissemination of OER, see Figure 6.



Figure 6. Conceptual Framework to explore different aspects of business models for OER

The micro level of analysis focuses on activities, resources and priorities within the organisation, including value propositions for developing OER content and materials which offers value to the customer, which is different to offerings from other OER providers (Periera, 2020). The meso level of analysis addresses customer interaction, stakeholder networks and product and service differentiation for various users. The macro level of analysis relates to the environmental factors which can influence sustainability of OER, in terms of funding streams, revenue, government priorities for enhancing access to education for different target audiences and legal and technological issues. Examples include GDPR (General Data Protection Regulation) IP (Intellectual Property) rights, Creative Commons licensing agreements for developing and sharing educational materials, content and resources. The framework is used to analyse a sample of three business case studies who have developed OERs to enhance learning opportunities for various users. The overarching aim of this report is to explore how the relationships between higher education and business can address barriers to mainstream adoption and development of innovative and sustainable models for OEP. The goal of the case studies is to understand how OER is interpreted in practice by different organisations including the extent to which business models address sustainability, funding, revenue stream and user needs and to share best practice and encourage a culture of collaboration to enhance access to OER.

Level	Name	Description
Micro	Organisational context and activities	Visual representation, namely the Business Canvas (Osterwalder & Pigneur, 2010) of organisational activities, including resources, customer segments, partners, products, services, value propositions, revenue streams and cost structure.
Meso	Stakeholder networks, funding and revenue streams, OER products, services, customers and users	Engagement with products and services, for example static, interactive, dynamic and transformative (Darwish, 2019). The case studies selected for this project will illustrate different types of OER offerings and opportunities (or not) for users to adapt, customise and share and reuse educational content. For example, basic access to educational materials or documents, hosted on an OER library or repository (static) such as the National Forum for Teaching and Learning repository, to various products and services (e.g. Joubel/H5P plugin) which enable users to develop interactive teaching and learning resources which can be shared among a community of users (dynamic and interactive). Potentially, access to user-friendly resources which provide educators with the confidence to develop interactive teaching and learning resources for students (e.g. Joubel/H5P) may have a transformative effect on individual educators, in terms of the development of technological skills and confidence. Additionally, access to user-friendly technologies augmented by customer service and training support from the OER providers (e.g. Joubel/H5P) may help to create a culture, among educators and organisations, of developing, sharing and reusing high quality educational resources to enhance
Macro	Environmental and Policy	PESTLE model: SWOT analysis of

	context	Political/Economic/Sociocultural/Technological/Legal/Environmental Factors that influence development, dissemination and sustainability of Open Educational Resources, in European context, including extent to which materials are free to users or require a subscription, payment or membership fee to access different levels of service, products and features.
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Table 6. Outlining the three levels of analysis for the OER case studies

Description of the different dimensions of the Conceptual Framework

The conceptual framework has been developed by drawing on different business models (e.g. Osterwalder & Pigneur, 2010) which focus on various resources, motivations, revenue and funding streams, customer requirements and stakeholder networks. Key to this framework is the recognition of the needs of different stakeholders (e.g. Darwish, 2019; de Langan, 2011; Okoli & Wang, 2016) in terms of developing, supporting and using OER (e.g. governments, organisations, institutions and users). De Langan (2011) recommends that the various interests of different stakeholders are considered, when making a business case for supporting OER activities. For example, the extent to which the resources developed will support government policies and objectives. For example, improving technological and educational attainment level and enhancing access to the labour-market for different (e.g. national) target populations, the needs of the learners and users and the extent to which the OER providers have the capabilities and expertise to provide the OER resources and services to meet the needs of the different interested parties (e.g. (Darwish, 2019; de Langan, 2011; Okoli & Wang, 2016). Darwish (2019) identified four types of business approaches for developing OER which have different implications in terms of funding, sustainability and user interaction with resources. These include:

1. **Static OER**, usually the provision of resources on an OER server, website, repository or online library. Content (e.g. reports, documents, articles, educational resources) can usually be accessed, but not altered by users. Examples: WordPress, blogs, YouTube and Policy documents/reports and datasets (e.g. European and OECD online repositories).
2. **Interactive OER** – usually MOOCs or online educational courses, which provide learners with resources and “self-study” (Darwish, 2019) modules and coursework. The interactive aspect of this mode of OER is usually based on supportive interactive discussion forums and boards, where the users can

engage with other participants, online educators/lecturers and course providers. (E.g. Futurelearn, Coursera and other online MOOC providers).

3. **Dynamic OER** – usually MOOCS or online content which can be developed and customised by users, adapted to different local environments or users or in some cases, content. Darwish (2019) raises questions about the potential sustainability of funded projects in the long term when initial funding is dependent on European or other financial sponsorship.
4. **Transformative models of OER** – these are more enhanced and interactive models of OER which are based on transforming organisational practices, upskilling employees and offering customised solutions to organisations to enhance innovation and competitive advantage.

Three case studies are presented in this report mapped onto the above four dimensions of the Darwish (2019) model namely Static/Interactive/Dynamic and Transformative dimensions of OER practices and policies.

Firstly, The National Forum for the Enhancement of Teaching and Learning repository case study illustrates how the creation of a shared online space developed to host **Static** OER and materials can help users to access information and guidance on developing resources. This initiative was based on best practice and expertise from a community of education developers and professionals across the higher education sector in Ireland.

Secondly, the Joubel/H5P case study illustrates an **Interactive** approach adopted by the organisation to help users to develop the capabilities (via the H5P) plugin to produce interactive and high quality learning materials to enhance student engagement and the learner experience, primarily within the Higher Education Sector (worldwide).

Thirdly, the UNIR case study illustrates the **Dynamic** and collaborative approach taken by a private sector, Spanish speaking, online university to develop policies to support best practice in the adoption, usage and sharing of OER resources and practices with different stakeholders, including educators, policy makers and learners in various organisations within and across different countries.

The case studies highlight different levels of access to educational materials and various levels of engagement and opportunities for users to interact with and customise resources and illustrate the **Transformative** effect that different organisations can have on promoting a culture of developing and sharing OER, policies and practices among different stakeholders and communities. Factors which can influence the

longevity and sustainability of open educational repositories, content, resources and communities include the development of revenue streams, beyond the context of a finite project and deliverables, for example funded by government under a specific policy objective. Analysis of external factors using the [PESTLE model](#) for example Political, Economic, Sociocultural, Technological, Legal and Environmental influences can help identify potential barriers and enablers to developing sustainable open educational resources for various users.

Summary

The goal of the conceptual framework, developed within this study, is to move beyond a tendency within business models to focus on internal organisational activities to acknowledge the influence of external (de Langan, 2011) such as political and environmental factors. This includes recognition of the various requirements of different stakeholders (e.g. government, educational developers and users) for sustainable (Darwish, 2019), user friendly, accessible and timely OER.

Section 2: OER value propositions

2.1 Introduction to OER Value Propositions

In this section, we explore OER value propositions in business contexts. We gathered one hundred value propositions from businesses related to OER and OEP and created an [open database](#). We then analysed our sample and derived open business dimensions from them, with a view to exploring new and emerging value propositions related to Open Education.

2.2 Value Proposition Research Methodology

A conceptual model was designed to support the creation of a database (Schlosser et al., 2006). The database was developed to gain an insight into value propositions used by OER. The data collection process began by analysing the OER World Map and its associated database. Following this, additional search strategies were undertaken that included consultation with subject experts and pearl growing (Papaioannou et al., 2009). Pearls identified in this process were OER databases, OER partnerships and/or collaborations, OER promotional websites, OER research projects and academic papers (Date, 2003, Barker, 1990). As the data collection process progressed the search criteria was reviewed and redefined to ensure the database model would identify suitable content for analysis to align with the research aims (Schlosser et al., 2006). It emerged that the degree to which OERs were 'open' varied as did the business model adopted by the OER. In addition, there was a diverse type of OER offerings and opportunity for openness. These will be discussed further in the database analysis.

To explore the variety and fluidity of the OER ecosystem, OERs were analysed against their business model, whether or not they published under Creative Commons Licences, their value propositions and to what degree they were open. The business models as defined by Darwish (2019) of static, interactive, dynamic and transformative were applied to each database entry. This application was twofold analysing the focal company (the OER being examined) and the customer of the focal company. The extension to assess the additional level of customer business models arose from the fact that many OER leaders in the sector do not offer free and open OER but enable the provision of OER by their customers. This unlocked another level of analysis that will be discussed later and referred to as C2C (customer to customer) and C2B (customer to business). The business model and OER offering of customers of the focal company/database OER entry was analysed. Focal company customers often paid for a service to create/develop/host, etc. OER to or for their

customers/students/staff/business. As there was a mix of freemium and free OERs included on the database under the criteria for inclusion the level of open was split into two categories of gold and platinum as per Jhangiani and Biswas-Diener (2017). Gold in this case referred to the freemium option of free trials/free demonstrations/limited access/limited functionality with the option to avail of a premium offering for a financial cost. Platinum in this case referred to free OERs with no financial cost, however, some did require a subscription that required a data based transaction that could lead to data exploitation.

Categories	# of entries on database
LMS/VLE	24
Content Creator/Provider	16
Open Publisher	6
Open Ed CourseWare	26
Open Ed Repository	18
Open Repository and Open Ed. CourseWare	10
Total	100

Table 7. Database Categories

Business Model of Focal Company (Darwish, 2019)	# of entries on database
Static	25
Interactive	24
Dynamic	25
Transformative	26
Total	100

Table 8. Database Business Models Analysed

Limitations

The search strategy could have been limited by the fact that the primary researchers for this aspect of study were English speakers who are familiar with English OER offerings. The pearl growing search did lead to OER in languages other than English, some of which were included in the database. However, these findings were limited and with a sample database with a variety of OERs, limited to only 100 entries, it was not an exhaustive list nor an exhaustive search for non-English OERs. It was noted that the Open University model had been adopted successfully in other countries to deliver similar OER offerings in that country's official language. Furthermore, some HEIs offered OER in additional languages as a marketing and recruitment strategy as will be discussed later.

Criteria for inclusion on database

The database is comprised of a diverse selection of well-known OERs:

- Virtual Learning Environments (VLEs/LMS) such as Moodle and Canvas
- Content Creators such as Articulate and Wooclap
- Content Providers such as FutureLearn and GitHub
- Open Education Repositories such as The National Forum Ireland and Europeana
- Open Education CourseWare such as OpenLearn and OER Commons
- MOOCs such as FunMOOC and MOOC.org

- Publishers such as Wiley and Academia (Rexl Group)

As this database compiled a diverse sample of OER it was limited to a small selection of some key examples. Open databases were excluded as open science was considered to be more advanced than other areas of OER. While some might not consider MOOCs as OERs there is a blurred line between what is considered OER and the degree to which it is open. For inclusion on the database the OER offering had to offer some level of free and open access. This ranged from complete open with CCL; freemium offers that offered some level of open followed by financial transaction e.g. payment required for assessment or certification or credential, etc.; open trials, demos and limited usage with the option of more access or a higher quality offering following either a financial based subscription or a data exchanged based subscription often leading to data exploitation (Konkol et al., 2021). All those included in the database were relevant for both higher education and business. They were considered relevant to both as they can be accessed and used by both HEIs and businesses. Furthermore, the value propositions target both audiences.

2.3 Analysis of OER Value Proposition Database

Market Gap and Opportunity

There is a growth in digitising teaching, learning and research materials and offerings from a business for profit perspective such as [Butterfly Aero Training](#) and [Olive Group](#) and from an altruistic educational perspective such as [OER Africa](#) and [OER Commons](#). However, the sustainability varies drastically based on these approaches. Furthermore, as a result of the global pandemic national restrictions increased the numbers of those working or studying from home. With an estimated 220 million higher education students globally (World Bank, 2021) the demand for OER grew exponentially and with immediate effect. According to Eurofound (2021), Belgium had the highest response rate of employees working exclusively from home at 52% with Ireland and Italy at 47%, Spain at 45% and France at 43%.

There are a number of HEI and Non-governmental organisation (NGO) offerings that are created and remain static as an ongoing business model. Many of these offer similar OER offerings but operate in silos. Over a quarter of the database reflected this with OER offerings becoming stagnant and user analytics and benefits not clearly identified. Growth in this area along with projected trends in use of 'recommender systems', 'tracking preference expression', cross pollination of OER offering and increased stakeholder engagement, to name a few, align with the strategies and business models adopted by the most recognised brands related to OER e.g. MERLOT and CANVAS, etc.

(Melville and Sindhwani, 2017). The opportunity for HEIs, NGOs or other organisations that wish to enter the OER realm exists as this is a young and innovative market. However, attention must be paid to the significance of developing a sustainable strategy with access to ongoing financial resources to encourage a more robust and appealing OER offering. To avoid replication of OER offerings such as traditional standalone OERs and given the commonality of limited financial resources among some NGOs and HEIs, collaborations, partnerships or the development of OER communities could be explored as potential industry based solutions.

As identified in the Ehlers & Kunze (2021) *Awareness, Experience and Organizational Maturity of Open Education* report, there is a growing awareness of OER, while this is not universal it is relevant to both business and education. Value propositions are predominantly aimed at the education sector over business in relation to 'free' and 'open' OER. Business sectors are engaging with the same technology, however, typically customised, at cost and for private use (McKinsey, 2020; BusinessWire, 2022). Commitment to OER varies as does stakeholder engagement and institutional policy (ENCORE, 2021). There is an organic nature to many OER offerings that is very fluid, flexible and at times unplanned.

While awareness of OER may be on the increase it does not make it naturally align with core strategic goals. Those more successfully offering OER are OER focused organisations. OER is part of the strategy and core values of the organisation. Buy-in from leadership and key stakeholders ensures OER will remain a key focus (Bottery, 2004; Bridges & Mitchell, 2000). Clear communication and strategic transparency can not only support employee understanding can also encourage engagement which is essential to avoid any resistance or barriers to OER development (Brownell, 2000; Flood & Jackson, 1991). HEIs and NGOs that have dabbled with OER are not always operating with full support of their organisation or leadership.

Targeting

Content creators, content providers, LMS, and VLEs target both businesses and HEI. The language used and services or infrastructure offered is designed for teacher/student/researcher interactions. Those with subscription fees have more purposeful targeting focusing more on free demos and bulk buy options for campuses. The language, design and promotion of the OERs aligns with this e.g. online classrooms, e-tutorials, open lecture notes, etc. Popularity through brand recognition, number of subscribers and cross pollination of OER offerings suggest that those with subscription based services are experiencing a growth cycle and both strategy and selected business models are currently experiencing success. There is an opportunity

for HEIs and NGOs to learn and adopt this behaviour and strategy with more purposeful targeting that could perhaps attract more students thus introducing an added layer of sustainability into their business model. A number of OERs that target businesses only with a similar strategy were examined but excluded from this database due to the missing link to HEI. Again, this purposeful targeting strategy has proven successful from a business only perspective with more dynamic and transformative focused OERs experiencing exponential growth in recent times. Perhaps the global pandemic supported this growth with more organisations operating in a more advanced digital capacity. Both offerings to businesses and HEI were not typically open or free, however, they offered the opportunity to develop free OER.

The business model adopted depended on both financial resources and strategy. For HEI and NGO OER that are created as part of a project with set deadlines and funding the OER offering tends to be more static or interactive. Those operating a more dynamic or transformative business model typically had an income source from subscription fees, etc. and offered the opportunity to support the creation, development or infrastructure for OER. Depending on who was targeted as the audience predominantly influenced the degree of open and free OERs.

Business Models

The business models included on the database were static (25%) interactive (24%), dynamic (25%), transformative (22%) and mixed models adopted depending on target audience (4%) which would suggest a more transformative approach as discussed later (Darwish, 2019). Additionally, the degree of openness also varied between gold (41%), platinum (48%) and a combination of gold and platinum (11%) (Jhangiani, Biswas-Diener, 2017). These figures were all based on the OER offering of the focal company named on the database.

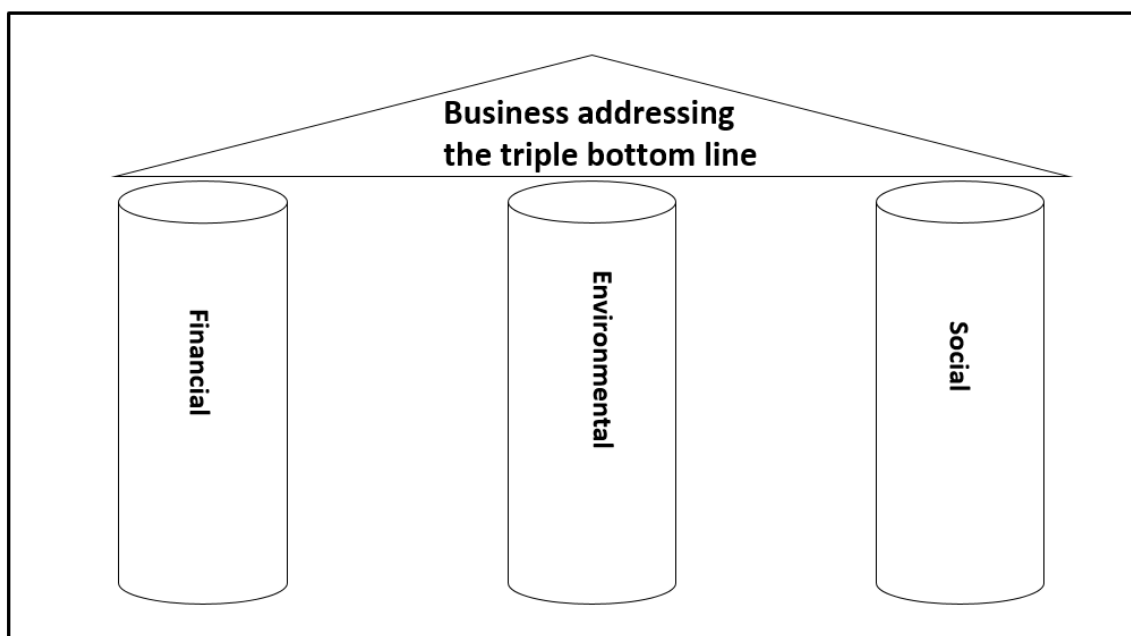


Figure 7. Business strategy that is adopting and addressing the triple bottom line

While considering sustainability against the triple bottom line (Elkington, 1994) also known as the 3Ps (People, Planet, Profit) organisations and institutions should consider their impact on the environment and their social impact to be considered truly sustainable, see figure 7 (Slaper & Hall, 2011). This theory has evolved with academics suggesting additional 4th and 5th pillars however the 'financial' pillar which was the original bottom line for business exists across all models. Interestingly, from the OER perspective, this pillar is not always constant and the OER offering suffers as a consequence. This is where HEI and business OER offerings predominantly diverge. Many HEI offerings have a static or interactive business model where short term grants or financing offer the opportunity to create the OER. Upon completion of the project and with no continued financing the OER offering remains static with limited or no updates, limited if any ongoing maintenance and limited opportunity to attract new financial support as well as end users.

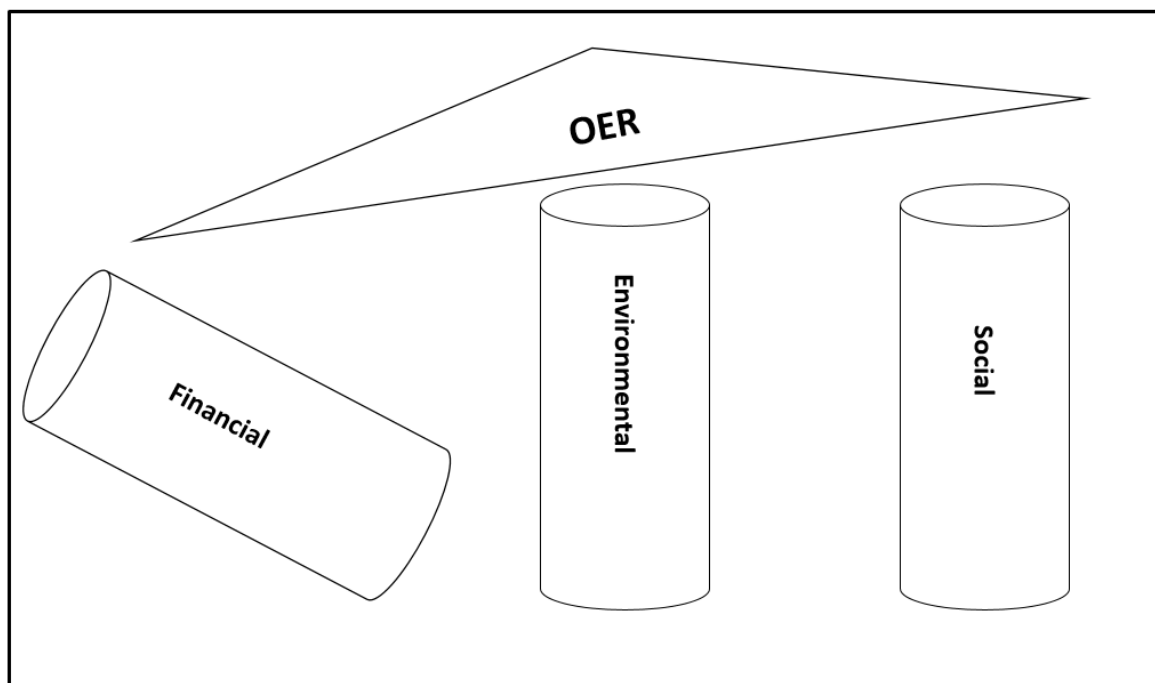


Figure 8. OER strategy that fails to adopt and address the triple bottom line

Those OER with dynamic and transformative business models and in particular those that are not HEI or NGO (non-governmental organisations) based have built in robust financial modelling. Furthermore, the HEI and NGO OERs are typically platinum level of open access with all materials available for free (Jhangiani & Biswas-Diener, 2017). While data based transactional subscription is often required there is no financial cost to access these OERs. As such the lack of income has led to less dynamic or transformative offerings, many with limited open resources that are subject to the original grant/financial requirements. These models typically show limited growth and the user analytics are not clear. Many of these are OER repositories, however there are similar MOOC and Open Ed. CourseWare offerings. While it cannot be obtained from publicly available information it is probable that without significant and ongoing financial investment the calibre and quantity of infrastructure and employees required may not be available to create more dynamic or transformative offerings.

Platinum OER

All free and fully open OERs on the database accounted for 47 out of 100. All 47 were HEI, NGO, a combination of HEI and NGO or government/regional authority backed projects. These 47 OERs relied on grants, funding, donations and philanthropic sponsors to create and/or maintain the OER. Some of these did not have ongoing funding and it is clear based on updates/lack of updates on the sites as to when the funding ended. The OER offerings were predominantly under a creative commons

license. However, there was a mix of both on many of these. Data on CCL was predominantly not clear on publicly available information for the database. With a deeper delve into the organisations it was possible to identify 55% of OERs as operating with CCL. While the levels varied CC BY was the most common finding. An additional 4% offered and promoted opportunities to create CCL content but did not themselves. A further 41% did not create CCL OER and did not appear to offer the opportunity to users to do so in partnership with that OER. The lack of readily available/easy accessible information on CCL suggests that this is not always considered a necessary value proposition

Offerings with limited ongoing financial resources were not all doomed to be unsustainable. Many have been created by HEIs as a form of promotion and recruitment. To this end the OER offering was circular. The OER may be a limited offering that does not directly offer a revenue stream for the HEI, however, it indirectly can bring in new revenue streams by expanding the knowledge and reach of the organisation and potentially encourage the enrolment of new students who wish to expand on their 'free sample'. This typically followed an interactive model that was somewhat elevated from the static offering and more likely to be a more attractive offering, thus fulfilling its purpose. Those with revenue and brand awareness strategies typically offer more recognised and more robust OER offerings as the support structure and stakeholder engagement is there for the OER offering. It does lead to the question on whether more dynamic or transformative OER offerings may result in increased appeal and engagement.

Focal Company Vs C2C and C2B

The focal company or in the organisations responsible for the OER offering have set business models. These vary from static to interactive, dynamic and transformative. Looking at these many offer a platinum based offering which allowed free access to the OER or gold standard offerings that was more of a freemium offering. Typically, these offered a free demo, trial or basic offering with a premium offering available following a financial transaction. Most required a data subscription to access the OER, which can lead to data exploitation with many Open repositories (17% of database) being the exception to the rule. The customer of the focal company did not always qualify as the end-user availing of OERs. Often the OER offering allowed their customer to create, develop and manipulate OER offerings via their service/platform/offering. This allowed focal company customers to then offer OER in C2C (customer to customer) and C2B (customer to business) format. Examples of how this could work would be if a VLE (virtual learning environment) was the focal company and a HEI was the customer. The HEI could develop OERs using the VLE and then offer these to their own customers

(students/prospective students/staff) as a C2C offering. Or the HEI, using their in-house expertise, could use the focal company VLE to develop customised OERs for businesses as a C2B offering. The HEI in this scenario could pay the VLE for their service and have the option to deliver their OER offering free of charge or at a cost. The business model used by the HEI (in this case the customer of the focal company) may be different to that adopted by the focal company. If a static model was used by the focal company as was the case for 25 entries on the database, the customer OER offering if possible also remained static. Beyond static focal offerings the other business models experience more change depending on whether the end user was interacting with the focal company or the customer of the focal company e.g. of the 27 interactive business models adopted by focal companies on the database 6% of their customers offered static modelled OERs to their end users. Depending on what audience is being targeted and organisational and financial limitations the customer could pivot the business model of the focal company offering and adapt to more open offering to a third party. The OER business model from the focal company was interchangeable based on the type of interaction that was required by the customer. This would suggest these OER offerings were ultimately transformative with their flexible approach depending on the stakeholders involved, this accounted for 4% of the database.

Platinum and Gold OER

In addition to the 47% of OERs with a platinum offering, a further 11% of OERs had a significant amount of open resources 10% through Open Ed. CourseWare and 1% as an LMS (Learning Management System) offering. The business models varied as did and while free there were freemium offerings also that required a data/financial transaction for additional services such as a qualification, access to additional materials/resources, etc. The LMS offered a freemium service with a limited suite of offerings to those using the free/basic package. The freemium offering allowed this LMS the opportunity to build a fee paying customer base to offer business sustainability while also offering free OER. The focal company offering was more of a gold level offering with some free and some paid offerings. Customers of this focal company then had the opportunity to develop a free OER or premium service offering to their end users whether they be customers or another business. 9% of these offerings had both platinum and gold offerings depending on what the end user requirements of the OER were. Similar to above, this is often used by the HEI as a means of promotion and to attract potential students. This mixed offering of both free and freemium services ensures there is some revenue creation to support the upkeep/maintenance/development of the OER if so allocated. The remaining 1% that offered both platinum and gold was a business

offering OERs through Open Ed CourseWare. Again, the interchangeability of the level of free and open access similar to the interchangeable business models reinforces the fluidity of OERs and the delivery of OERs.

Gold OER

The database included focal companies which accounted for 41% that offered predominantly freemium with 2% of the overall database available at a charge. So why were these included in this OER database? These organisations with limited or no free open access accounted for 41% of the database as they were key to the provision of OER by many other organisations. The infrastructure or online offering provided by these focal companies could be used to develop OERs with a small pivot in the business model and/or business interaction by their customers. These included a mix of both open and closed source content creators (12), VLEs (10), LMSs (9) and Open Publishers (4), Open Ed CourseWare (6). Again, this reiterates the fluidity of OER offerings. Furthermore, the C2C and/or C2B offerings had the potential to be free, freemium or at a cost depending on the preference and business model selected by the customer of the focal company.

From the business perspective there are many interactive, dynamic and transformative business models being adopted. Those with transformative and dynamic approaches appear to be experiencing greater success based on the company's own reported usage statistics. While many of these do not offer free and open resources, they offer free trials, demos or limited access for free. Many of these offer freemium services with a financial transaction required to access a more premium level service. As a result, there is a continuous stream of revenue available to the organisation for ongoing costs, development of the product/service and inbuilt financial sustainability. In addition, these organisations allow their users to create open access content which can follow their freemium model of the fully free and open model more commonly adopted by NGOs and HEIs. In the database of 100 OER samples, 25% had static business models within the focal business and all users of these also experienced a static business model offering which would require investment of time, employees, finances, infrastructure to offer a more interactive, dynamic or transformative offering derived from the original OER. If the focal company offering was interactive, dynamic or transformative the C2C/C2B OER had the ability to adopt any model. There was no apparent trend on the customer model adopted as financial, technical, etc. variables would need to be evaluated also to see how and why they targeted their audience.

2.4 Analysis of Value Propositions

Target audience

The value propositions promote the opportunity for interactivity, increased engagement, improved teaching and learning but those that are freemium based do not sell themselves on the potential of open. While not specifically targeted at the education sector exclusively they are the primary audience. Perhaps this could pivot to grow more business collaborations or partnerships.

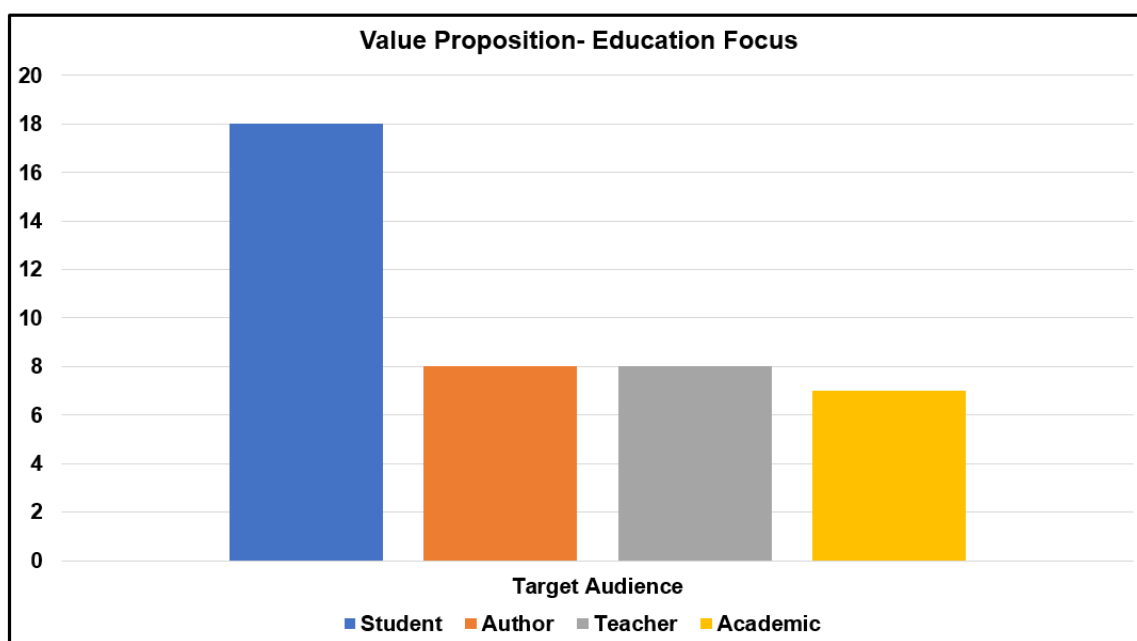


Figure 9. Value proposition targeted at education sector

Target Audience: While 14% addressed 'manage' in their value proposition, 11% of these focused on 'management' (typically of data) and only 1% referred to 'manager'. These predominantly refer to functionality of the OER offering rather than targeting certain people within an organisational structure. This highlights that while the strategic pitch does not particularly focus on a specific target audience, when it does it is more directed at education based organisations given the language used.

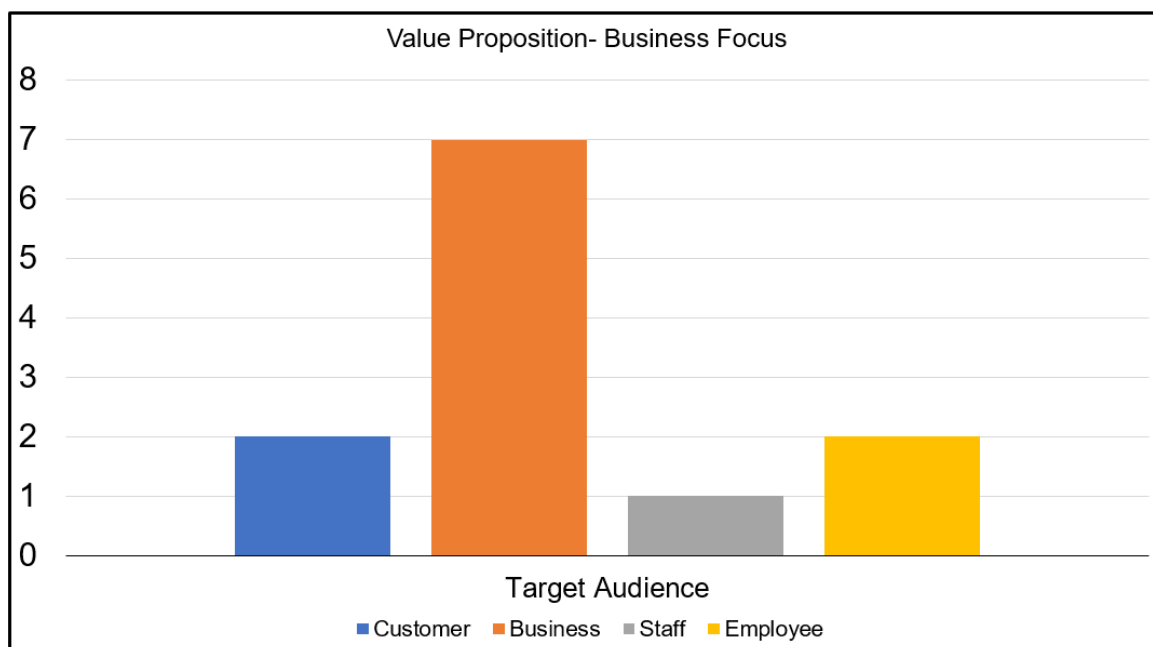


Figure 10. Value proposition targeted at business sector

Promotion and Branding

Details on CCL (Creative Commons License) on sites to support the creation of OER but you need to search for it. Those that promote open or CCL and offer a more transparent level of OER that is free and does not require any form of subscription promote themselves on the basis of altruistic values and the United Nations Sustainable Development Goal 4, 5 and 10 promoting quality education, equality, diversity and inclusion. There is the opportunity to develop promotion on the benefits of OER such as the accessibility anytime, anywhere. Furthermore, there is the opportunity to consider environmental and social impact and a possibly more sustainable educational opportunity- no commuting emissions, all digital no hardcopies, greater global reach, removing barriers to access, etc.

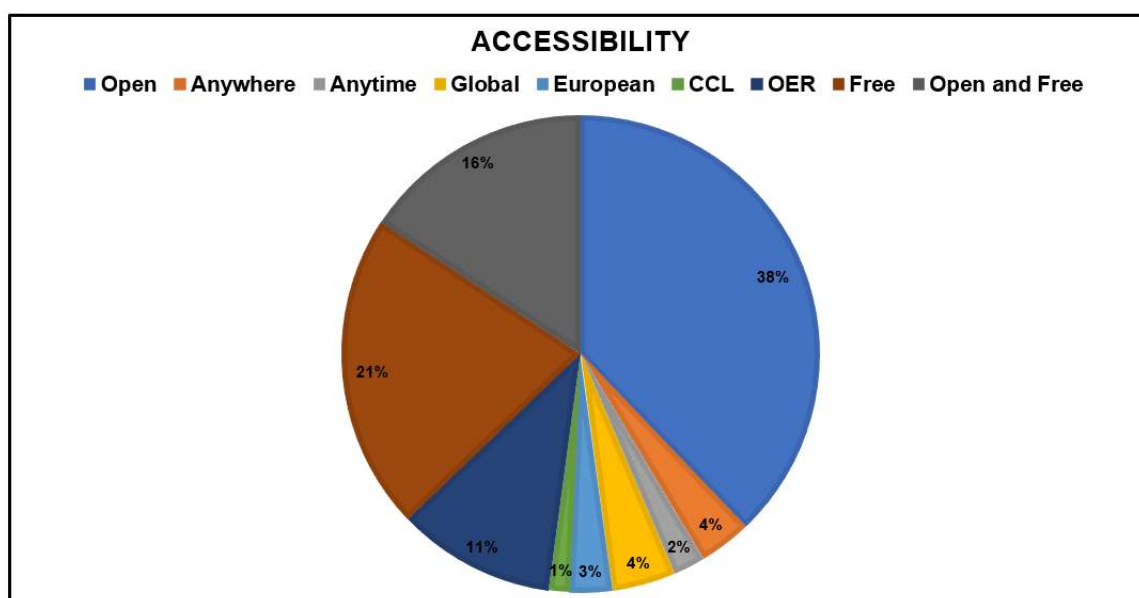


Figure 11. value propositions for accessibility

Accessibility: Despite many being freemium services most OER describe and promote themselves as ‘open’ (53%) and ‘free’ (30%) with some promoting themselves as both ‘open’ and ‘free’ (22%). Interestingly, not many describe or promote themselves as an OER (15%).

Usage: Ease of use was surprisingly omitted from most value propositions with only 5% referring to ‘simple’, 5% referring to ‘easy’ and 1% describing their offering as both ‘simple’ and ‘easy’. Emerging language used as value propositions to describe usage included: learn (47%), resource (24%), 15 platforms (15%), quality (10%), tool (8%)

Future Proofing: OERs naturally lends itself to future proofing and are associated with innovation and the future of education (Orr, Rimini, van Damme, 2015), however, 5% or less take advantage of this as a value proposition [Sustain (5%), Environment (3%), Future (3%), Sustainable (2%)].

Strategy and Pricing

When looking at business models and OER in general there is a very fluid approach that lends itself to diverse offerings that are not only unique but also creative and innovative. It is an area that is in a growth cycle resulting in constant change and very dynamic and transformative outputs. Those organisations that go beyond the traditional development of an end product and consider a more collaborative, community and individual user based approach are experiencing potentially more success based on subscribed users and reported increased activity. Two examples of this would be Joubel and Academia. Both have defined and transparent strategic goals

and perhaps these alone or a combination of these coinciding with the global pandemic has led to exponential growth of these OERs. Academia has successfully adopted 'recommender systems' as part of their open strategy which offers personalised recommendations and encourages ongoing interaction with the OER. Embracing innovation and new technological advances could be beneficial in the creation and/or development of OERs. This can be promoted as a value proposition, be used for targeting, offer more functionality of the OER and build in a form of sustainability through unique and more competitive offerings.

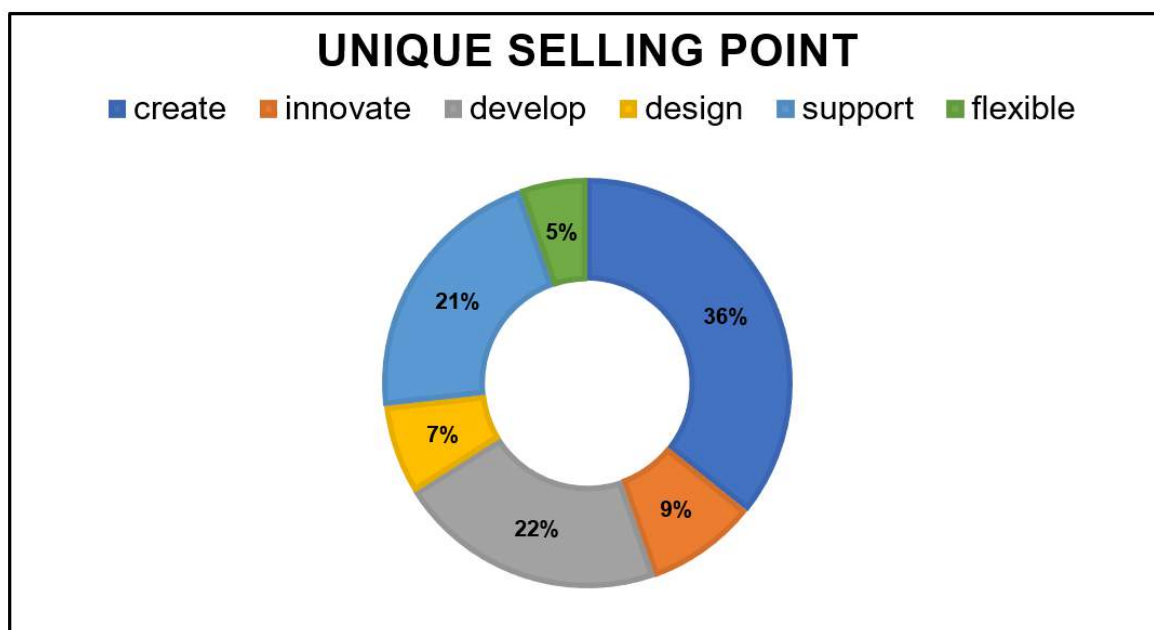


Figure 12. value propositions for unique selling points

Unique selling point: Creativity and innovation without the additional future proofing angle were identified as common value propositions. There is the opportunity to leverage this future to gain more traction for OER offerings. [create (20%), innovate (5%), develop (12%), design (4%), support (12%), flexible (3%)]

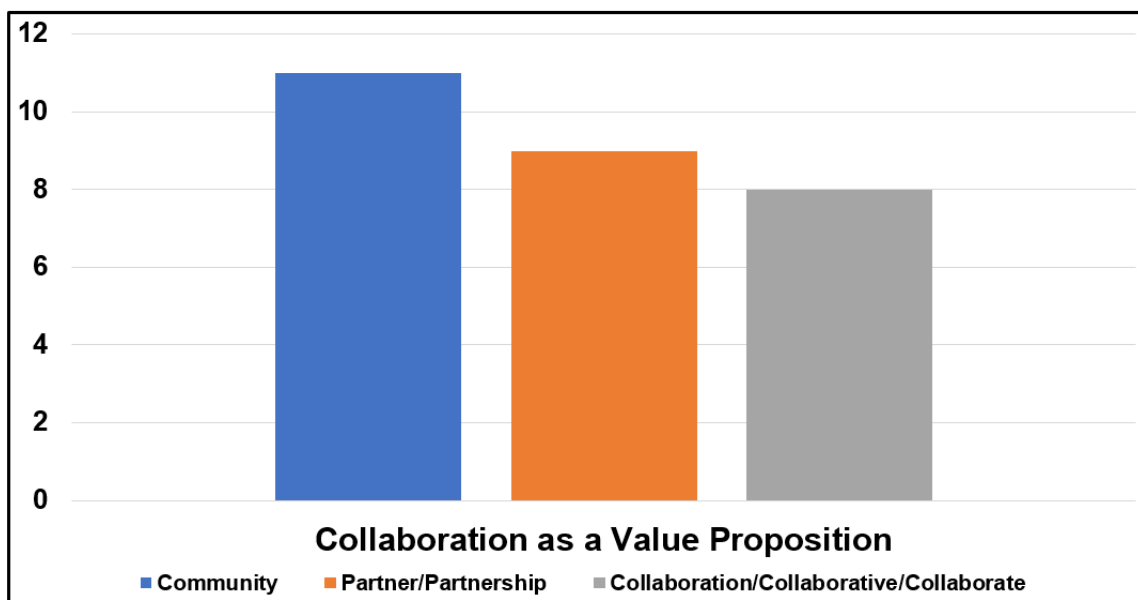


Figure 13. value propositions for collaboration

Collaboration: While just under 30% of OERs included some form of collaboration as part of their value propositions, there was a similar approach and nearly equal distribution of language used. [community (11%), partner/partnership (9%), collaboration/collaborative/collaborate (8%)]

Pricing: 10% of value propositions refer to cost, 5% to subscriptions and 6% to fees. An additional 1% discusses both cost and fees and 1% discusses both cost and subscription. Of these 18% in total that mention pricing as part of their value propositions, 11% describe the OER as open and of those 6% also use the word 'free' to describe their OER. Only 4% of these have required no financial transaction and are all NGO or HEI OER. The remainder of these are mainstream business and offer OER infrastructure or services to support and/or develop OER.

2.5 Summary of Value Proposition research

In summary, in this section, we analysed one hundred businesses that integrated OER in their business models. We found when considering sustainability against the triple bottom line also known as the 3Ps (People, Planet, Profit), we found that from the OER perspective the financial pillar was not always present. Recommendations and conclusions from this value proposition research are detailed below in section four.

Section 3: Case studies of open business models in action

3.1 Introduction to the case studies

This section details three different case studies on organisational approaches to promoting OER practices, policies and user capabilities in producing, reusing and sharing open educational materials, primarily to enhance teaching and learning practices, expertise and the student experience within higher education institutions across different national and international environments. The case studies are supplemented with comments based on interviews with experts in the field of OER, who were instrumental in championing OER practices and policies within the organisations, detailed in the case studies. Pseudonyms were attributed to each interviewee and their comments and contributions to this report. The activities and approaches that the different case study organisations adopted, in order to promote Open Educational Resources and practices, knowledge exchange, expertise and Communities of Practice were mapped against the different dimensions of the Darwish (2019) model of OER as outlined in Table 9.

The Darwish Model (2019) maps various types of OER activities against the 9 different organisational priorities (e.g., key partners; activities; value propositions; revenue streams; customer relations; business segments; channels; cost structure and resources) as described in the Osterwalder and Pigneur (2010) Business Canvas Model. Darwish (2019) describes four different approaches to developing OER activities and products which illustrate various levels of interaction with customers and stakeholders. Static models of OER include repositories and online libraries, where users can access OER documents and information which have been developed by other individuals and contributors.

The example of a static model in this report is the case study of the National Forum for the Enhancement of Teaching and Learning (NFT&L), herewith abbreviated in the report to “National Forum”. The National Resource Hub, which was established by the National Forum to support educators within the higher education sector in Ireland to access and share practices to enhance teaching and learning practices and engagement with digital technologies. Interactive models of OER, as defined by Darwish (2019) include MOOCs and online training courses and learning resources, where learners are often provided with the opportunity to interact with course moderators and peers via

online discussion forums. The case example of an interactive model of OER business practices in this report is illustrated by Joubel/H5P plugin which provides users from different sectors, including Higher Education with the technical capabilities and support (from a global online community of H5P personnel and users) to develop interactive educational materials (e.g., quizzes and surveys) to enhance learners' experiences.

The dynamic model of OER business practices (Darwish, 2019) is illustrated in this report by the case study of UNIR, a wholly online university with a presence across different Spanish speaking countries worldwide. UNIR, in partnership with other stakeholders, has developed policies and guidelines which can be customised and adapted to encourage collaboration and the adoption of OER practices across different environments, cultures and local contexts. Finally, the transformative model of OER, described by Darwish (2019) is illustrated by the three different cases within this report, namely the National Forum's National Resource Hub (Static Model of OER), The Joubel/H5P plugin (Interactive Model of OER) and UNIR's approach to developing policies to support the adoption and adaptation of OER capabilities, knowledge exchange and practices to different environments (Dynamic Model of OER). It can be argued that the three cases within this report all aim to transform learner capabilities, access to OER resources and technological know-how to enhance the quality of learning and training resources for different users. A summary of the different models of OER, in relation to the case studies, is presented in the model below.

Case	Description	Darwish (2019) model of Open Educational Resources, Activities and Practices.			
		Static	Interactive	Dynamic	Transformative
National Forum	OER Repository	Y			Y
Joubel/H5P	Plug-in (interactive educational resources)		Y		Y
UNIR	OER policies			Y	Y

Table 9. Case studies mapped to Darwish Model

3.2 Case study 1: National Resource Hub managed by The Irish National Forum for the Enhancement of Teaching and Learning in Higher Education

Background

The National Forum for the Enhancement of Teaching and Learning in Higher Education in Ireland was established in 2012 to promote knowledge generation and the exchange of best practice between educators within the higher education sector in Ireland. A small core team was set up to foster collaboration across higher education institutions and disciplines in Ireland. A commitment was made to share the outputs and learning from projects and initiatives funded by the National Forum, openly. In 2020 an online open repository was established, specifically for the purpose of exchanging knowledge and disseminating best practice and research generated from the National Forum funded collaborations and activities. As part of the data collection process for this case study we interviewed Sarah [pseudonym] who was instrumental in developing policies, infrastructure and support to encourage individuals and institutions to disseminate and share Open Educational Resources and project outputs.

National Forum organisational context

According to details on the website (National Forum for the Enhancement of Teaching and Learning, 2021a) the goal of the National Forum was to support the professional development of educators within higher education in Ireland via different activities, networks, training and development opportunities, national, regional and sector level events and funded collaborative programmes. Additionally, the Forum sought to promote excellence in teaching and learning by acknowledging the contribution of individual educators and teams to enhancing the quality of teaching and learning and the quality of students' experiences within Higher Education Institutions in Ireland. One of the Forum's activities was the creation of a National Resource Hub namely a repository of shared open educational resources, held on a central server which could be accessed by users (National Forum for the Enhancement of Teaching and Learning, 2021c) Open Educational Resources (OERs) on the National Resource Hub are licensed using Creative Commons licences and can be accessed by users to help build capacity and expertise as educators. For example, by browsing through publications and resources by subject field, sourcing information on funding calls and searching for training opportunities (e.g., courses and micro-credentials) and developing understanding and capabilities on new technologies and best practice approaches to supporting learners within various programmes within Higher Education Institutions.

Customers, products and revenue

In general, the content on the National Resource Hub includes documents or webinars that have been produced and uploaded by academic staff, researchers, educational technologists and subject experts, many who have been supported, to produce and disseminate resources via initiatives (funded by the National Forum). Open Educational Resources shared in the National Resource Hub are licensed using Creative Commons (CC) licences (National Forum for the Enhancement of Teaching and Learning, 2021c). All Creative Commons-licensed resources require attribution. Resources created by the National Forum use the most permissive licence, CC-BY which requires attribution only. Some of the resources shared in the National Resource Hub use licences with additional restrictions. The National Resource Hub includes a document offering guidelines on the different types of Creative Commons Licences available (National Forum for the Enhancement of Teaching and Learning, 2021b) to help individuals and organisations to select the most suitable licensing agreement for open education materials. The National Resource Hub is largely used as a repository, where users can search for, access and upload resources, publications and webinars under the following topics which have been informed by educational policies, priorities and practice in Ireland:

- 1) Assessment and Feedback
- 2) Student Success
- 3) Teaching and Learning Practice
- 4) Digital Learning
- 5) Professional Development
- 6) Open Education
- 7) National Forum Publications
- 8) Accessibility and Inclusion

There are some interactive features within the Resource Hub that are asynchronous rather than synchronous, where the user can request support using an email form and an administrator in the National Forum will respond to the query. There is a search function which offers the user the facility to filter resources by licensing type, media format and subject discipline. Publications and resources are displayed in order of the date that they were uploaded. There appears to be a shift in focus in terms of the educational issues over the last two years, with a number of recent resources addressing digital technologies, the impact of Covid and greater emphasis on the Student Voice/Student Engagement and inclusion.

OER – as a core aspect of the business model

According to Sarah [*pseudonym] one of the key strengths of the National Forum is that

“It [The Forum] not only works in collaboration within institutions and disciplines but also encourages collaboration across institutions and disciplines [in the Higher Education Sector in Ireland]”.

One of the main aims of the NFT&L was to increase capacity and understanding of Open Educational Practices (OEP) and to encourage individuals and institutions to share resources, learning and outputs from initiatives and projects funded by the Forum. The approach taken by the team in the National Forum was to undertake a needs assessment across the sector and then to develop webinars and toolkits to develop capabilities across the sector for using OER and OEP for teaching and learning. According to Sarah, this involved working across the sector, across all institution types, from organisations with less than 500 students to institutions with over 20,000 students. This required responding to the different needs and requirements of the various organisations and individuals. Sarah observed that:

“Many people don’t understand what Open means in terms of Open Licensing.”

“Some institutions were already engaged in supporting OER, [for example projects with Librarians to disseminate resources held in university libraries] and other institutions needed more help.” (Sarah).

Work within the National Forum Open Education team was primarily focused on supporting individuals and institutions to understand open licensing and to encourage a culture of sharing project outputs (funded by the Forum) openly, i.e., as OER, including via the National Resource Hub. Also, Sarah discussed the importance of developing policies to ensure the sustainability of OER and OEP across the sector, beyond the activities of individuals, teams within institutions and specific practices within projects.

“Unless Open Practice is embedded in strategy and policy it will be hard to ‘stick’. It was really clear that strategies and policies were essential if we wanted to support Open Educational Practices across the sector and beyond individual projects.” (Sarah).

National Forum Repository for Open Educational Resources

The National Resource Hub was established to provide educators with an online platform to share outputs from NFT&L funded projects and other OER which individuals had found useful in their own work. While it was recognised that people would publish documents and resources on other sites, such as WordPress and YouTube, the National Resource Hub provided users with a:

“One stop shop for resources created [by individuals] within the Irish Education Sector - sharing things that are more granular, rather than whole collections, encourages the practice of adapting and re-using resources.” (Sarah).

According to Sarah one of the benefits of the National Forum is that it is publicly funded. Therefore, everything developed by the National Forum is licensed using a CC BY licence and is freely and openly available online (e.g., in the repository and National Forum website.)

In terms of sustainability the National Forum is committed to long term funding for initiatives.

“You want to embed things, building practices and capabilities across the sector, including encouraging people to reuse and share resources.” (Sarah).

Challenges

When discussing the challenges of encouraging individuals to develop, share and reuse OER, Sarah suggested that organisations such as the National Forum can act as a catalyst to encourage behaviour change. For example, by supporting individuals who are motivated and interested in learning about and sharing OER who could act as *“visible exemplars in their organisation” (Sarah)* and potentially encourage others to develop, share and reuse open educational materials.

“You work with the enthusiasts, the people who want to do it [engage in developing and sharing open educational materials] and watch it grow from there.” (Sarah).

Sustainability and funding models for OER

When discussing sustainability and long-term funding for OER and OEP, Sarah suggested that long term public funding (versus private/public or freemium/premium financial models) fits with the needs and ethos of the education sector.

“I would be an advocate for lobbying for public funding. For me the goal is to understand that it’s not about a profit-making venture, it’s about meeting the needs of all, and the people who need it (Open Educational Resources) most are the most marginalised, for example in the Education and Community sectors. I am an advocate for public accountable funding, and I would put a great deal of effort into committing to publicly funded education.” (Sarah).

Summary

In summary, the National Resource Hub hosted by the National Forum provides a virtual space where individuals can both find and share resources (not just free of charge, but also openly licensed to permit reuse) to contribute to knowledge generation and professional development of educators and learners and other stakeholders (e.g., policymakers) within the higher education sector in Ireland. The

National Resource Hub (e.g., repository) provides users with access to OER and educational materials for reference, upskilling and professional development in addition to opportunities for face-to-face learning, interaction and community building via engagement and participation in NFT&L seminars, events and project activities. The ethos of the National Forum and associated activities illustrates the benefits of encouraging collaboration within and across the education sector and providing support to individuals and organisations to develop and share open educational resources to disseminate knowledge and best practice (e.g., open licensing agreements, project outcomes, useful materials and resources). The emphasis on embedding open education into practice, supported by clear policies and strategies helped to highlight the importance of providing learners with high quality educational materials as well as encouraging institutions and individuals to develop the capabilities, skills and confidence to share expertise and resources. The recognition of education as a public good, supported by public funding, meets the goal of ensuring that Open Educational Resources are available to marginalised groups as well as learners who are in a position to pay for their education.

3.3 Case study 2: Joubel

Background

Joubel is the parent organisation responsible for designing and launching the H5P plug-in, in August 2018, to provide technological solutions for content creation, primarily for Teaching and Learning practices within higher education institutions worldwide. The H5P plugin is used by customers (200 million users on 200,000 websites) to create, share and reuse over 40 types of interactive content (e.g., quizzes, memory games, flashcards, videos etc.) The H5P plugin is compatible with multiple html and VLE platforms including Canvas, Blackboard, Moodle, Brightspace and WordPress. H5P customers are from different sectors including private and public sector organisations, NGOs, schools and universities. H5P staff offer customers support and expertise (Software as a Service), as well as offering the H5P plugin as a stand-alone product, which can be self-managed by users. H5P staff can provide technological support and upgrades (24/5) and are located in the US, EU and Australia to ensure that customers have access to a server within the region. There is a global community of H5P users (find out more about how the H5P community works) and original educational materials and content is available to users, primarily in English, but also in different languages, for example German. According to details on the website, the business grew from 700 organisations using H5P in July 2020 to 1700 organisations in November 2021. As part of this case study, an interview was

conducted with Alex *(pseudonym), a lead educational technology expert and innovator and founding member of H5P and associated products and services.

Organisational context

The goals of the organisation (source: website) are to facilitate the creation, use and reuse of html-based content across multiple sites and to encourage the exchange of resources and expertise created by the worldwide community of H5P users. The ease of use of the H5P plugin means that content (over 40 different types of resources – e.g., quizzes, videos, flashcards etc.) can be developed and customised by users who are not experts in technology. (Customer endorsements on the website [e.g., educators within higher education institutions] highlight the ease of use of the HP5 plugin as key to developing and sharing high quality OER among staff and students.

Customer products and revenue

Content created with the H5P plugin can be shared, used and reused by individual users within an organisation or within the worldwide community of H5P users. Html content can be shared and published across different sites (e.g., WordPress, Canvas etc.) which can help disseminate high quality educational resources to multiple users (e.g., staff and students). The ease of use of the H5P plugin means that individuals who are not technological experts can develop educational content, which can help to upskill academic staff and lecturers and potentially increase their confidence in developing and sharing educational resources. This in turn may promote a culture of sharing, using and reusing resources which may impact positively on increased access to OER for students. The core aim of the organisation is:

“To ensure we succeed in empowering as many people around the world to create content and share it. We work with the community to bring H5P forward.” (Alex).

Impact of the Covid-19 pandemic on the business

According to Alex, the Covid-19 pandemic impacted on the business, primarily in terms of the type of support that users sought, rather than solely in relation to a change (e.g. increase or decrease in the number of customers). There was a greater demand from customers to seek support with transferring teaching and learning from face-to-face to online platforms during the pandemic. This meant a greater focus on communicating and interacting remotely via technologies such as Zoom and videos and developing modes of online assessment such as digital exams, rather than on activities concerned with developing and sharing new content and resources. According to Alex decisions by customers to engage with digital technologies during the Covid-19 pandemic was based on:

“Must have rather than nice to have [products and services]” Alex

OER as a core aspect of the business

Customers who purchase H5P products and associated services can access 24-hour support for five days a week. However, there is also an online community and support for users of the free version of H5P.

“We have a forum, people can ask questions, we also have members of staff who can share expertise. We use social media and mailing lists to [connect with] over 200 million end users worldwide.” (Alex)

Challenges

Alex discussed the benefits of developing technologies and products, such as the H5P plug-in which provides users with the skills, resources and support to develop educational content which can be customised and remixed and adapted. However, in contrast with the interactive and dynamic nature of developing content via the authoring tools, the repositories and hubs where the resources can be shared are often static, for example documents published in PDF format which are difficult to remix and customise. According to Alex, for organisations that are dependent on publishing resources online in a repository or hub as the main source of revenue there is the threat that other organisations could access the content, copy it and publish the resources on a competing online hub or repository. This may potentially present challenges to creating, and sharing Open Educational Resources (OER) on repositories. As the main focus within the H5P business model and activities is to support users in harnessing the benefits of H5P technologies and services to develop interactive teaching and learning resources, the dependency on developing and sustaining an online repository or hub is a primary source of income from the organisation. The establishment of an online community of users who can share expertise and get support from other people who are developing resources with the free version of the H5P plugin is a way to market the H5P product and to disseminate information and interest in the product.

Alex suggested that different types of copyright licences for example, free to use and reshare versus restrictions to use and reshare might help encourage users to share OER and may protect learning hubs and repositories from having their materials copied and published on other repositories and online hubs.

“Maybe different licences might help, but open content is open, that is one of the main ideas.” (Alex).

Analysis and lessons learned

According to Alex, one of the lessons learned, since the early days when the organisation was founded, was the challenge of getting sponsorship from users to maintain the hub and for OER development.

“You can’t expect your users to support you to keep things going. You actually have to sell them something. There were some companies who wanted to support us [to develop products and resources] but couldn’t find a way [to donate to us] as we aren’t a not-for-profit organisation. We have to sell something we can’t rely on support, and maybe that is something we learned.” (Alex)

Additionally, Alex identified the various values and priorities that different customers will have, and what they will be willing to pay for. Accessibility was a core value underlying all customers' needs, in terms of ensuring that the H5P products and resources were easy for users to engage with to create content, regardless of different levels of ability/disability [such as visual, sensory, auditory impairment]. However, accessibility within products and features was something that customers expected to be included within their service level agreement rather than realising that there are resource implications (e.g. cost, time and effort) to developing, testing and customising products and services to meet the varied needs of different customers.

“It’s not easy when you have such an interactive product as we have!” (Alex)

“Accessibility is the main focus of our projects, it’s very important for designers, for example to check contrast [and images and text and usability of features] throughout the process, or there would be a lot of work at the end [for the designers]. We need to design with this in mind.” (Alex)

Summary

The insights and comments given by Alex illustrate the potential tensions inherent in developing online educational resources for profit and for open use and dissemination. The H5P model seems to capture the best of both worlds, namely revenue generating activities and services which focus on providing different levels of expertise and support to users (primarily HEIs) to promote the development and use of interactive and online teaching and learning materials to enhance the student experience and learning outcomes. An interactive online community for users of the free version of the H5P plugin promotes sharing of expertise and highlights the value of creating a culture of openness and information sharing to enhance the skills and capability of users who are involved in the development of high quality educational resources for learners.

3.4 Case study 3: Universidad Internacional de La Rioja (UNIR)

Background

Universidad Internacional de La Rioja (UNIR), www.unir.net, is a Spanish University established in 2008. UNIR is a 100% online private for profit university. UNIR currently provides more than 190 academic degrees, namely official diplomas like, i.e. bachelor, master and doctorate programmes, and private, non-official programmes in Science and Humanities, Law, Business, Engineering and Social Science disciplines. A number of Lifelong Learning Programmes/courses are also provided to company's staff and professionals based on the industry requirements. They are delivered in Spanish (mainly) and English (some). It comprises an academic community of over 2.500 knowledgeable lecturers from all over the World, along with a strong team of more than 1.000 multidisciplinary staff members (including 200 academic tutors), working on administrative management and support services. The main headquarters are located in Logroño, La Rioja, Spain. It has also premises in Madrid (Spain), Colombia (Bogota), Quito (Ecuador), Lima (Peru) Bolivia (Santa Cruz), Mexico DF (Mexico), Buenos Aires (Argentina), and Miami (USA), along with a number of collaboration agreements with Latin-American and European universities. Student enrolment was over 66,000 in 2022. Foreign students at UNIR stands for the 21%, learning from 85 different countries, mainly Germany, Argentina, Austria, Bolivia, Chile, China, Colombia, South Korea, Ivory Coast, Costa Rica, Ecuador, El Salvador, USA, France, Greece, Guatemala, Honduras, Morocco, Mexico, Panama, Paraguay, Peru, UK, Singapore, Turkey or Venezuela.

UNIR Research (<http://research.unir.net>), stands for the Vice-rectorate for International Research at Universidad Internacional de La Rioja (UNIR, <http://www.unir.net>). UNIR Research groups together all the research activities carried out by UNIR research Groups at the international level. It works on selected scientific and humanistic fields of study as Engineering, with particular focus on information and communication technologies (ICT), Psychology, Education, Law, Communication, Economy and Social Sciences. To do so, UNIR provides support to over 300 researchers in a number of topics organized as research groups. The Research Institute for Innovation & Technology in Education (UNIR iTED, <http://ited.unir.net>) develops research projects very much focused on ICT and Technology-enhanced Learning (TEL), eLearning, Open education and Learning Analytics since they are core topics of the university. This institute has contributed to over 60 research projects since 2012.

This includes providing access to educational resources online produced by staff via the TV channel in various countries and languages including French, Arabic, Finnish, as

well as Spanish and English and promoting the use of digital technologies within teaching practices to enhance the learning experience for distance-based students. This case study details UNIR's policies and practices in relation to Open Educational Resources (OER) and online learning and is supplemented by comments and insights from an interview with a Senior level leader and innovator in online education, teaching, learning, research and policy -*Ben [*pseudonym].

Organisational context

A key aim of UNIR is to harness technology to enhance teaching and learning in Higher Education and to provide access to Open Educational Resources (OER) to promote inclusion, equality of educational opportunities and lifelong learning as outlined in the Education4All guidelines (UNESCO 2015). UNIR has developed policies to promote the development, dissemination and use of [Open Educational Resources \(OER\) and Practices](#) (OEP) and the exchange of knowledge between stakeholders (including researchers, academics and students) in Spanish speaking countries around the world. "It is not just about the language, it's about culture. When you talk about Spanish [language] you are talking about 50 countries - different accents, words for the same thing, different approaches to working together. We put our policy in place which can be adapted, used and reused in different contexts and cultures. Diversity is the key to putting together a global perspective." (Ben).

Customers, products and revenue

The goal of the policy developed by UNIR is to encourage different stakeholders e.g., teachers, learners and content creators to engage with and publish Open Educational Resources and services. The vision for OER creation, use and dissemination is supported by an online university repository and TV channel which provides users with access to educational online materials and videos. According to Ben* 20% of online content is available for free and without registration (open), 20% is available for free under free registration, and 60% of content is available to registered students under the annual tuition.

OER – as a core aspect of the business model.

OER is a core part of this business (Universidad Internacional de la Rioja, 2013) and includes different goals and activities:

- The design of e-learning systems and courses, including mechanisms for assessment, accreditation and different types of learning programmes and qualifications (e.g. micro credentials).

- Data collection, generation and learner analytics, including raising awareness among staff and lecturers on issues around Ethics, Privacy, GDPR and Social Responsibility.
- Faculty and students are encouraged to collect data on the use of OER in teaching and learning activities.
- Open Education and Open Science – promote a culture which encourages the use of technology to enhance teaching practices and contribute to the quality of the experience of the learner at a distance from a physical campus environment underpinned by training and support on issues relating to producing and sharing OER content. For example, promoting awareness of data collection methods, learner analytics, privacy issues, Licensing and sharing content (e.g., variations of Creative Commons agreements in terms of attribution of work to the content creator and terms around the dissemination of resources, usually for non-commercial use).

Policy and Environmental factors influencing UNIR goals and OER activities

The development and provision of OER resources is a key part of the UNIR Business model to promote a culture of equality and access to high quality educational resources to learners, in line with policy objectives for inclusion and lifelong learning (UNESCO, 2015). The dissemination of high-quality resources via the university OER repository helps to highlight UNIR reputation and research activities in terms of promoting digital technologies and OER to enhance Teaching and Learning practices in Higher Education. Additionally, by providing users with access to “free to use” online resources UNIR demonstrates an awareness and understanding of the need to support learners who are not physically or geographically located in the campus environment. The provision of free online resources and educational materials to users provides a way to market UNIRs educational offering and ethos, which may encourage potential students to enrol on UNIR undergraduate and postgraduate programmes. According to the UNIR website, retention rates are high and dropout rate on programmes is less than 5%. The approach to supporting Open Education and OER to enhance Teaching and Learning activities is articulated in UNIR’s policies and practices and provides a way to attract, support and retain students undertaking online learning programmes across various geographical locations. According to Ben, the distinction between open and closed education is less important than the philosophy underlying online education provision, namely the goal of providing access to education and a seamless and high-quality experience for the learner mediated by a diverse range of social and learning

technologies (e.g., Twitter, videos, etc.) regardless of whether the learner is online or (face-to-face) in the classroom.

Challenges:

According to Ben, challenges to developing sustainable Open Educational Resources (OER) include the dependence on individuals to devote time, energy and expertise to developing and sharing educational materials and resources.

“It is free for me to use but not free for you to produce [the resource].” (Ben)

“If the potential sustainability is limited and dependent on an individual producing the resources, or a subscription is cancelled - the resource will not be maintained in the future” (Ben)

“There should be some exchange - there has to be some benefit then, it doesn’t have to be economic profit but some trade-off on knowledge and resources, if not the life of that resource will be limited, which is a shame”. (Ben)

Recommendations

When considering a business model for developing and disseminating online educational content and materials, Ben suggests that an emphasis on free versus for profit resources is less important than the underlying philosophy supporting the exchange of information and sharing of resources to ensure sustainability. Namely, there should be a value proposition around producing resources and contributing to the development of online educational content, communities and practices, rather than focusing on consuming and accessing free resources to be adapted and reused.

“You have a right to reuse but you also have the right to produce/publish and upload [new resources and content] - if not the spirit of ‘free’ is really twisted. Exchange is the key - you have to do something for the community if you want to take something from them. I really support that.” (Ben)

Summary

In summary, this case study illustrates the Open Educational Policy of UNIR (Burgos, 2017) along with the related sustainability (e.g., business model) of Open Educational Resources (OER) and Practices within the context of a private sector (for-profit) online university. The emphasis on developing and adapting policies to support information-sharing and exchange of knowledge and educational materials across different contexts within different [Spanish speaking] countries highlights the need to recognise the importance of building communities, on a global basis which recognise individual

cultural differences and work practices as key to successful collaboration and sustainable working relationships. This case study also highlighted an important value underlying the development and sustainability and longevity of open education resources, namely that individuals and organisations should be encouraged to contribute to the development of new resources and practices rather than just consuming, using and reusing what others have produced and uploaded.

This case study illustrates how policies and practices can support the development and sustainability of free open educational resources and communities, alongside a business model which is based on the activities and priorities of a private sector online university. The emphasis on community building across global boundaries and recognition of cultural differences and work practices as well as highlighting the need for individuals to exchange knowledge and to produce new Open Educational Resources, rather than just consuming what others have provided, offers a human-centred approach to developing sustainable models of open educational provision and Communities of Practices.

3.5 Case study analysis

Overview

The goal of the ENCORE+ project is to develop a European network to share knowledge and expertise within the field of OER, including practices, policies and technological solutions. The aim of the network is to share our findings with different stakeholders to encourage businesses and educational organisations across Europe to consider harnessing the benefits of OER to enhance access to high quality training and educational materials for a diverse body of learners. The activities of WP4.1, as detailed in this report, contribute to the overall ENCORE+ project by providing a review of the literature in the field of OER, in particular identifying various business models pertinent to OER strategies and activities, for example Darwish, 2019 and providing practical examples of OER priorities and practices within different organisations. The three case studies detailed in this report, namely Joubel/H5P; the National Forum and UNIR, provide a greater understanding of value propositions and business models for OER in different organisations across different national and international environments.

The cases were selected based on the opportunity to showcase different aspects of OER in practice, with additional information provided (via interviews) with industry experts and leaders in the field of OER, educational development and technology-based learning solutions. Joubel/H5P provides a description of the development of technologies and expertise (e.g. H5P plugin) to help users, including educators and

training providers to produce online interactive educational resources for a variety of learners. UNIR provides an example of the development of OER policies and practices, within a private online university (with a presence in different Spanish speaking countries worldwide) to encourage collaboration, knowledge exchange and team-working among stakeholders in different local and international educational environments. The National Forum case study describes the establishment of the National Resource Hub, which provided an online presence where stakeholders could share OER practices and materials with the aim of enhancing teaching, learning and technological expertise among education professionals across the higher education sector in Ireland.

The methodology for generating the data for the case studies included desk research, including background information from the websites on the three case study organisations. The interviews were conducted online with three industry experts in the field of OER. Ethical Approval was sought and participants signed consent forms prior to contributing to the interviews. The transcripts were anonymised and participants were provided with pseudonyms to ensure anonymity. Interviewees were provided via email with copies of the draft case studies to ensure transparency and to encourage participants to provide feedback and collaborate on the case studies. Finally, following completion of the case studies, in collaboration with the interviewees a cross case analysis was conducted to look for unique and common themes, including lessons learned, across the three case studies as detailed below.

Conceptual Framework for Analysis

The case studies were informed by the Darwish (2019) Model which describes four different business approaches to developing OER practices and products, based on descriptions of key activities (e.g., customers, revenue streams, communication channels and resources) identified within the Osterwalder and Pigneur (2010) business Canvas. In summary, the four approaches to developing OER business models and activities described by Darwish (2019) are:

- 1) Static Model of OER - for example an online repository or library, where users can access resources developed by other parties (e.g., National Forum case study: National Resource Hub).
- 2) Interactive Model of OER - for example MOOCs and online learning resources supported with opportunities to interact with an online community of users and support staff (e.g., with technical expertise) - for example Joubel/H5P case study.

3) Dynamic Model of OER - for example developing shared practices and policies to enhance knowledge generation, collaboration and resources across different communities and learning environments, for example within online universities (e.g., UNIR case study).

4) Transformative Model of OER- all three case studies illustrated different aspects of the transformative potential of OER underpinned with policies, practices and resources.

Cross Case Analysis

The cases were analysed to explore common and unique aspects of the different approaches to adopting OER practices. This included supporting users to develop technological expertise, to share knowledge, to enhance teaching and learning practices and to enhance access to high quality educational materials by different learners across various sectors and settings. The similarities and differences between the three cases are detailed below and the analysis of the cases is summarised in Table 10 below.

Case	Strengths	Challenges	Recommendations
UNIR	OER policies which can be adapted and customised for users in different settings.	Sustainability - dependency on goodwill - e.g., time, money and to develop resources.	Culture of 'quid pro quo' - you take something from the community - then you give something to the community
	Free online content available to users in different media (e.g., TV) and languages		Promote Communities of Practice - and development of resources in different languages (not just English).
National Forum	Shared online space for accessing OER	Sustainability - funding stream beyond project life	Explore different funding models for sustainability and longevity of projects
Joubel /H5P	Shared Community of Practice (users) and technical support staff	Sustainability - encourage users to share resources	Clear guidelines on licensing and fair usage
	Opportunity for users to develop technological skills and confidence to	Potential fear of resources being copied and used	Clear guidelines on terms of usage and maintenance of OER and online

	produce interactive educational resources	without author accreditation.	presence, beyond individual users or employees.
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Table 10. Summary of Cross Case Analysis

Similarities – the three cases illustrate the use of OER for transformative change, development of Communities of Practice (CoPs) (e.g., Wenger) and knowledge exchange, targeting stakeholders, primarily within HEI Sector, e.g., academic staff, students. (H5P also has clients within the public and private sector, not for profit and other industries).

Differences:

National Forum– online learning hub (**Static model of OER**) – exchange of knowledge and skills to promote OER and development of digital resources within the academic community (Ireland) and dissemination of National Forum funded initiatives and projects (Ireland) on digital resources and online learning. Publicly funded initiative, open to users.

Strengths – knowledge exchange, dissemination of NFT&L projects, skills and expertise (e.g., OER, publishing online, copyright licenses etc) to wider community in HEI (Ireland).

Challenges: Sustainability and long term funding stream beyond projects and public funding. Maintenance and updating of online resources beyond the life of projects. (Comment – H5P interview – dangers of repositories – resources can be copied and published on another repository (e.g., by a competitor).

UNIR – Private sector online university (Spanish language). Over 60k enrolments across different countries (Spain, South America, USA) (**Dynamic model of OER**). Promoting the use of OER via policies and practices shared within different communities worldwide.

Strengths: Emphasis is on developing policies which can be adapted and used by different stakeholders in different countries, taking into account local language and cultural differences and ways of working. Online content (40%) is available for free to users (e.g., courses and TV channel which broadcasts new content each week). 60% of content is available at different levels to students enrolled in OER. UNIR model – example of development of Communities of Practice, supporting students beyond English language medium and an example of free and for-profit models of online education co-existing side by side.

Challenges: Dependency on goodwill, e.g., people who are willing to give time, effort and resources to sharing knowledge and developing practices to support OER and communities. (Quote from interview with Ben* (pseudonym) – should be quid pro quo – you take something from community/repository – then you give something back – this is a challenge to sustainability of OER, dependency on people to contribute their time and resources for free in light of competing commitments, obligations etc).

Joubel/H5P: Technological innovations and products to help (primarily stakeholders in HEIs) to develop interactive educational content (e.g., quizzes, surveys and questionnaires) to enhance teaching and learning experience for students. **(Interactive model of OER)**. Two levels of customer service and support (stand-alone H5P plug-in and Software as a Service for customers who need more support (e.g., hosting resources and technical expertise).

Strengths: 24-hour support over 5 days per week and also an interactive online community where users can ask for technical help which is supported by H5P staff. Value proposition H5P is to make it easy for users to produce high quality online educational content, which can be shared, adapted and reused, which both increases the skills and capabilities of educators to produce interactive online teaching and learning resources to enhance the learning experience for students. Mixture of “freemium” and “for-profit” business models. Free content helps to market the value of H5P products and features among users, who may wish to purchase the premium version of H5P.

Challenges: Interview with Alex* (pseudonym) about the challenges of encouraging users to share OER content on repositories, which can be copied and republished on another (e.g., larger) online hub/repository. Recommend greater awareness and information sharing on copyright licenses and fairness about usage and reuse of resources, this may increase confidence by users in uploading and sharing content to online repositories. However, sustainability and longevity of OER repositories is dependent on clear values and practices re fair usage, reuse and sharing of resources but also on the maintenance of the online repository, in terms of updating and replenishing resources which may be challenges for individuals who contribute to OER communities, in light of other conflicting commitments.

In summary the case studies illustrate the benefits of adopting a strategic and focused approach to adopting OER policies, practices and technological solutions which enhance collaboration, team-working and technological capabilities to support users to develop quality training and educational materials for different learners. Challenges

identified by interviewees included issues of sustainability, in terms of long term funding, resources (e.g., the time and goodwill of individuals and groups to produce and freely distribute materials with clearly defined guidelines for maintaining and replenishing resources, for example beyond the life cycle of a project or funded initiative. Raising awareness of different licensing agreements (e.g., Creative Commons), fair usage and shared values and codes of practice within OER communities were identified as key to encouraging users and groups to develop educational materials and enhance access to learning opportunities and resources for learners across different European organisations and sectors. A more detailed account of the summaries and conclusions from the different activities undertaken and described within this report are described within the concluding section within this report.

Section 4: Conclusions and recommendations

4.1 Value proposition conclusions and recommendations

When looking at HEI/NGO OER offerings they are not always well positioned if considered against a stress test. OER industry standards are constantly evolving with unique, innovative and advanced offerings. Key areas of concern that should be addressed in both business model selection and strategy development are:

1. **Cash Flow:** how long can the OER last without ongoing funding/external financial support? How long can the OER survive if operating at a loss (e.g. no one paid to maintain/host the OER, etc.)? What is the earning potential of OERs?
2. **Staff:** Is there a succession plan beyond project funding? Is there a sustainable business model? Who is indispensable? What is the impact on staff should they work on an OER on a continuous basis?
3. **Infrastructure:** is it currently meeting the needs of the OER? What are the future needs? Are there contingency plans?
4. **Students/Learners:** What is the biggest source of students/learners? Why? How to diversify?

While the challenges extend beyond the above to the environment and policy. These four key challenges cannot be ignored as they appear to be the distinguishing challenges experienced by more static and/or interactive HEI and/or NGO OER offerings that have been overcome by the global OER entities that lead the market.

4.2 Recommendations from Value Proposition Analysis

The following recommendation honeycomb revolves around six key themes, see figure 14.



Figure 14. Recommendations from Value Proposition Analysis Honeycomb

As results have shown these themes have been approached in a very fluid and creating a very active diverse OER hive/ecosystem. The nine resulting recommendations are aimed to support and elevate OER offerings toward industry best practice.

1. Greater collaboration and strategic partnerships are required between HEI and NGOs to minimise duplication and enhance the quality of OER offerings.
2. Institutional policy and strategic planning are required for OER to increase commitment and stakeholder engagement.
3. Need for a sustainable financial structure.
4. Commitment to OERs beyond project dates/creation.
5. Opportunity to enhance value propositions through promotion of unique selling points such as: easy to use, accessible 24/7, free, social equality, environmental benefits in a world moving toward net zero emissions.
6. OERs should promote themselves and operate as OERs, thus being free and open.
7. Business Models and OER strategy must be evaluated to see if optimal approach has been adopted.
8. Encourage and incentivise more OERs producers to exploit the value of publishing under the Creative Common Licence framework.
9. Encourage and incentivise more businesses to embrace innovation and technological advances in machine learning, recommender systems and data analytics.

Sustainability and future proofing checklist

Table 11 includes emerging items of consideration for OER sustainability and future proofing of OERs. This list is not exhaustive but identifies several barriers or potential points of failure that should be evaluated.

OER Sustainability and Future Proofing Checklist	
Available Skilled Staff	<ul style="list-style-type: none"> ✓ Learning Experience Designer/ Instructional Designers/Learning Technologists: Design, develop and Look after the flow and touchpoints of a course, consult with SME's on performance & showcase the impact of the learning. ✓ Community Manager: Create Social Media Content, Create Engagement, respond to VLE community needs, solve learner/user issues, analyse trends & Moderate Forum Discussions. ✓ Subject Matter Experts (SME) ✓ Graphic and Multimedia Designers ✓ LMS/VLE Administrator: To manage the learning environment ✓ Data Analyst: Collect and monitor data for key insights ✓ Project Manager: Manage stakeholders, timelines, budgets & deliverability of the course to the required standard/quality ✓ Trainer/Academic Developer: To Provide training & support
Financial Ability	<ul style="list-style-type: none"> ✓ Environmental Impact: Potential restrictions increased carbon taxes- could this impact ability to provide open; potential reduction in number on education/business campuses- less travel, heat, energy emissions or is it? Environmental targets towards climate neutrality- friend/foe? Costs associated. ✓ Global reach: Who pays? Potential loss of business to global entities <ul style="list-style-type: none"> ○ Access to more global learners. Developing nations versus EU. ✓ Managing a global workforce: Increasing labour costs, ✓ Current economic status: economic growth in EU, employment rates, inflation rates, monetary policy, user/business/higher ed confidence and commitment to open education.

Technical Ability	<ul style="list-style-type: none"> ✓ IT skills ✓ Infrastructure available ✓ Accessibility from a learner/user perspective. ✓ Environmental Impact: potential restrictions regarding emissions, data centre planning process, data centre energy usage, could this impact ability to provide OER. ✓ Ability to provide service required ✓ Cybersecurity ✓ Data protection
Social, Environmental and Political Environment	<ul style="list-style-type: none"> ✓ Trends emerging from pandemic. ✓ Learnings from failed past models, how to avoid repetition; evaluation and reflection for learning and future planning. ✓ Social environment and appetite for OER. ✓ Political environment and appetite for OER: global influences, EU influences, current or proposed relevant legislation, stability of EU and member state governments. ✓ Legal: GDPR, Creative Commons Licensing, Copyright, Intellectual Property, Environmental legislation.

Table 11. OER Sustainability and Future Proofing Checklist

4.3 Case study conclusions and recommendations

The case studies presented in section three of this report, illustrate different activities and priorities within models of promoting best practices and sharing OER resources. The National Forum provides an example of the development of an online learning hub to share best practice and outcomes from (publicly funded) initiatives and projects to enhance the quality of teaching and learning across the higher education sector in Ireland. UNIR provides an example of how a private sector online university developed policies and practices to promote knowledge exchange on the use of OER within higher education and to disseminate best practice across communities, encouraging that policies and practices are adapted and reused to meet the needs of different users (e.g., work-practices, culture and language) across different higher education institutions, primarily within Spanish speaking countries, worldwide. Joubel/H5P provides an example of the development of an authoring tool which can help educators to produce and share interactive educational content (e.g., quizzes and interactive modes of assessment) to enhance the quality of teaching and learning resources and the learner

experience. In summary, the three case studies illustrate different approaches to promoting the use of OER to build communities, enhance educators' skills in producing educational resources, underpinned by policies to encourage the exchange of knowledge and expertise in embedding OER within teaching and learning practices.

The challenges to developing sustainable business models of OER, which were highlighted by the interviewees included the dependency on "goodwill" for users to contribute resources (e.g., time and expertise) to developing and sharing OER, in light of potentially conflicting priorities and work commitments. Additionally, on a practical level, the issue of funding for example dependency on public funding may present challenges in terms of incentives for maintaining, publishing and disseminating OER materials when funding for projects has ceased. In summary, based on the above case studies, it seems that OER embedded within other (for profit) models of online educational content development may offer a more sustainable approach for encouraging users to produce and share open resources and educational materials online. For example, the revenue from the (for-profit) activities could help fund seed projects and initiatives to promote and disseminate educational content and expertise within online Communities of Practice.

Recommendations

Some practical suggestions from the case studies to promote the development, use and exchange of OER are summarised below:

- **Community building:** Share best practice and expertise to encourage users to develop, use and re-use educational content.
- **Awareness raising:** Showcase examples of best practice OER content development (e.g., video or demonstration of how users developed OER, in a particular setting, what stakeholders were involved (highlighting the outcome, benefits and lessons learned). Raise awareness on copyright (e.g., CC licensing) and fair usage and sharing of resources to encourage users to share and upload content, based on an understanding of the implications of different licensing arrangements.
- **Policies and practices:** Develop policies and practices to support collaborative working and development of OER (including technological considerations) which can be adapted to different communities, cultural and language contexts and working environments.

- **Evaluation:** Analyse activities that promote or impede OER, based on best-practice case-study examples, for example balance between (profit/not for profit) business priorities and activities within organisations; buy-in from stakeholders on the value of OER, skills and capabilities of users (e.g., technological/legal/copyright etc.) and willingness or resistance to developing, using and disseminating open educational resources. Additionally, issues such as the sustainability of resources and longevity and maintenance of materials (e.g., on repositories) would potentially shed light on the activities which contribute to OER strategies and practices and the activities which might impede the adoption of OER within business practices and organisations (e.g., dependency on individuals to give time and resources to developing OER in the context of other business activities and priorities.)

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Website

For further and updated information about this project please see:
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