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Prácticas educativas abiertas en educación superior

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Prácticas educativas abiertas en educación superior

Special Issue Editorial
Open Educational Practices in Higher Education

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La idea de "apertura" en el ámbito educativo no es en absoluto nueva (Zawacki-Richter et al., 2020). Sin embargo, lejos de haberse mantenido estable, su significado ha cambiado de manera considerable a lo largo del tiempo y la geografía (Peter y Deimann, 2013), dando lugar a un concepto complejo y multidimensional (Bozkurt et al., 2023). Al igual que cualquier otro ámbito de la sociedad, la educación está definida por diferentes tipos de límites que controlan el acceso a las oportunidades de aprendizaje; materializadas en contenido, personas, espacios y otras infraestructuras. Cada organización dedicada a la enseñanza, y el sistema educativo en general, se base en delimitaciones tanto tangibles como invisibles. Las puertas de las organizaciones educativas han permanecido tradicionalmente cerradas a las personas que no están matriculadas como estudiantes. Además, existen demarcaciones curriculares y límites intra-organizacionales que proporcionan acceso a determinadas experiencias de aprendizaje tan solo a partes del estudiantado. Las limitaciones de acceso se basan en criterios heterogéneos, tales como la edad, género, estatus socioeconómico, titulaciones previas, competencias y otro tipo de atributos personales. Al mismo tiempo, dichas barreras están determinadas por convenciones, valores y los recursos que cada sociedad decide invertir en educación.

La educación, particularmente la educación superior, ha estado tradicionalmente reservada a una élite. De hecho, la democratización del acceso a la educación superior es un fenómeno relativamente reciente, iniciado en el siglo XIX. Durante el siglo XX, se estableció firmemente la idea de que las universidades debían ir más allá de la docencia y la investigación para cumplir así su papel en la sociedad. La llamada "tercera misión" (Compagnucci y Spigarelli, 2020) aglutina a todas aquellas actividades destinadas a fortalecer y mejorar los vínculos entre las universidades y el contexto social y comunidades donde se sitúan. Entre las mismas se incluye la extensión universitaria, concretada en actividades destinadas a proporcionar oportunidades para el aprendizaje a lo largo de la vida y formación continua. Tal redefinición de la educación superior puede interpretarse como una forma de apertura de estructuras institucionales y recursos que solían permanecer inaccesibles para la mayor parte de la población.

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Otra forma en la que la educación superior aumentó su apertura a la sociedad durante el siglo XX fue mediante la proliferación de universidades de educación a distancia, siguiendo el modelo de la Open University británica fundada en 1969. Dicho modelo, diseñado con el objetivo de llegar a poblaciones tradicionalmente excluidas de la educación superior (como por ejemplo, personas de edad mediana que compatibilizan los estudios con su actividad profesional), se basa en una mayor flexibilidad y el uso de tecnologías de la información y la comunicación. Numerosas instituciones alrededor del mundo fueron establecidas siguiendo el mismo patrón: Athabasca University en Canadá (1970), UNED en España (1972), FernUniversität in Hagen en Alemania (1975), UNED en Costa Rica (1977), Open University en Países Bajos (1984), Indira Gandhi National Open University en India (1985), etc.

En la transición del siglo XX al XXI, el significado asociado al término "abierto" en educación pasó a estar principalmente relacionado con las nociones de propiedad intelectual y los derechos de autor. En 1998, David Wiley propuso la licencia de Contenido Abierto, y en 2001, el Instituto de Tecnología de Massachusetts (MIT) lanzó OpenCourseWare (OCW) como una iniciativa para lanzar materiales de enseñanza y aprendizaje en línea creados por sus docentes. El término "Recursos Educativos Abiertos" (REA) fue acuñado en un evento organizado por la UNESCO (2002) sobre el impacto del OCW en los países en desarrollo. Desde entonces, se ha convertido en un elemento central de las políticas promovidas por la UNESCO en el campo de la educación, culminando con la adopción de una recomendación en su Conferencia General (UNESCO, 2019), considerada como el primer instrumento normativo internacional para abarcar el campo de los materiales y tecnologías educativos con licencia abierta en la educación (UNESCO, n.d.). La UNESCO ha publicado también numerosos materiales con el objetivo de fomentar el uso y el intercambio de los REA, incluidas directrices dirigidas a educadores, líderes institucionales y encargados de formular políticas (UNESCO y COL, 2012; 2019). Por su parte, la Comisión Europea también ha creado un marco para apoyar la educación abierta en la educación superior (Inamorato dos Santos et al., 2016), mientras que entes privados, como la Fundación Hewlett, han establecido también programas dedicados a esta área.

El foco de atención sobre los contenidos que caracterizaba inicialmente al movimiento en torno a los REA se ha expandido gradualmente para cubrir una gama más amplia de actividades educativas, como muestra el desplazamiento de interés hacia el concepto, más amplio, de Prácticas Educativas Abiertas (PEA) (Koseoglu y Bozkurt, 2018). Más allá de la producción y la (re)utilización de los recursos, las PEA también abarcan aspectos como la implementación de infraestructuras de educación abierta (Decuypere, 2019; Marín y Villar-Onrubia, 2022; Villar-Onrubia y Marín, 2022) o la adopción de modelos pedagógicos innovadores que respeten y capaciten a los estudiantes como coproductores en sus trayectorias de aprendizaje permanente (Andrade et al., 2011). En particular, los cursos abiertos masivos en línea (MOOC) se han integrado en la oferta educativa de muchas universidades en todo el mundo. Estos pueden considerarse como experiencias de educación abierta, incluso en aquellos casos en que no se basan en REA estrictamente hablando (Stracke et al., 2020). Otras innovaciones pedagógicas, desde la incorporación de tareas de edición de Wikipedia en el currículo (Petrucco y Ferranti, 2020) hasta iniciativas destinadas a apoyar la aparición del aprendizaje abierto centrado en la comunidad entre pares (Damasceno, 2023), han proliferado durante las dos últimas décadas.

En general, las PEA se han institucionalizado de forma global en el sector de la educación superior, a través tanto de políticas (Atenas et al., 2019; 2022) como de infraestructuras (Marín y Villar-Onrubia, 2022). Sin embargo, al margen de algunos casos destacados, la sostenibilidad

de las iniciativas de educación abierta ha resultado ser todo un reto (Tlili et al., 2023), y las primeras promesas de una democratización radical del acceso a la educación superior no se han materializado en su mayor parte. De hecho, la investigación sobre PEA ha madurado en los últimos años y ha incluido cada vez más perspectivas críticas que revelan algunas de las consecuencias no deseadas y las tensiones que pueden surgir en relación con las PEA (Bayne et al., 2015; Cronin, 2020; Funes y Mackness, 2018; Veletsianos, 2021; Villar-Onrubia, 2022).

Con este número especial, proporcionamos una perspectiva internacional sobre la diversidad de formas que las PEA pueden tomar en diferentes contextos de educación superior.

Los dos primeros artículos del número (*Apoyando la práctica educativa abierta: estudios de casos reflexivos de la Universidad de Edimburgo* y *Repercusión de las Prácticas Educativas Abiertas en la Educación Superior: una revisión de literatura*) proporcionan una visión micro y macro, respectivamente, cubriendo una amplia gama de prácticas y tipos de iniciativas que pueden encuadrarse dentro de la noción de educación abierta en la educación superior. Lorna Campbell, Melissa Highton y Ewan McAndrew presentan en su artículo en inglés el caso de la Universidad de Edimburgo como un ejemplo de plena integración de las PEA en el núcleo de los valores y operaciones institucionales. Los autores muestran ejemplos de prácticas inspiradoras en el contexto de la educación abierta (por ejemplo, cocreación de libros abiertos, evaluación del contenido en Wikipedia), basándose en diferentes tipos de datos para evidenciar un impacto positivo. Los autores destacan la importancia del compromiso estratégico de la Universidad de Edimburgo con la educación abierta para su sostenibilidad, creando un entorno de políticas abiertas permisivo, y poniendo en marcha una serie de servicios básicos destinados a mejorar la capacidad digital de estudiantes y educadores en torno a los REA. Argumentan que este compromiso es vital para apoyar eficazmente las PEA a nivel institucional y proporcionar recomendaciones para otras instituciones de educación superior.

Alejandro Fernández-Pacheco García presenta una revisión bibliográfica siguiendo un enfoque descriptivo-retrospectivo que revela aspectos clave y hallazgos que surgen de la investigación sobre este tema (*Repercusión de las Prácticas Educativas Abiertas en la Educación Superior: una revisión de literatura*). Tras revisar 24 artículos publicados entre 2018 y 2022, identifica patrones notables, como la prevalencia de métodos cuantitativos y el interés en investigar las PEA en contextos interdisciplinarios. Los temas abordados en estas investigaciones incluyen la relación entre la implementación de las PEA y la mejora de los procesos de aprendizaje de los estudiantes, la equidad pedagógica promovida por estas prácticas, la brecha entre sus beneficios y viabilidad, el apoyo a un papel más activo del estudiantado, y la necesidad de fortalecer la formación docente en las competencias de educación digital. Además, el autor destaca la necesidad de tales esfuerzos de desarrollo de capacidades y de un enfoque organizativo más innovador de las universidades para apoyar eficazmente las OEP, así como las barreras políticas y estratégicas.

La mayoría de los artículos del número especial se centran en la intersección entre las PEA y la formación de educadores. En su artículo en inglés, Javiera Atenas, Leo Havemann, Virginia Rodés y Manuel Podetti analizan oportunidades de formación sobre alfabetización en datos abiertos ofrecidas a educadores universitarios y personal de apoyo docente en América Central y del Sur entre 2016 y 2022 (*Alfabetización crítica de datos en la práctica: Un modelo de educación abierto para la formación docente*). Su estudio reveló una mejora general entre los participantes en términos de alfabetización de datos y su capacidad para adoptar PEA. Después

de discutir algunos de los aspectos clave que contribuyeron a una evaluación positiva de esos cursos de capacitación, los autores esbozan estrategias pedagógicas abiertas que se pueden utilizar para desarrollar la alfabetización crítica de datos abordando las desigualdades de datos, la justicia de datos y el compromiso cívico.

Carolina Álvarez Loyola y Diana Margarita Córdova Esparza aportan una revisión bibliográfica sobre el uso de nano-cursos (opuestos a los masivos) en línea abiertos para la formación en línea destinada a apoyar el desarrollo de la competencia docente digital (*Los NOOC para el desarrollo de competencias digitales y formación virtual: una revisión sistemática de literatura*). A partir de los resultados de cinco estudios realizados en países de habla hispana, publicados entre 2017 y 2022, el artículo concluye que los llamados NOOC pueden ser útiles para tal fin, especialmente en relación con la creación de contenidos digitales, la alfabetización informacional, la comunicación y las habilidades de colaboración. Asimismo, argumentan que los NOOC pueden ser una forma efectiva de fomentar el desarrollo profesional continuo y destacan la importancia de planificar estratégicamente el diseño de recursos de aprendizaje para permitir el logro de los resultados de aprendizaje previstos.

Dos de los artículos se centran en la formación de docentes en etapas educativas obligatorias. Janaina de Almeida Sousa y Tel Amiel presentan un estudio en inglés realizado con docentes de educación básica y formadores de docentes de educación superior en Brasil (*Prácticas Educativas Abiertas desde la perspectiva de educadores abiertos: Aportaciones a la formación del profesorado*). A través de entrevistas semiestructuradas y un análisis documental, analizaron las percepciones de los participantes sobre el diseño e implementación de las PEA, examinando lo que significa ser un "educador/a abierto/a". Los resultados apuntan a una visión de las PEA como un conjunto de diversas actividades participativas que promueven la colaboración, el intercambio y el equilibrio en las relaciones de enseñanza/estudiante, así como la libertad y autonomía del alumnado. Además, las percepciones de los participantes muestran que el desarrollo de estas prácticas es intrínseco a la actitud del educador/a, va más allá de los REA y es un proceso evolutivo en múltiples dimensiones. Los autores identifican varias dimensiones pedagógicas a explorar para el desarrollo de las PEA.

En su manuscrito en inglés, Michael Paskevicius presenta un estudio basado en encuestas a los estudiantes de un programa de formación inicial docente en la Columbia Británica (Canadá), sobre su adopción de las PEA y la comprensión de los conceptos de educación abierta (*Empoderando a los futuros educadores: aprovechando la apertura por diseño al integrar la tecnología en los programas de formación de profesorado*). El estudio revela una comprensión limitada de la mayoría de los conceptos relacionados con la apertura en la educación, mientras que los elementos más familiares son los libros de texto abiertos, los REA, la investigación de acceso abierto y las licencias abiertas. A pesar de que muchos reconocen su relevancia, pocos de los participantes en la investigación sabían cómo integrarlos prácticamente en su práctica docente. El artículo concluye afirmando la necesidad de desarrollar las capacidades en PEA como parte de los programas de formación inicial del profesorado y destaca la necesidad de un diseño educativo y, en particular, de la "apertura por diseño" como punto de partida.

Laura Fernández-Rodrigo, Arnau Erta-Majó y Eduard Vaquero Tió describen el diseño interdisciplinario de un objeto educativo transmedia destinado a apoyar el desarrollo profesional continuo de los educadores, como ejemplo de iniciativa de educación abierta (*Diseño y producción interdisciplinar de un Objeto Educativo Transmedia en abierto para la*

formación permanente de profesionales de la educación). Siguiendo un enfoque de investigación basado en el diseño según el modelo TPACK, el estudio analiza la producción de los materiales Teenpods en la Universitat de Lleida (España). La iniciativa consistió en la producción de una serie de REA –susceptibles de ser utilizados de manera individual, en procesos de aprendizaje autodirigidos, o por educadores en un contexto de aprendizaje facilitado que anima a la coproducción y la reutilización/remezcla.

Por último, el número especial también contiene un artículo dedicado al fomento de la investigación sobre las PEA, a través de una red internacional creada para apoyar a investigadores noveles en este ámbito. Francisco Iniesto, Rebecca Pitt, Carina Bossu, Rob Farrow y Martin Weller presentan en su trabajo en inglés los resultados de una evaluación de la Global Open Education Student Network (GO-GN) (*Comunidad, Becas, Apertura: Apoyando Investigadores Junior a través de Prácticas Educativas Abiertas*). Basándose en datos cualitativos, evidencian el impacto del programa en los participantes y concluyen con algunas recomendaciones y lecciones aprendidas: la necesidad de introducir flexibilidad, apertura en la comunicación (compartir ideas de investigación y retroalimentación), relaciones de confianza entre los compañeros y en la naturaleza de la propia red, así como el apoyo constante a los participantes a través de reuniones con el equipo.

Como ilustra la diversidad de enfoques y temas tratados en este número especial, las PEA han impregnado la educación superior de múltiples maneras y con diferentes niveles de institucionalización y éxito. Las iniciativas para el fomento de la capacidad en materia de PEA dirigidas a educadores, tanto en la formación inicial como continua del profesorado y en todos los niveles educativos, son altamente relevantes para una adopción significativa de tales prácticas. En este sentido, las universidades desempeñan un papel central como las instituciones habitualmente responsables de diseñar y entregar las calificaciones requeridas a los educadores para acceder a la profesión. Además, las PEA no solo son importantes como tema en este sentido, sino también como vehículo para el diseño y formación de docentes.

En términos de investigación y desarrollo futuros en torno a las PEA, más allá de las iniciativas relacionadas con la formación pedagógica genérica, sería importante comprender las especificidades de su adopción en contextos disciplinarios específicos. Por ahora, esto ha permanecido en gran medida ausente de la literatura. Del mismo modo, la investigación sobre PEA proviene principalmente de regiones de habla inglesa, en el Norte Global, y uno de los objetivos de este número especial era ofrecer una perspectiva más amplia. No obstante, se necesita más investigación para arrojar luz sobre qué PEA son significativas y apropiadas en otros contextos culturales. Si bien no es nuestra intención reunir recetas de PEA para ser replicadas en otros contextos, los artículos en este número resaltan elementos y factores que contribuyeron a resultados positivos y deberían ser tenidos en cuenta por educadores y líderes institucionales interesados en la educación abierta.

Los esfuerzos de abajo a arriba por parte de educadores son muy importantes, pero sin el apoyo institucional y la voluntad de sus responsables de la toma de decisiones de adoptar los principios de la educación abierta, el alcance y la sostenibilidad de las PEA solo pueden ser limitados y sujetos al interés de individuos específicos. En cualquier caso, en lugar de buscar la apertura por sí misma, es esencial definir el papel que se espera que ésta desempeñe en relación con la misión, la visión y los valores fundamentales de las instituciones de educación superior. La apertura en la educación superior solo vale la pena si ayuda a las universidades a cumplir con

su responsabilidad social, actuando como facilitadora del compromiso de la educación superior con el bien común (Manzano-Arrondo, 2012).

No nos gustaría concluir este editorial sin agradecer sinceramente a los autores y revisores por sus valiosas contribuciones a este número especial. Esperamos que las contribuciones de los autores sean de interés para los lectores de la Revista Edutec y que fomenten una mayor reflexión sobre las PEA, así como nuevas investigaciones y prácticas.

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Supporting open education practice: Reflective case studies from the University of Edinburgh

Apoyando la práctica educativa abierta: estudios de casos reflexivos de la Universidad de Edimburgo

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Abstract

This paper outlines the University of Edinburgh's long-running strategic commitment to supporting sustainable open education practice (OEP) across the institution. It highlights how the University provides underpinning support and digital capability for OEP through central services working with policy makers, partners, students, and academics to support co-creation and active creation and use of open educational resources to develop digital literacy skills, transferable attributes, and learning enhancement. We present a range of case studies and exemplars of authentic OEP evidenced by reflective practice and semi-structured ethnographic interviews, including Wikimedia in the Curriculum initiatives, open textbook production, and co-creation of interdisciplinary STEM engagement resources for schools. The paper includes recommendations and considerations, providing a blueprint that other institutions can adopt to encourage sustainable OEP. Our experience shows that mainstreaming strategic support for OEP is key to ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all.

Keywords: *open educational practices, open educational resources, Wikipedia, co-creation, reflective practice*

Resumen

En este artículo se describe el compromiso estratégico de larga duración de la Universidad de Edimburgo con el apoyo a la práctica sostenible de la educación abierta (PEA) en toda la institución. Se destaca cómo la Universidad proporciona apoyo de base y capacidad digital para la PEA a través de los servicios centrales que trabajan con los responsables políticos, socios, estudiantes y equipos académicos para apoyar la cocreación y la creación y uso activos de los recursos educativos abiertos para desarrollar habilidades de alfabetización digital, atributos transferibles, y la mejora del aprendizaje. Presentamos una serie de estudios de casos y ejemplos de PEA auténticas evidenciados por la práctica reflexiva y entrevistas etnográficas semiestructuradas, incluyendo Wikimedia en las iniciativas del plan de estudios, la producción de libros de texto abiertos y la cocreación de recursos participativos interdisciplinarios STEM para las escuelas. El artículo incluye recomendaciones y consideraciones, y ofrece un modelo que otras instituciones pueden adoptar para fomentar una PEA sostenible. Nuestra experiencia demuestra que integrar el apoyo estratégico a la PEA es fundamental para garantizar una educación de calidad inclusiva y equitativa y promover oportunidades de aprendizaje permanente para todos/as.

Palabras clave: *prácticas educativas abiertas, recursos educativos abiertos, Wikipedia, cocreación, práctica reflexiva*

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1. INTRODUCTION

At the University of Edinburgh, we believe that open education practice (OEP) and open educational resources (OER) are fully in keeping with our institutional vision, purpose, and values, to discover knowledge and make the world a better place, while ensuring that our teaching and research is diverse, inclusive, accessible to all and relevant to society. Our experiences of embedding OEP at institutional level over time have served to highlight changes in attitudes of students and educators towards OEP and demonstrate the importance of working in partnership at all levels across the University.

The University's commitment to OEP and OER is in line with UNESCO's 2019 Recommendation on Open Educational Resources, which highlights the role that OER can play in achieving the aims of the Agenda for Sustainable Development. This provides a meaningful and comprehensive manifesto to which we contribute through our Social Responsibility and Sustainability programmes. The UNESCO Recommendation recognises that:

> "in building inclusive Knowledge Societies, Open Educational Resources (OER) can support quality education that is equitable, inclusive, open and participatory as well as enhancing academic freedom and professional autonomy of teachers by widening the scope of materials available for teaching and learning." (UNESCO, 2019)

This paper outlines how the University's central learning technology services work in partnership with policy makers, partners, students, and academics to provide strategic support for OEP. We present a series of reflective practice case studies, highlighting authentic open education practice and student experience across the university, along with key recommendations for institutions wishing to develop sustainable support for OEP.

2. METHODOLOGY

In keeping with the diversity of open practice across the institution, and Cronin's articulation of OEP as complex, personal, contextual and continually negotiated (Cronin, 2017), we do not employ a single methodology to evaluate and quantify the impact of OEP at the University of Edinburgh. Instead, we employ a range of methodologies including analysis of platform data, reflective practice, and semi-structured ethnographic interviews (O'Reilly, 2009). These provide us with a qualitative overview of OEP across the institution, enabling us to monitor impact and tailor the central support provided to staff and students.

Data is gathered from platforms used to host open courses and OER, including Wikipedia (page views, edits, pages created), MOOC partner platforms (learner enrolments, certificates), Media Hopper Create media asset management platform (open media views), TES Resources (OER downloads), Edinburgh Diamond (open textbook downloads), and the Open.Ed website (page views, OERs added to showcase), to evidence engagement with the outputs of open practice. This data, along with narrative highlights, is captured in monthly service reports shared with the Information Services Group Senior Management Team. We engage with our own data to understand achievement and participation and tell stories about the impact of OEP across the institution and beyond.

There is no unified peer review system or quality assurance process for the OER created by staff and students. The review process is dependent on the nature of the resources, how they are created, and where they are shared. Academic colleagues are trusted to maintain the quality of their own teaching materials. Open online course resources are reviewed by teams of academic experts and instructional designers. OERs created by students through curriculum assignments are assessed by tutors and peers. Student co-created OERs shared in public repositories are reviewed by Open Content Curator Interns. Content shared on Wikipedia is open to review by Wiki admins, editors, and millions of Wikipedia users.

Reflective practice is a key component of OEP at the University of Edinburgh. Reflective practice may be understood as "the process of learning through and from experience towards gaining new insights of self and/or practice" (Finlay, 2008). Finlay (2008) characterises the aim of reflective practice as being to critically consider practice experiences to gain new understanding and improve future practice. We encourage both staff and students to reflect on their experience of engaging with OEP through open education courses, projects, initiatives and assignments. In addition to traditional scholarly outputs, these reflections are captured in reflective blog posts and semi-structured ethnographic interviews. The Academic Blogging Service[1] provides colleagues with a platform to develop their digital identities and share their authentic voices. Academic staff and learning technology professionals contribute reflective blog posts to Teaching Matters[2] , an editorial blog that shares ideas and approaches to teaching and learning. Students are encouraged to contribute to course and project blogs. The OER Service blog hosts reflective blog posts from student interns[3]. Sharing open practice through reflective blog posts is also an effective form of networked participatory scholarship, defined by Veletsianos and Kimmons (2012) as:

> teaching and research practices that espouse openness including activities such as open teaching, the production and dissemination of open educational resources, publishing in open access journals, keeping a professional blog, and sharing of research data in online venues. (p. 167)

The University's Wikimedian in Residence records semi-structured ethnographic interviews with staff and students who have participated in Wikipedia in the curriculum assignments[4]. These reflective outputs enable us to capture the impact of open education projects and initiatives, to iteratively refine open assignments, and to share authentic voices and experiences within the university and more widely.

The case studies presented here incorporate empirical data together with excerpts of ethnographic interviews and reflective blog posts from staff and students reflecting on their experience of engaging with OEP at the University of Edinburgh.

[1] https://blogs.ed.ac.uk/
[2] https://www.teaching-matters-blog.ed.ac.uk/
[3] https://open.ed.ac.uk/tag/open-content-interns/
[4] Stories of Student Empowerment, interviews with staff and students, https://media.ed.ac.uk/playlist/dedicated/51020161/1_5ikxjzq6/1_prhg9j4t

3. WORKING WITH POLICY MAKERS

Open education policies play a critical role in promoting the adoption of OEP and OER, and fostering collaborations that favour the democratisation of knowledge access and production (Atenas et al., 2020).

To encourage staff and students to engage with OEP through the creation and use of OER, an Open Educational Resources Policy (University of Edinburgh, 2021) was approved by the University's Learning and Teaching Committee in 2016. University policies are subject to a 3-to-5-year review cycle and in 2021 the OER Policy was revised and updated to include a new definition of OER, bringing it in line with the UNESCO Recommendation on Open Educational Resources:

> Open Educational Resources (OER) are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others. (UNESCO, 2019)

Cronin (2019) has highlighted the importance of supportive open policy, coupled with institutional culture and individual agency, as motivating factors in incentivising OEP:

> While openness may be a strategic objective at the institutional level, it cannot be mandated at the individual level. Individual members of staff and individual students must be supported and enabled to engage in open practice, but more importantly, supported in making their own decisions about whether and how to engage in open practice. (p. 158)

In order to motivate engagement with OEP, the OER Policy is informative and permissive. Rather than mandating the use of open licences, it encourages staff and students to use, create, and publish OERs to enhance the quality of the student experience, increase the provision of learning opportunities for all, improve teaching practices, and enrich our shared knowledge commons. As a formal University policy, it provides colleagues with the reassurance that they have permission to share their teaching and learning resources under open licence, provided they respect all third-party copyright.

In keeping with the University's commitment to open knowledge, we have shared the OER Policy under Creative Commons licence as part of an award-winning suite of open teaching and learning policies to benefit other institutions across the sector[5].

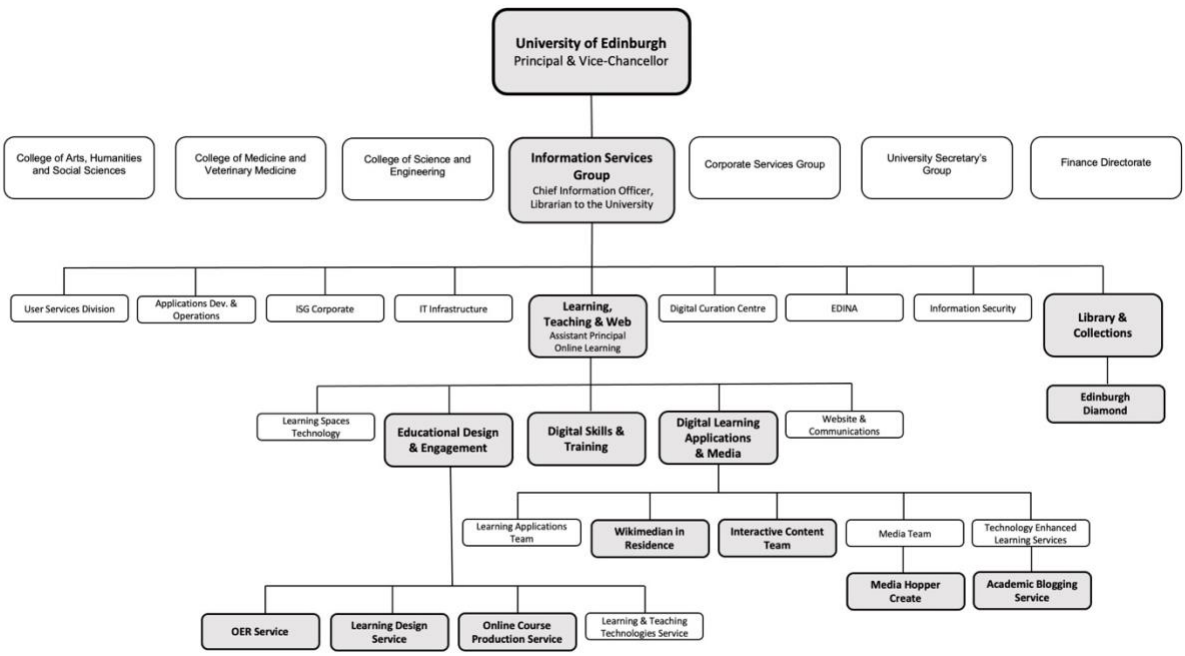
[5] Open Policies for Learning and Teaching, https://open.ed.ac.uk/open-policy-for-learning-and-teaching/

4. PROVIDING UNDERPINNING SUPPORT AND DIGITAL CAPABILITY TO ENABLE OEP

To support our OER Policy and enable staff and students to develop the digital skills needed to engage with OEP, we have a range of central services, based in the Information Services Group. The OER Service, Online Course Production Service, Learning Design Service, Wikimedian in Residence, Interactive Content Team, and Academic Blogging Service form part of the Learning Teaching and Web Services Directorate, led by the Assistant Principal for Online Learning. Edinburgh Diamond, a service that supports the publication of open e-books and journals, is provided by the University Library. These services provide support for all staff and students; any colleague who has the ambition to develop their OEP, or to share their teaching and learning materials as OER, can do so with central support.

Figure 1

Directorates, divisions and services within Information Services Group that provide support for OEP



The OER Service provides advice and guidance on creating and using OER, engaging with OEP, and runs a digital skills programme focused on developing digital and copyright literacy skills and competence. Understanding authorship, copyright, and licensing is increasingly critical at a time when both staff and students are actively engaged in co-creating digital resources and open knowledge. The service supports schools and colleges and works closely with staff and students to embed open education practice and co-creation in the curriculum, through OER creation assignments and innovative Student Experience projects.

The OER Service also manages Open.Ed[6], a one-stop shop that provides access to OER created by staff and students. Our OER Policy recommends that open resources are shared in an

[6] https://open.ed.ac.uk/

appropriate repository or public-access website to maximise their discovery and use by others. The University supports multiple channels and services for this purpose including Media Hopper Create[7], our media asset management platform, which hosts over six thousand Creative Commons licensed media items, Edinburgh Diamond[8], a Library service that supports the publication of academic and student-led Open Access books, journals, and textbooks; and TES Resources[9], an external platform where we share OERs for schoolteachers, co-created by our students.

The University also employs a Wikimedian in Residence (WiR)[10], whose role is to facilitate a sustainable relationship between the University and Wikimedia UK[11] , the UK chapter of the Wikimedia Foundation[12] . The WiR helps staff and students to develop digital and information literacy skills through Wikipedia editathons, organized events where people come together to create or edit Wikipedia entries on a specific topic (Littlejohn & Hood, 2018), empowering them to contribute to the global pool of open knowledge. In addition, the WiR embeds open practice in the curriculum by supporting Wikipedia editing assignments in course programmes across the University.

5. WORKING IN PARTNERSHIP

The University of Edinburgh has a long-standing commitment to widening access to high quality online learning opportunities to as diverse a group of learners as possible through our MOOCs and free short online courses. Over the last decade, we have developed partnerships with international learning platforms, universities and cultural organisations to bring richness and diversity to these courses. Since 2013, over four million learners around the world have enrolled in almost a hundred free online courses on our partner platforms Coursera, FutureLearn and EdX.

Table 1

Free short course enrolments across all partner platforms, 2013 – 2023

Partner Platform	Enrolments	Certificates
Coursera (since 2013)	4,004,824	44,919
FutureLearn (since 2013)	312,044	3,901
EdX (since 2016)	354,161	13,417
Total	4,671,029	62,237

[7] https://media.ed.ac.uk/
[8] https://books.ed.ac.uk/edinburgh-diamond/
[9] https://www.tes.com/teaching-resources/shop/OpenEd
[10] Wikimedian in Residence, https://outreach.wikimedia.org/wiki/Wikipedian_in_Residence
[11] https://wikimedia.org.uk/
[12] https://wikimediafoundation.org/

The University's strategic values are woven into the course production process and all new courses must align with the values of our 2030 Strategy[13]. These courses demonstrate our commitment to providing free, open access learning on a global scale, delivering positive change locally, regionally, and globally.

To ensure the majority of our free online courses are open, sustainable, and accessible to all, open practice is embedded in every step of the course creation workflow, supported by a dedicated Online Course Production Service (OCPS), working closely with the OER Service. The OCPS team includes instructional designers, media producers, project managers, copyright and licensing experts, and marketing professionals, who work with our partners and academics to develop quality assured, open licensed courses. OCPS share their own open practice through blog posts on the Open.Ed blog[14], open pedagogy and learning design resources[15], and open courses including *How to Create an Online Course*[16], and *How to Create Video for Online Courses*[17].

5.1. Learning for a Sustainable Future

Climate change, gender equality, health, social equity and inclusion are issues that affect us all, impacting human well-being and economic stability. In partnership with the British Council and Learning for Sustainability Scotland, we created two courses to help learners develop an informed personal response to these major challenges: Learning for a Sustainable Future[18] and Live at COP26[19]. Our partners made a vital contribution to the development of these courses, from course content creation and delivery to marketing. This tripartite partnership enabled us to tap into a global education network and bring in learners from communities across the world.

> The British Council and Learning for Sustainability Scotland had a positive, proactive attitude to working with young people and activists, who in turn made invaluable contributions to the course content and discussions. (Lizzy Garner-Foy, Instructional Designer)

5.2. Open Media Bank

Media resources created with our partners for our free short online courses are shared through the Open Media Bank[20] where they can be downloaded for re-use and repurposing under Creative Commons licence. This ensures that these high-quality media resources are open, sustainable, and accessible. Students have continued access to their learning resources after their courses have concluded, and they can be reused and repurposed by teachers both within the University and beyond. With over 1,200 open licensed videos, featuring academics, guest speakers and experts discussing everything from philosophy, history and music to medicine, data, and climate change, the Open Media Bank represents a significant contribution to the global knowledge commons.

[13] University of Edinburgh. *Strategy 2030.* https://www.ed.ac.uk/about/strategy-2030 (19 May 2023).
[14] https://open.ed.ac.uk/blog/
[15] https://open.ed.ac.uk/elder-edinburgh-learning-design-roadmap/
[16] https://open.ed.ac.uk/how-to-create-an-online-course/
[17] https://open.ed.ac.uk/how-to-create-video-for-online-courses/
[18] https://www.onlinecourses.ed.ac.uk/all-courses/learning-sustainable-future
[19] https://www.onlinecourses.ed.ac.uk/all-courses/learning-sustainable-future-live-cop26
[20] https://media.ed.ac.uk/channel/Open%2BMedia%2BBank/

Table 2

Open Media Bank data 2017-2023

Open licensed videos	Player impressions	Plays	Minutes viewed
1,233	131,977	36,416	125,159

6. WORKING WITH STUDENTS

The University of Edinburgh Student Union (EUSA) were instrumental in encouraging the University to adopt an OER Policy and we continue to see student engagement and co-creation as being fundamental aspects of OEP.

The OER Service, Online Course Production Service, and Wikimedian in Residence, all offer employment opportunities to students through salaried internships that enable them to gain a wide range of transferable skills while developing their own open practice and digital competence and confidence. Engaging with OEP through the free and open Wikimedia projects and creating OER and open knowledge, encourages both staff and students to become 'knowledge activists', not just passive consumers of information but *active* creators of knowledge (Hood & Littlejohn, 2018; Panesar et al., 2022). Students are encouraged to work collaboratively, engaging with their learning and important conversations around open access, copyright, neutral point of view, bias, and the credibility of source.

6.1. Knowledge Activism

Tomas Sanders, an undergraduate History student employed as an Open Content Curator intern working with the OER Service, participated in a Wikipedia editathon during his internship and later went on to run an editathon for Black History Month with the University's student History Society. His knowledge activism continued after graduation as he participated in editathons on under-represented topics such as the history of AIDS activism in Scotland. Reflecting on what "knowledge activism" means to him, Tomas stated that:

> [Wikipedia] remains a massive resource for people to access and understand history. And yet the history that people access on Wikipedia is often very different from the history that you would access within a university department. There is very little social history, very little women's history and gender history, history of people of colour or queer history. And the only way that is ever going to be overcome is if people who come from those disciplines start actually engaging with Wikipedia and try to correct those imbalances.[21]

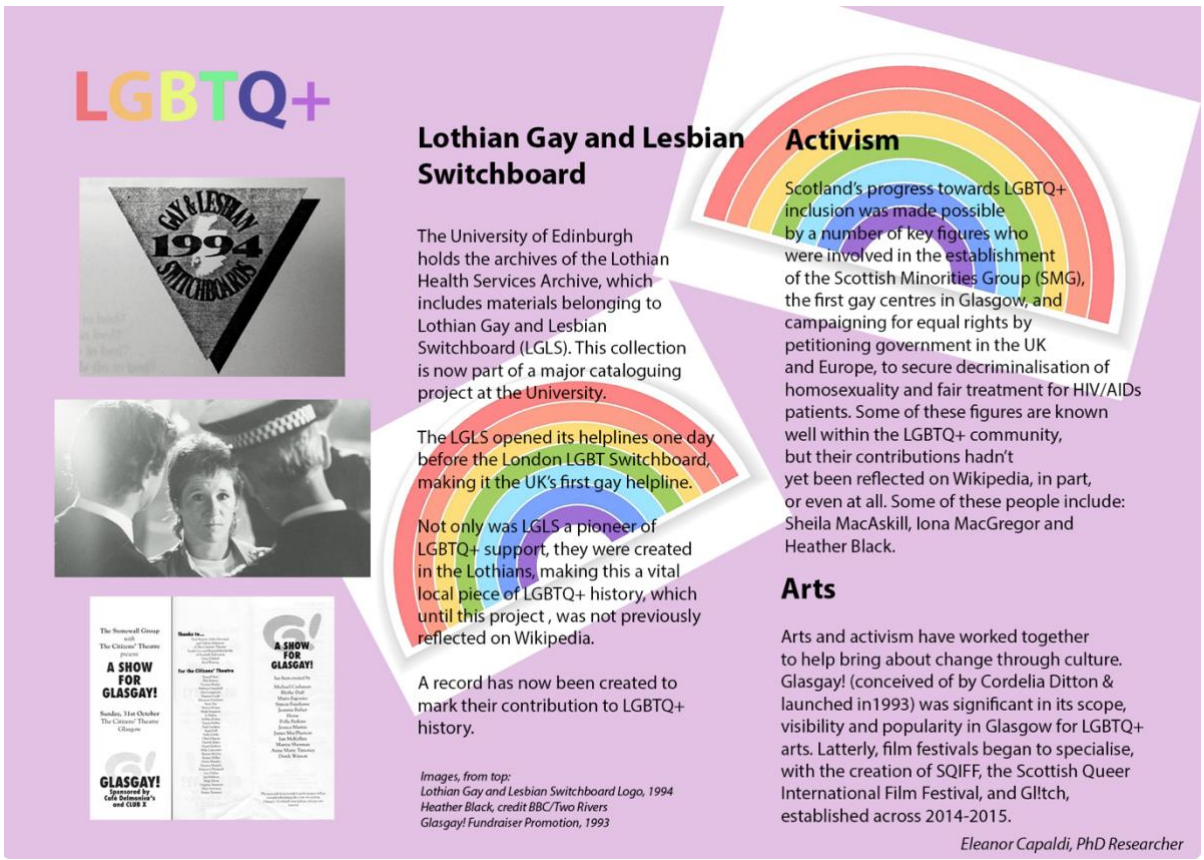
[21] Wikipedia and History. Interview with Tomas Sanders, History undergraduate at the School of History, Classics and Archaeology, https://media.ed.ac.uk/playlist/dedicated/51020161/1_5ikxjzq6/1_44vqmw7c

6.2. Recovering Histories

Three students secured a Student Experience Grant[22] to undertake a project focused on improving LGBTQ+ history, gender history and Black history on Wikipedia. These topics are all under-represented online, but they are areas where the University of Edinburgh had important stories to share. The students' research contributed to the creation of an OER for an end of project editing event where staff, students, and members of the public were invited to contribute to Wikipedia pages on these topics. One student, Sian Davis, also previously contributed to another collaboration with the Wikimedian in Residence; a student History Society project to improve public understanding of Scotland's role in the transatlantic slave trade through paired research to enhance topic coverage on Wikipedia. Another, Eleanor Capaldi, developed and ran a 'Wikipedia art' workshop at the University of Glasgow to explore how LGBTQ+ people engage with art online, reusing images from Wikipedia and facilitating workshop participants to turn them into open GIFS, memes, and TikToks.

Figure 2.

Research poster by History PhD student Sian Davies, part of her project on Scotland's involvement in the TransAtlantic Slave Trade.Figure 3. Research poster by PhD student Eleanor Capaldi, part of her project on Scotland's LGBTQ+ History.



[22] https://www.ed.ac.uk/student-experience-grants

7. WORKING WITH ACADEMIC TEAMS

Our services work with academic course teams across the University to embed OEP in the curriculum through open course assignments. These open assignments constitute an effective form of authentic assessment. Authentic assessment engages students by requiring them to apply their skills and knowledge to real world contexts and challenges, demonstrating thoughtful understanding of problems and mastery of complex concepts (Wiggins, 2011), (Lund, 2013). Engaging with OEP through curriculum assignments can help both staff and students to develop a wide range of core disciplinary competencies and transferable attributes including digital, data and copyright literacy skills, understanding how knowledge and information is created shared and contested online, collaborative working and collective knowledge creation, information synthesis, critical thinking, source evaluation, and writing as public outreach.

7.1. Wikimedia in the Curriculum

A wide range of courses at undergraduate and postgraduate level incorporate Wikimedia editing assignments, many of which focus on addressing under-represented topics, and improving the visibility of marginalised groups and individuals, delivering on the University's commitment to equality, diversity, and sharing open knowledge (McAndrew & Thomas, 2020). Creating Wikipedia entries enables students to demonstrate the relevance of their field of study and share their scholarship in real-world contexts, while contributing to the global pool of open knowledge. Writing articles that will be publicly accessible and live on after the end of their assignment has proved to be highly motivating for students and provides an incentive for them to think more deeply about their research (Johns & McAndrew, 2018). It encourages them to ensure they are synthesising all the reliable information available, and to think about how they can communicate their scholarship to a general audience (Christie, 2020; Stuhl, 2014). Students can see that their contributions will benefit the huge audience that consults Wikipedia, plugging gaps in coverage, and bringing to light hidden histories, significant figures, and important concepts and ideas (Anderson, 2021). This makes for an inspiring and innovative teaching and learning experience, that enhances the digital literacy, research and communication skills of both staff and students (Christie, 2020).

7.2. Wikimedia and the History of (non-Western) Art

Engaging with OEP by contributing to Wikipedia encourages lecturers to recommend Wikipedia in the Curriculum assignments to their colleagues. Staff become open knowledge 'nodes', sharing their open practice and providing advice about creating successful assignments that meet Board of Studies requirements.

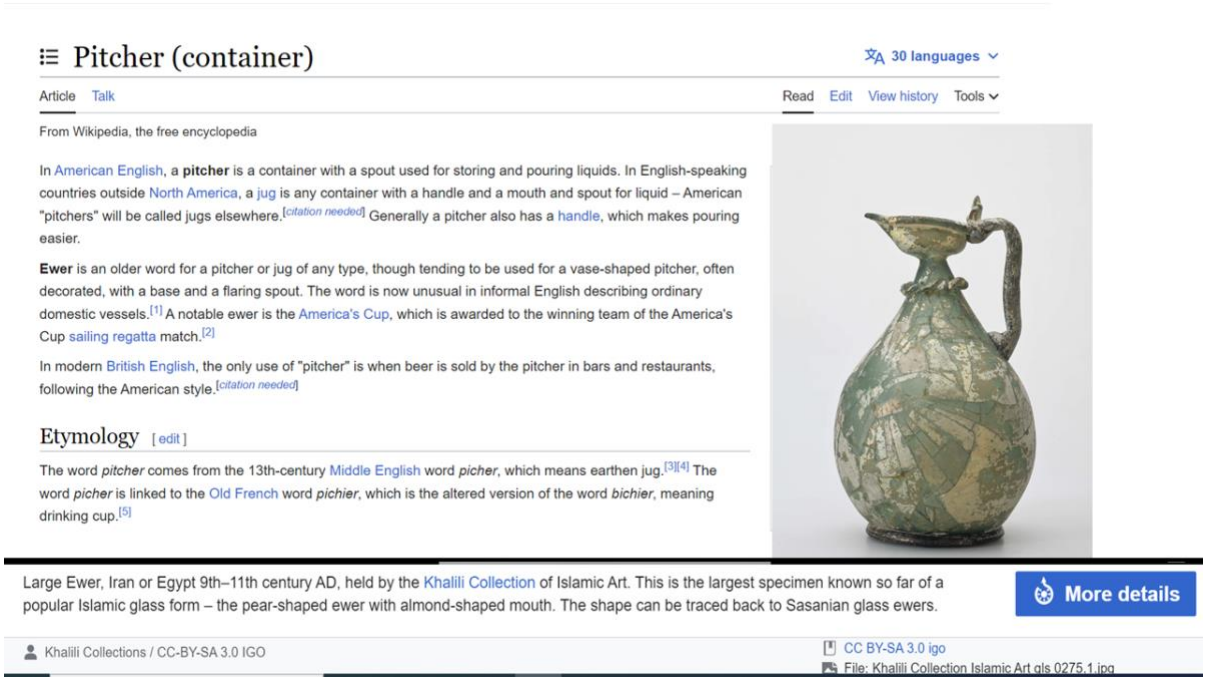
World Christianity lecturer Dr Alex Chow, an early proponent of Wikimedia in the Curriculum assignments, supported History of Art lecturer Dr Glaire Anderson during her first Wikipedia assignment on the Islamic Visual Culture course. Undergraduate students evaluated Wikipedia content about Islamic art, science and the occult and prepared group presentations discussing any gaps or problematic coverage. They were trained to edit Wikipedia by our WiR and improved these articles by contributing their scholarship as a lasting open output of their studies for the benefit of all. Dr Anderson commented:

> In a year that brought pervasive systemic injustices into stark relief, our experiment in applying our knowledge outside the classroom gave us a sense that we were creating something positive, something that mattered. As one student commented, "Really love the Wikipedia project. It feels like my knowledge is actually making a difference in the wider world, if in a small way.

This positive learning experience encouraged Dr Anderson to explore different ways of engaging students in discussions about how visual arts are represented, or under-represented, online. This motivated them to share beautiful open-licensed images of Islamic art (shared by the Khallili Collections on Wikimedia Commons[23]) by adding them, not only to niche pages, but to high level, high traffic pages on Wikipedia, where they can be easily discovered among other examples of visual culture.

Figure 4.

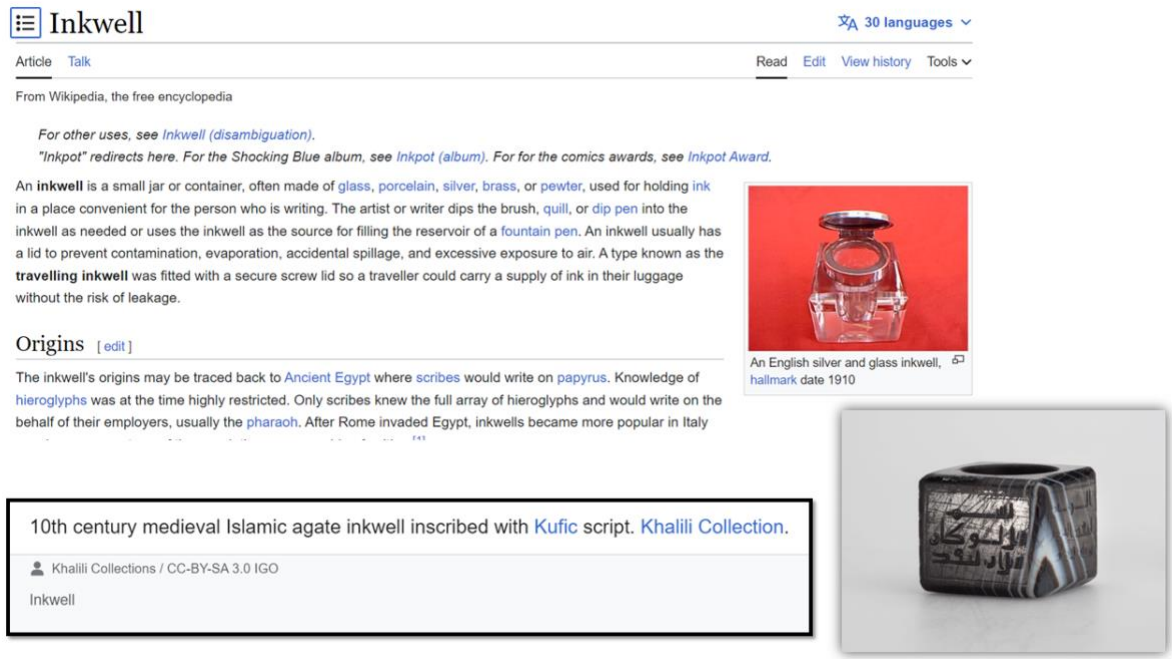
Image of 11th century ewer from the Khalilli Collection of Islamic Art added to the Wikipedia page for Pitcher by History of Art undergraduate students. CC-BY-SA 3.0 via Wikipedia and Wikimedia Commons.



[23] Category: Khallili Collections, https://commons.wikimedia.org/wiki/Category:Khalili_Collections

Figure 5.

Image of 10th century inkwell from the Khalilli Collection of Islamic Art added to the Wikipedia page for Inkwell by History of Art undergraduate students. CC-BY-SA 3.0 via Wikipedia and Wikimedia Commons.



Reflecting on the assignment, student Sophia Klepnikov commented:

> Overall, it was a total revelation to me... The first discussion we had was pointing out the gaps in the information online. So one of our goals was to bring, in this case, Caliphal and Islamic art into the mainstream discussions of visual culture. Specifically adding images was the easiest, and most effective, way we could make these conversations more diverse and also elevate Caliphal art... I found it to be a very empowering experience and one that was quite unexpected. But to engage with a tool [in Wikipedia] that's so widespread was really fantastic.

8. SUPPORTING CO-CREATION

Another important benefit of OEP is that it helps to facilitate the co-creation of knowledge and understanding. Co-creation can be described as student led collaborative initiatives, often developed in partnership with teachers or other bodies outside the institution, that lead to the development of shared outputs. Co-creation of curriculum activities and learning opportunities has been shown to benefit both teachers and learners in a number of ways:

> (a) fostering the development of shared responsibility, respect, and trust; (b) creating the conditions for partners to learn from each other within a collaborative learning community; and (c) enhancing individuals' satisfaction and personal development within higher education. (Lubicz-Nawrocka, 2018)

8.1. GeoScience Outreach

GeoScience Outreach (Douglas et al., 2022) is an optional project-based course that attracts final-year students from a range of degree programmes including Geology, Environmental Sciences, Geography, Archaeology and Physics. Over two semesters, students design and undertake an outreach project that communicates some element of their field. Students have an opportunity to work with a wide range of clients including schools, museums, science centres, and community groups, to design resources for STEM engagement. Students may work on project ideas suggested by the client, but they are also encouraged to develop their own ideas and outreach resources. Copyright of the outreach resources is retained by the students, but they are encouraged to share them as Creative Commons licensed OERs.

GeoScience Outreach enables students to work in new and challenging environments, acquiring a range of transferable skills that enhance their employability. They gain experience of science outreach, public engagement, teaching and learning, and knowledge transfer while developing communication, project and time management skills.

s. Open Content Curator Interns employed by the OER Service work with GeoScience academics to repurpose these materials to create OERs aligned to the Scottish Curriculum for Excellence[24], which are shared online through Open.Ed[25] and TES Resources, where they can be found and reused by schoolteachers. These OERs, co-created by our students, have been downloaded over 140,000 times by teachers around the world, and the collection was awarded Open Education Global's 2021 Open Curation Award[26].

Table 3

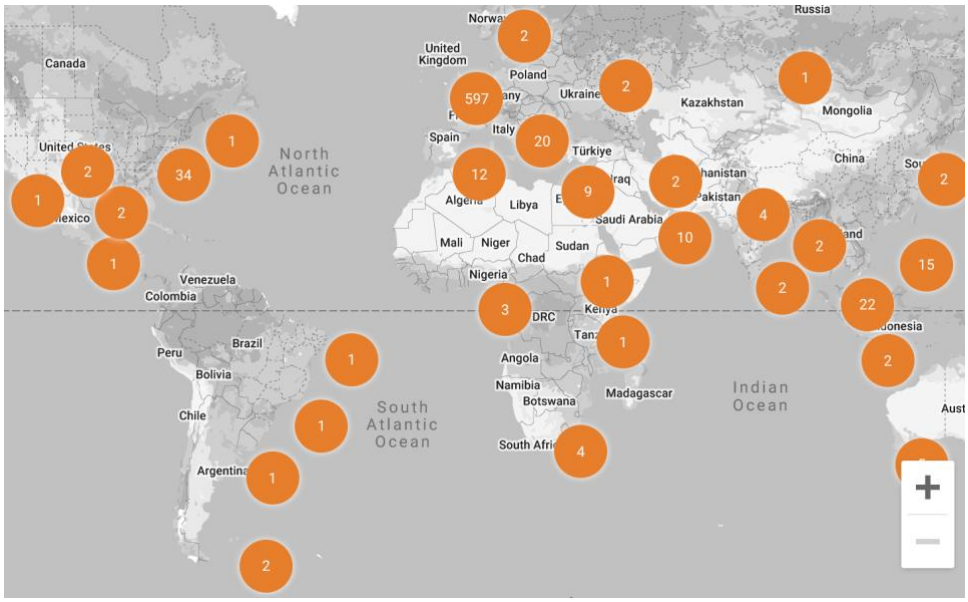
OER downloads from TES Resources, 2019-2023

Resources	Views	Downloads
84	39,283	141,890

[24] https://scotlandscurriculum.scot/
[25] https://open.ed.ac.uk/edinburghs-oers/
[26] https://awards.oeglobal.org/awards/2021/open-curation/open-ed-collection-of-geoscience-outreach-oers-and-more-on-tes/

Figure 5.

Geographical distribution of GeoScience OER downloads from TES Resources, January – April 2023



GeoScience Outreach student and Open Content Curator intern Amy Cook reflected:

> There was a real joy for me to build a relationship with my client, making a resource to fit their needs, as well as having the opportunity to be creative and add some diversity to my university studies. In the first half of the year, there's a real focus on giving us all the background information we need, to create not only a great teaching resource but also an OER. As a female physicist it's been so great to share my passion for my subject with others. And hopefully I will have inspired young people to get involved in science, demonstrate that it's accessible to all and even involves some creativity too.

8.2. Co-creating Public Knowledge About Global Health Challenges.

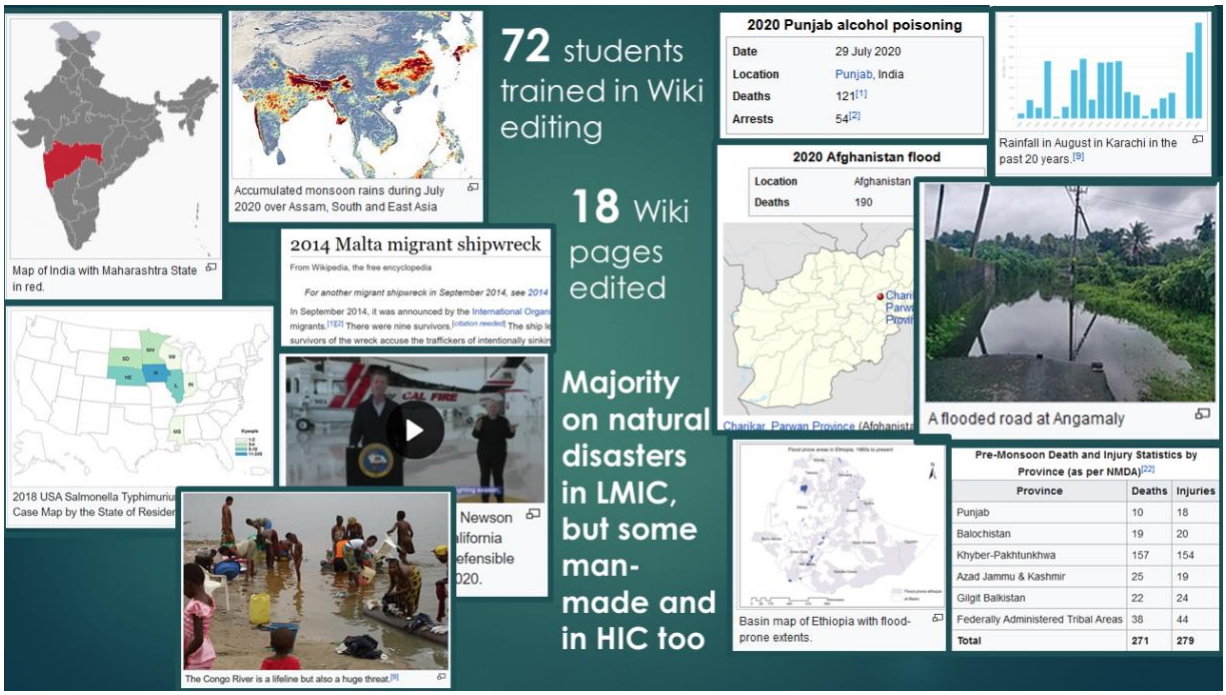
Global Health Challenges is an online course that forms part of the Global Challenges MSc. The course introduces postgraduates from a range of disciplines, including international relations, humanitarian work, medicine, public health and architecture, to the principles and practice of global health. Students come from high, low, and middle-income countries, and each explores a different country through the course. This enables the class cohort to have critical discussions about different global health challenges in a variety of settings.

Over four weeks, students work in small groups to edit a short Wikipedia "stub" article (usually less than 200 words long) on a natural or human-made disaster. Working remotely, students are trained to edit Wikipedia and then contribute 300 words each to co-author a newly improved 1,500-word page. Students also submit individual reflections on the digital skills they developed and the importance of maintaining good communication channels within an interdisciplinary team based in different locations, all of which are key components in global health careers.

This assignment enables postgraduates to develop a range of communication skills in an effective and critical way. Students are required to go beyond the descriptive, to think about factors that led to the crisis, considering what went well and what went wrong with local and international responses and the short or long-term consequences. They're encouraged to focus on neglected issues, places and communities, to apply their research skills to review published and grey literature and add to the body of public knowledge. The assignment provides an opportunity for geographically distant learners to come together to co-create knowledge with lasting value that actively contributes to public understanding for the common good. In 2019, 24 editors added 17,000 words that have now been viewed over a million times.

Figure 6.

Outputs of Global Health Challenges Wikipedia assignment over 3 years



Course organiser, Professor Liz Grant concluded:

> In terms of contributions to the planet, with over 300 disasters taking place every year, this assignment allows students to think of issues that affect communities they may have never heard about, explore and synthesise grey literature that may be inaccessible or unknown to many, and contribute to the discussion about fragile states of health and global health issues.
>
> As an advocacy–oriented programme we view the importance of the interdisciplinary work that we can enable among students...to help shift paradigms in global health by engaging in research that is open to the public, that challenges misconceptions and considers references from all over the world in a critical manner thus contributing to the decolonisation of the curriculum with Wikipedia.

Through open practice, the Global Health Challenges Wikipedia assignment empowers students to develop new skills and to communicate their scholarship to co-create improved knowledge and understanding of overlooked topics, thus benefiting people, scholarship, and the planet.

9. ACTIVE RE-USE FOR LEARNING ENHANCEMENT

Actively encouraging engagement with OEP provides opportunities for the university to re-use and re-purpose educational resources to enhance learning and to reach new audiences in innovative and creative ways.

9.1. Open eTextbooks for Access to Music Education

Open eTextbooks for Access to Music Education[27] was a Student Experience Grant project that brought together staff and students from the Reid School of Music, the OER Service, and Library and University Collections to co-create an open e-textbook by remixing open content originally created for the Fundamentals of Music Theory MOOC and redeveloped for an on campus blended learning course.

The project set out to create a prototype open textbook that could be used for undergraduate teaching within the University and shared under open licence. The development process allowed us to evaluate open textbook platforms, learn about repurposing content to create open textbooks, and assess the feasibility of extending this approach to further open textbook initiatives. The project also enabled our student partners to develop digital and copyright literacy skills including an understanding of OER, open licenses and open textbooks.

The students worked closely with lead academic Dr Nikki Moran to co-create the open textbook, collating videos and transcripts from the MOOC, text content from the on-campus course, and new material covering music theory in contextual critical global context. The students' thinking around the content and structure of the open textbook provided valuable insight on how rudiments of musical notation are taught.

Fundamentals of Music Theory (Moran et al., 2021) was published on Edinburgh Diamond, the University's e-book hosting platform, in late 2021 and by 2023 it had been downloaded almost 10,000 times by users around the world. The project stimulated redevelopment of both the MOOC and on campus course with students benefitting from the addition of new video material.

[27] https://blogs.ed.ac.uk/opentextbooks/

Table 4

Fundamentals of Music Theory downloads from Edinburgh Diamond, 2021-2023

Downloads	**Top 10 Countries**	**Top 10 Referrers**
9,841	1. USA	1. Direct
	2. United Kingdom	2. University of Minnesota
	3. India	3. Google
	4. Philippines	4. E-books directory
	5. Canada	5. Twitter
	6. China	6. Baidu
	7. Australia	7. Quora
	8. Nigeria	8. University of Edinburgh
	9. Germany	9. Facebook
	10. France	10. Conneticut State University

Reflecting on the project, Dr Moran commented:

> In terms of the quality of teaching and learning that these students have received, I believe that they've had great benefit from the reflective cycle behind this etextbook project, where the students' input and development of my original teaching materials has brought about further teaching and learning enhancement. I also expect this etextbook to be an important asset in the future for on-site students.

OEP was an integral component of this project. Students were encouraged to share reflective blog posts about their experience and were given the opportunity to present their experience at a number of open education and teaching and learning conferences.

In a reflective blog post student intern Ifeanyichukwu Ezinmadu wrote:

> OER means opportunity to me. The opportunity to share knowledge of a subject in a more accessible format that is mostly not bound by financial capability to access the material. Hereby, creating a channel that facilitates equal educational opportunity for all.

The Open eTextbooks for Access to Music Education project successfully showed how existing open content can be repurposed to create an open textbook and demonstrated how OEP can facilitate the democratic reshaping of teaching materials through student engagement and co-creation.

10. RECOMMENDATIONS

The University of Edinburgh's model of providing central support for OEP in partnership with policy makers, academic colleagues, partners and students provides a blueprint that other institutions can implement to encourage sustainable OEP.

Key recommendations and considerations include:

- Aligning support for OEP to institutional strategy and global policy drivers, e.g. UNESCO Recommendation on OER, UN Sustainable Development Agenda.
- Creating a permissive policy environment that encourages staff and students to engage with OEP and the creation and use of OER.
- Providing central services to support colleagues to develop the digital skills, capability, and confidence to grow their own open practice.
- Developing course materials that are open by default, ensuring they are sustainable, accessible and reusable. Sharing teaching and learning materials as OER is a key component of OEP.
- Embedding OEP in the curriculum through Wikipedia editing and OER creation assignments to enable the development of transferable digital and information literacy skills.
- Engaging students in the co-creation of learning experiences, open knowledge, open resources, and open practice.
- Encouraging staff and students to reflect on their practice and provide platforms to enable them to share their experiences and authentic voices.

11. CONCLUSIONS

The University of Edinburgh's strategic commitment to OEP has been shaped by our institutional vision and values and informed by global initiatives including the UNESCO Recommendation on OER and the United Nations Sustainable Development Agenda.

We have enabled OEP to become self-sustaining across the institution by creating a permissive open policy environment, formalising our commitment to openness, and by putting in place an array of central services providing digital capability to enable practice. This approach provides both staff and students with the reassurance they need to share their practice and resources openly and the digital skills required to engage with OEP and the co-creation of OER and open knowledge.

Integrating OEP in the curriculum has become core to our teaching and learning ethos, encouraging innovation, and bringing significant benefits including building networks, relationships, and communities, fostering agency and empowerment, developing strong societal values and an appreciation of equity, intersectionality, and social justice. Co-creating learning opportunities through authentic open practice assignments enables students to develop essential digital skills, core competencies and transferable attributes.

This commitment to openness enables us to harness the transformational potential of OEP, influencing strategic developments within the institution including curriculum transformation, digital strategy, and re-evaluating approaches to assessment.

Our experience shows that mainstreaming strategic support for OEP is key to ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all, supporting social inclusion, and enabling our learners to become fully engaged digital citizens and knowledge activists.

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Número especial: Prácticas educativas abiertas en educación superior

Repercusión de las Prácticas Educativas Abiertas en la Educación Superior: una revisión de literatura

Impact of Open Educational Practices in Higher Education: A Literature Review

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Resumen

Una de las tendencias que se está desarrollando actualmente en Educación Superior es la educación abierta. Por ello, el objetivo principal de este estudio es examinar la repercusión de las Prácticas Educativas Abiertas en la Educación Superior. Para la realización de esta investigación, se llevó a cabo una revisión bibliográfica centrada en un enfoque descriptivo-retrospectivo. En lo referente a la elección de la muestra, se empleó un muestreo no probabilístico intencional, donde 24 estudios publicados en la base de datos *Web Of Science* entre los años 2018 y 2022 fueron los elegidos como muestra. Entre los resultados más destacados se observa que más de la mitad (un 66,6%) son estudios cuantitativos, dentro de los cuales, en su mayoría, encontramos investigaciones basadas en la realización de cuestionarios, implantación de proyectos para fomentar el uso de los REA y revisiones de literatura. Por último, el 60% de las publicaciones analizadas concluyen exponiendo que las Prácticas Educativas Abiertas son una herramienta que mejora el aprendizaje de los estudiantes. Este trabajo concluye exponiendo que la motivación y el interés del alumnado, además de los aprendizajes significativos y el pensamiento crítico, se ven influenciados por el uso de Prácticas Educativas Abiertas.

Palabras clave: educación superior; prácticas educativas abiertas; recursos educativos abiertos; revisión de literatura.

Abstract

One of the trends currently developing in Higher Education is open education. Therefore, the main objective of this study is to examine the impact of Open Educational Practices in Higher Education. In order to carry out this research, a literature review focused on a descriptive-retrospective approach was carried out. Regarding the choice of the sample, a non-probabilistic purposive sampling was used, where 24 studies published in the Web Of Science database between 2018 and 2022 were chosen as the sample. Among the most noteworthy results, more than half (66.6%) are quantitative studies, within which, for the most part, we find research based on questionnaires, implementation of projects to promote the use of OER and literature reviews. Finally, 60% of the publications analysed conclude that Open Educational Practices are a tool that improves student learning. This work concludes that student motivation and interest, as well as meaningful learning and critical thinking, are influenced by the use of Open Educational Practices.

Keywords*: higher education; open educational practices; open educational resources, literature review.*

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1. INTRODUCCIÓN

Una de las tendencias que se está desarrollando actualmente para la integración de la TIC en educación es la educación abierta, entendida ésta como una forma de enseñanza y aprendizaje que aúna dos elementos fundamentales: el uso de las TIC y la utilización de elementos fundamentales en "abierto" como son la adaptación, redistribución, intercambio y colaboración de recursos en sitios de acceso libre. Este planteamiento es el centro de lo que en la actualidad se conoce como movimiento educativo abierto (Caeiro Rodríguez *et al.*, 2015). Este movimiento se basa en unos principios fundamentados en la idea de que el conocimiento es un bien común y por tanto la educación debería favorecer la construcción de dicho conocimiento haciendo uso de los diferentes medios, dentro de los cuales destacan las TIC.

Según Ramírez (2011), las Prácticas Educativas Abiertas (en adelante PEA) surgen como un movimiento educativo abierto que trata de modificar las prácticas habituales de los docentes, convirtiéndolas en prácticas innovadoras secundadas por Recursos Educativos Abiertos en adelante (REA). Las PEA son praxis que favorecen la creación, utilización y reutilización de REA fomentando modelos pedagógicos innovadores y la autonomía del alumnado para hacerles partícipes de su proceso de aprendizaje (OPAL, 2011). Es decir, las PEA hacen referencia a la elaboración, uso y modificación de los REA con el objetivo de mejorar la calidad educativa. Además del uso de los REA, las PEA engloban la idea de constituir experiencias formativas de acceso abierto, como por ejemplo los cursos de formación, seminarios, talleres, actividades, entre otros, cuya finalidad es movilizar la educación de manera que sea accesible para toda la sociedad.

Como afirman Chiappe y Martínez (2016), la mayoría de definiciones no tienen en cuenta un espacio de gestión de la circulación de los saberes en el aula. A este respecto, es importante aclarar que las PEA son aquellas prácticas que, además de usar o crear REA, introducen un modelo de gestión colaborativa en el que los docentes y alumnos colaboran de forma conjunta. No obstante, esto incluye a la evaluación como ámbito de la práctica educativa. En todo caso, hoy en día las PEA tienen una estrecha relación con la noción de educación abierta y se observa que la producción de conocimiento pasa por procedimientos cooperativos que ocurren en ambientes de acceso libre donde se comparten, adaptan y reutilizan diferentes recursos.

Podemos afirmar entonces que las PEA forman un nuevo enfoque en cuanto al modelo de enseñanza-aprendizaje, encaminado a fomentar el desarrollo de competencias para acceder a la información, procesarla y difundirla, todo ello en un entorno enriquecido por la tecnología presencial y a distancia (Rivero y Rabajoli, 2016). En definitiva, podemos decir que las PEA nacen para cambiar las prácticas docentes. Como establece Ramírez (2011), las PEA intentan cambiar las prácticas habituales del docente por prácticas innovadoras sustentadas por REA. Estas prácticas incorporan procesos de formación a través de cursos presenciales y a distancia (e-learning, b-learning, m-learning y MOOC), combinación de colecciones con REA para apoyar la educación, utilización de tecnologías abiertas, redes de investigación sobre educación abierta, instituciones y organismos que impulsan el acceso abierto, etc. (Sarango-Lapo et *al.*, 2015).

Finalmente, en línea con lo que proponen Valle et *al*. (2016), es importante saber que para que los docentes tengan una buena formación en el uso de los REA, como parte de las PEA, es imprescindible que se lleve a cabo un proceso de desarrollo de competencias para la adquisición de habilidades tecnológicas. Ahora bien, dicho proceso debe abarcar desde la

familiarización hasta la integración de las tecnologías en el proceso educativo, introduciéndolas en la estructura curricular. Este procedimiento de apropiación tecnológica debe comprender dos elementos: la parte teórica y la práctica sobre los recursos a utilizar; así, se alcanzará una comprensión, aplicación, adaptación y transformación para el desarrollo de prácticas educativas abiertas. En ese sentido, la formación docente favorece tanto la apropiación tecnológica como para la generación de PEA.

Un buen planteamiento en la formación docente sobre el uso de REA permite iniciar proyectos de innovación educativa en las aulas con TIC, de tal manera que los discentes y docentes alcancen un producto aplicable en sus clases. Éstas son prácticas educativas abiertas innovadoras (Valle et *al*., 2016).

Una vez realizado un breve recorrido sobre el significado de las PEA y los REA junto con sus características e información más relevante, es necesario concluir exponiendo el objetivo principal de este estudio: examinar la repercusión de las Prácticas Educativas Abiertas en la Educación Superior.

Para alcanzar el objetivo principal del estudio, es necesario formular una serie de preguntas de investigación que lo guíen:

- ¿Cuáles son los métodos de investigación más utilizados para analizar las PEA como un recurso en Educación Superior?
- ¿En qué área geográfica existe mayor número de investigaciones sobre PEA en Educación Superior?
- ¿Cuál es la media de citas por artículo sobre PEA en Educación Superior?
- ¿Cuál es la media de coautores por artículo sobre PEA en Educación Superior?
- ¿Dentro de que ámbitos y/o facultades universitarias el uso de PEA es más generalizado?
- ¿Qué pautas y conclusiones significativas sobre las PEA en Educación Superior pueden extraerse del contenido de los artículos analizados?

2. MÉTODO

Toro (2002) define la revisión bibliográfica como “un procedimiento estructurado cuyo objetivo es la localización y recuperación de información relevante para un usuario que quiere dar respuesta a cualquier duda relacionada con su práctica” (p.25).

Podemos decir que una revisión bibliográfica es una valoración crítica, sistemática, exhaustiva y reproducible de las producciones científicas sobre un tema concreto y cuyo objetivo es reconocer, valorar y simplificar el conjunto de ensayos existentes que han sido elaborados por otros investigadores con el menor sesgo posible.

Centrándonos en esta investigación, para la realización de la misma se tuvieron en cuenta diferentes metodologías relacionadas con la revisión de la literatura científica, inclinándose finalmente por la elaboración de una revisión bibliográfica centrada en un enfoque descriptivo-retrospectivo (Veiga de Cabo *et al.*, 2008), es decir, un estudio cuya finalidad es definir, clasificar, catalogar y analizar hechos ocasionados en el pasado.

Según Codina (2020), la utilización de revisiones bibliográficas ayuda a detectar oportunidades de investigación, proporciona modelos para nuevas investigaciones, facilita un marco teórico y metodológico para nuevas investigaciones y constituye la base de la evidencia, en este caso, las PEA en Educación Superior.

Además, para este estudio se llevó a cabo un muestreo no probabilístico intencional, debido a que se escogieron directamente los sujetos/elementos que se pretendía que formasen parte de este estudio. Desde septiembre de 2022 hasta diciembre de este mismo año, se buscaron, recopilaron, clasificaron y analizaron los artículos que iban a formar parte de este estudio.

Todos ellos tenían una serie de características comunes. Estos artículos debían estar publicados en la base de datos Web Of Science (WOS); se utilizó esta base de datos ya que es una de las principales fuentes de artículos de divulgación científica, lo que aseguró una mayor influencia y accesibilidad a los documentos, además de ser una de las bases de datos más importante a nivel mundial. Otra característica importante es el año de publicación: éstos debían situarse dentro de los últimos cinco años (2018-2022); la principal razón de esta decisión está ligada a la velocidad en la que surgen nuevas publicaciones relacionadas con las PEA, además para que un trabajo se considere con mayor rigor científico siempre se busca haber utilizado bibliografía lo más actual posible. Finalmente, una de las propiedades más relevantes, coincidente con el objeto de estudio de este trabajo, es la necesidad de que todos los artículos tratasen la repercusión de las PEA en la Enseñanza Superior.

Por otra parte, tras la elección de la metodología que se iba a implementar en este estudio, se llevaron a cabo los siguientes pasos:

- Paso 1º: indagación y selección de los datos.
- Paso 2º: clasificación de los artículos en virtud del área de estudio.
- Paso 3º: evaluación y reflexión de la información.

De manera más detallada, podemos dividir el proceso seguido para la búsqueda de referencias bibliográficas significativas para este estudio en las siguientes etapas (ver Figura 1):

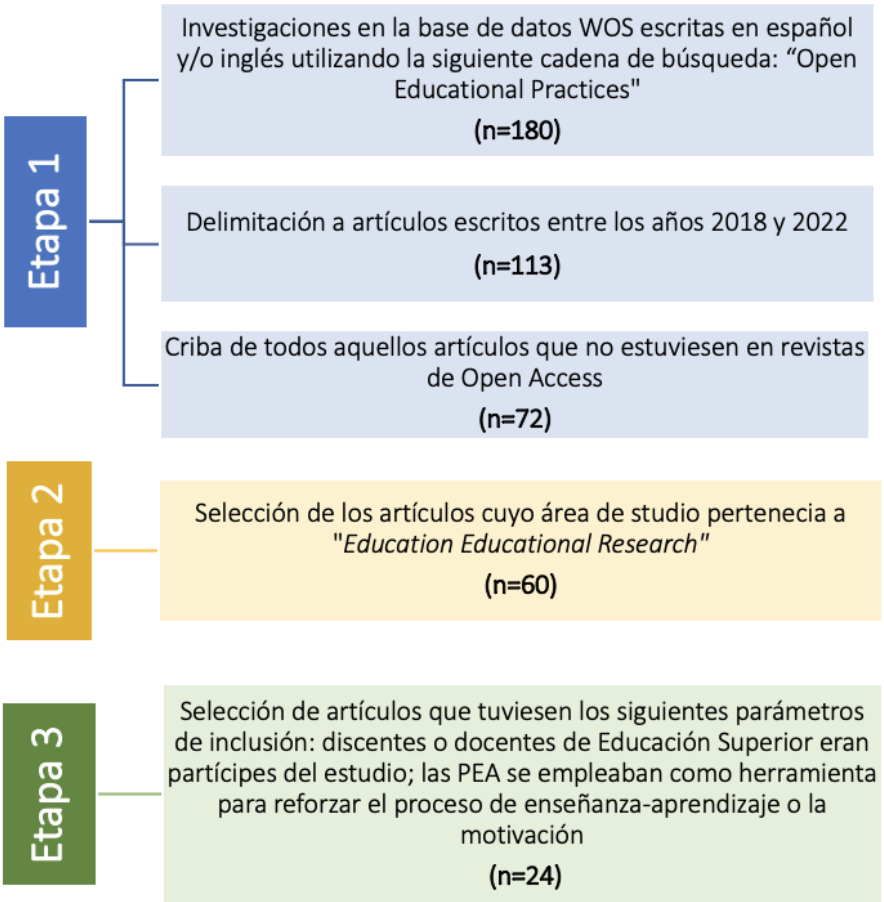
- Etapa 1. Se realizó una búsqueda inicial cuyo propósito era la localización de las investigaciones escritas en español y/o inglés utilizando la siguiente cadena de búsqueda: “Open Educational Practices”. De esta primera búsqueda se obtuvieron un total de 180 publicaciones en la base de datos WOS. De igual modo, en esta primera etapa se delimitó la localización de artículos escritos entre los años 2018 y 2022, obteniendo así 113 publicaciones. Además, con respecto a su accesibilidad, se descartaron aquellos documentos que no estaban en revistas *Open Access*, ya que además de una incongruencia, este hecho afecta a la búsqueda de información sobre este tema por cualquier usuario, recibiendo así un producto total de 72 artículos.

- Etapa 2. En esta segunda etapa, se afinó la búsqueda filtrando el producto obtenido en la fase anterior a través de la pestaña "área de estudio" que incluye la base de datos WOS. Por ende, se tuvo en cuenta el ámbito que tienen mayor relación con la temática a analizar, siendo éste: *Education Educational Research* (60 artículos).

- Etapa 3. En esta última etapa se realizó una lectura profunda de los 60 artículos encontrados en la fase anterior, eligiendo los trabajos que, además de los parámetros anteriores, tuvieran los siguientes criterios de inclusión: en ellos, los discentes o docentes de Educación Superior eran partícipes del estudio y adicionalmente, las PEA se empleaban como herramienta para reforzar el proceso de enseñanza-aprendizaje o la motivación.

Figura 1

Diagrama de flujo de estudios identificados, excluidos e incluidos



Tras el filtrado final, 24 trabajos indexados en la base de datos WOS fueron los elegidos como muestra del estudio, todos ellos publicados entre los años 2018 y 2022. Ahora bien, es importante destacar que no se analizaron artículos del año actual (2023) debido a que aún no se había publicado ninguna investigación relacionada con las PEA y la Educación Superior en el momento del estudio.

Todos los datos obtenidos fueron recogidos de forma manual y mecánica, revisando los documentos en la base de datos WOS y, posteriormente, vertiendo los datos más relevantes en una tabla de Excel.

Para una mejor organización de los datos obtenidos de los estudios encontrados, se construyó un primer modelo de tabla donde se presentaban las variables más descriptivas de los artículos: a) Título de la investigación; b) Año; c) Nombre de los autores; d) Ubicación; e) Número de participantes; f) Método de investigación; g) Área temática; h) Número de coautores; i) Número de citas en WOS (Anexo I).

Una vez finalizada dicha tabla, se creó una segunda donde se muestra información didáctica más relevante para la investigación, formada por las siguientes columnas: a) Título de la investigación; b) Objetivos; c) Resultados (Anexo II).

3. RESULTADOS

Algunos indicadores bibliométricos a tener en cuenta son el número de coautores y citas con las que cuenta cada uno de los artículos seleccionados. Como se observa en la Tabla 1, la media total de coautores por artículo es de 2 colaboradores. En cuanto al número de citas, encontramos un dato muy llamativo: a lo largo del año 2022 el número de citas disminuyó drásticamente; sin embargo, gracias a los datos de años anteriores, finalmente la media de citas por artículo es de más de nueve citas por texto (9,58). Aunque de cara a los resultados no se analizarán dichos datos, se cree interesante exponerlos debido a la gran discrepancia observada en relación al total de citas de cada artículo dependiendo del año de publicación (ver Tabla 1).

Tabla 1

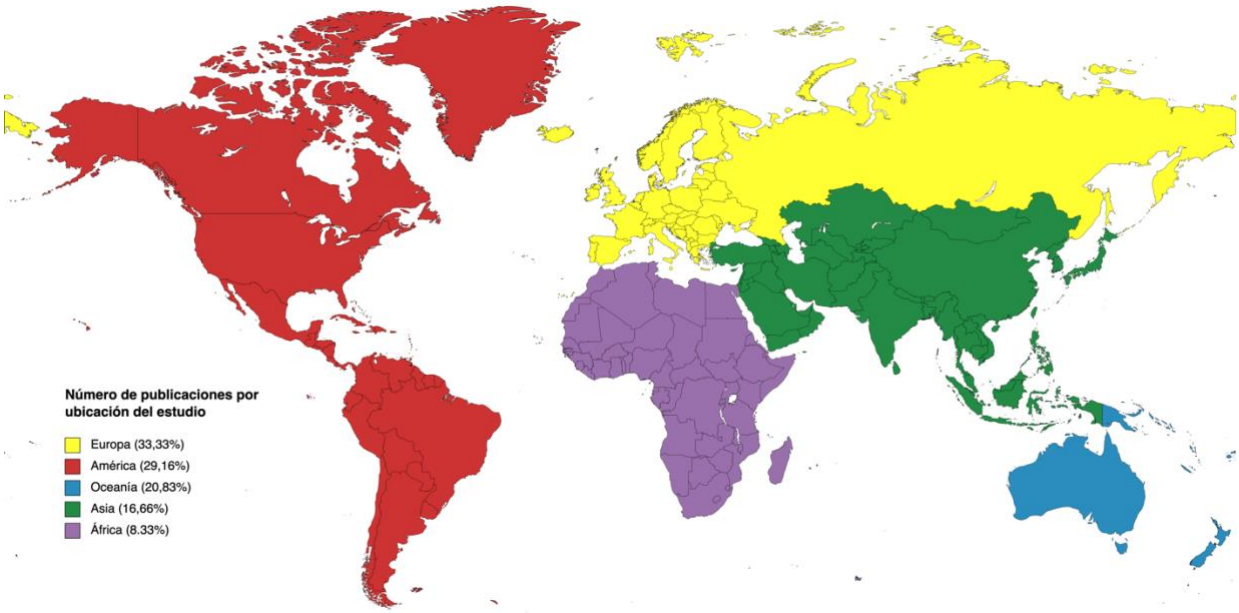
Media de coautores y citas por artículo

Año	N.º de artículos	N.º de coautores	Media de coautores	N.º de citas	Media de citas
2018	4	8	2	27	6,75
2019	5	10	2	26	5,2
2020	5	16	3,2	67	13,4
2021	4	8	2	109	27,25
2022	6	6	1	1	0,17
TOTAL	**n=24**	**n=48**	**2**	**n=230**	**9,58**

Centrándonos en el lugar de investigación, si comparamos los estudios realizados en los diferentes países, tanto en el continente europeo (33,33%) como en el americano (29,16%) encontramos un mayor número de publicaciones sobre las PEA en Educación Superior (ver Figura 2). Además, es relevante destacar que un gran número de las mismas se han llevado a cabo en países angloparlantes como Reino Unido, Estados Unidos, Canadá o Australia, llegando a ser casi la mitad de las investigaciones analizadas (45,8%).

Figura 2

Número de publicaciones por ubicación del estudio



En relación con los artículos analizados, hay que destacar que la mayoría de éstos investiga el uso de PEA en diferentes ámbitos y facultades universitarias, siendo en su mayoría interdisciplinares, es decir, en ellos intervienen docentes y/o alumnos de diferentes áreas temáticas (casi un 84%). Sólo 4 investigaciones se sitúan en un área temática concreta, ya sea Educación o Ciencias Sociales (ver Tabla 2).

Tabla 2

Número de publicaciones por área temática

Área temática	N.º de publicaciones	%
Educación	3	12,5%
Ciencias Sociales	1	4,2%
Multidisciplinar	20	83,3%
TOTAL	**n=24**	**100%**

Por otro lado, centrándonos en los diferentes estudios con una muestra determinada, el número de individuos que componen la muestra de cada una de ellas se sitúa en un intervalo muy dispar (entre 10 y 600 participantes aproximadamente), siendo las investigaciones "Open thinking as a learning outcome of open education: scale development and validation" y "PRAXIS: Open Educational Practices and Open Science to face the challenges of critical Educational Action Research" las que cuentan con un mayor número de participantes. Como podemos observar en la Tabla 3, un alto porcentaje de las investigaciones estudiadas cuentan con una muestra ubicada entre 0 y 99 participantes (65,3%).

Tabla 3

Número de publicaciones por tamaño de la muestra

N.º de participantes	N.º de publicaciones	%
0-99	15	65,3%
100-199	3	13,1%
200-299	1	4,3%
300-399	1	4,3%
400-499	1	4,3%
500 o más	2	8,7%
TOTAL	**n=23**	**100%**

Con relación al método de investigación utilizado en los diferentes documentos analizados, más de la mitad (un 66,6%) son estudios cuantitativos, dentro de los cuales en su mayoría encontramos investigaciones basadas en la realización de cuestionarios a docentes y discentes de Educación Superior sobre la importancia de la utilización de las PEA en esta etapa educativa. Un ejemplo de ello es el estudio de Cardoso *et al.* (2019), en el cual, con el fin de identificar los conocimientos, prácticas y percepciones del profesorado en relación con los REA y el Acceso Abierto en el contexto de sus prácticas de enseñanza e investigación, se envió un cuestionario al profesorado de todas las instituciones públicas de Educación Superior en Portugal y los datos fueron sometidos a un análisis descriptivo.

Por otro lado, dentro de los estudios cuantitativos, encontramos otras investigaciones basadas en la implantación de un proyecto piloto para fomentar el uso de REA. La investigación de Karunanayaka *et al.* (2018) utiliza el diseño de un MOOC para la mejora de las PEA a través de un proceso iterativo de análisis, diseño, desarrollo e implantación.

La revisión literaria también forma parte de los estudios cuantitativos analizados sobre las PEA en Educación Superior. Un ejemplo de este tipo de estudios que podemos encontrar en los artículos revisados es el llevado a cabo por Zhang *et al.* (2020), el cual tenía por objetivo proporcionar información sobre la diversidad funcional dentro de las PEA y los REA. Para ello, se llevó a cabo una revisión literaria de 30 artículos científicos, encontrados en diferentes bases de datos, que trataban las PEA y los REA para la accesibilidad al aprendizaje en alumnos con discapacidad.

Por último, como podemos ver en la Tabla 4, casi un 30% de los artículos analizados utiliza métodos cualitativos. Dentro de los artículos que utilizan este método de investigación, la mayoría sigue una metodología teórica constructivista a través de la recogida de experiencias, entrevistas, grupos focales… Un ejemplo, es el artículo de Tualaulelei y Green (2022), el cual, para ampliar la comprensión de las PEA como un medio para ayudar a los alumnos a promover la pedagogía de la equidad, llevó a cabo un estudio cualitativo siguiendo una metodología teórica constructivista a través de entrevistas y grupos focales a estudiantes de Educación Superior.

Tabla 4

Número de publicaciones por método de investigación

Método de investigación	N.º de publicaciones	%
Estudio cuantitativo	16	66,6%
Estudio cualitativo	7	29,2%
Estudio mixto (cualitativo y cuantitativo)	1	4,2%
TOTAL	**n=24**	**100%**

Finalmente, en relación con las pautas y conclusiones extraídas de los estudios analizados que investigan la implantación de PEA en centros de Educación Superior, se llegan a unos resultados comunes y destacados (ver Tabla 5):

- El 58,3% de las publicaciones estudiadas analizaban la relación entre la implantación de PEA en Educación Superior y la mejora del proceso de aprendizaje de los estudiantes. Todas éstas concluyen sus investigaciones indicando que las PEA son una herramienta que mejora la actitud, la motivación y facilita la adquisición de contenidos a los estudiantes complementando su proceso de enseñanza-aprendizaje.

- La mitad de las investigaciones (12 artículos = 50%) centraban su interés en la equidad pedagógica que promueve este recurso. Los resultados exponen que las PEA tienen el potencial de reducir las desigualdades sociales institucionales, empoderando a los maestros para construir planes de estudio dando expresión a las voces socialmente marginadas. Es decir, las PEA son una pedagogía emergente que promueve la integración de múltiples enfoques pedagógicos para responder a las necesidades de aprendizaje individuales de los estudiantes.

- Por otro lado, en lo referente al beneficio de las PEA y su aplicabilidad, son, de nuevo, 12 los artículos (50%) que concluyen sus investigaciones exponiendo que existe una brecha entre los beneficios de esta herramienta y su viabilidad y aplicabilidad.

- El 46% de los artículos analizados encontraron evidencias de que las PEA pueden apoyar un papel más activo para el alumno.

- Por último, sólo un 25% de las investigaciones analizadas indican que es necesario reforzar la formación docente en cuanto a competencias tecnológicas y didácticas para poder llevar a cabo una correcta implantación de las PEA en el aula.

Tabla 5

Número de publicaciones según las conclusiones

Pautas y conclusiones	N.º de publicaciones	%	TOTAL
Las PAE mejora la actitud, la motivación y el aprendizaje de los estudiantes	14	58,3%	n=24 (100%)
Existe una brecha entre el beneficio de las PEA y su viabilidad y aplicabilidad	12	50%	n=24 (100%)
Las PEA promueven la equidad pedagógica	12	50%	n=24 (100%)
Las PEA apoyan los diseños educativos centrados en el alumno	11	45,8%	n=24 (100%)
Falta de formación docente relacionada con las PEA y los REA	6	25%	n=24 (100%)
La implementación de PEA depende del apoyo institucional	6	25%	n=24 (100%)

Por otra parte, en las revisiones bibliográficas encontradas las conclusiones distan mucho de las anteriores, destacando dentro de las mismas: a) las universidades dedicadas a la educación a distancia necesitan transformarse y adoptar un nuevo enfoque organizativo más innovador y que responda mejor a un contexto de cambio continuo (Cardoso *et al.,* 2019); b) aunque el potencial de las PEA para aumentar el acceso a los materiales del curso y la participación en entornos de aprendizaje es alentador, el acceso no significa inherentemente inclusión (Heck *et al.,* 2020); y c) la accesibilidad todavía está en su infancia dentro de los REA y los investigadores deben centrarse más en considerar los cuatro principios de accesibilidad (perceptibles, operables, comprensibles y robustos) al proporcionar PEA (Zhang *et al*., 2020).

4. DISCUSIÓN Y CONCLUSIONES

Ante el interés surgido por el uso de las PEA en educación y más concretamente su utilización en la Educación Superior, a continuación se comparan los resultados obtenidos con los de otras investigaciones.

Bozkurt *et al*. (2019) afirman que muchas universidades han adoptado las PEA como modelo de enseñanza y aprendizaje únicamente para atraer a más estudiantes, es decir, las utilizan como un método publicitario de sus universidades, pero no se aplican ni se desarrollan dichas prácticas en las aulas. En consonancia con estos autores, tras el análisis de las diferentes investigaciones, nuestro trabajo señala que, para no ser un mero spot publicitario, para una implantación idónea de las PEA es imprescindible fortalecer la formación docente en competencias tecnológicas y didácticas para poder realizar una buena implantación de las PEA en el aula, y además, las universidades necesitan transformarse y adoptar un nuevo enfoque organizativo más innovador que responda mejor a un contexto de cambio continuo.

En relación a las barreras que podemos encontrarnos en la puesta en marcha de las PEA y la utilización de los REA, Koseoglu y Bozkurt (2018) plantean la necesidad de desarrollar nuevas estrategias y políticas para eliminarlas, siendo crucial para beneficiarse completamente de las PEA en la educación y llegar así a poblaciones más amplias. Nuestro estudio además expone que no sólo existen barreras políticas y estratégicas en la aplicabilidad de las PEA, sino que encontramos fuertes barreras sociales que dificultan los beneficios de las PEA, como es la brecha existente entre su viabilidad y aplicabilidad.

Para centrar nuestra atención en las conclusiones extraídas del objetivo principal de esta investigación es determinante finalizar respondiendo a las preguntas de investigación derivadas del mismo.

En primer lugar, partiendo de la pregunta: ¿cuáles son los métodos de investigación más utilizados para analizar las PEA como un recurso en Educación Superior? Se debe destacar que, aunque la gran mayoría de artículos son estudios cuantitativos, es cierto que dentro de los mismo encontramos una gran diversidad de métodos cuantitativos utilizados (investigaciones basadas en la realización de cuestionarios a docentes y discentes de Educación Superior sobre la importancia de la utilización de las PEA, investigaciones basadas en la implantación de un proyecto piloto para fomentar el uso de REA y revisiones de literatura), al igual que sucede en los estudios cualitativos (metodología teórica constructivista a través de la recogida de experiencias, entrevistas, grupos focales…) y estudios mixtos analizados.

En segundo lugar, siguiendo con el resto de preguntas de investigación en las cuales se estudian las diferentes características de las publicaciones analizadas sobre las PEA en Educación Superior como son el área geográfica, el número de citas, el número medio de coautores, además de los ámbitos y/o facultades universitarias, se evidencia que el número medio de citas por artículo es inferior a lo esperado para tratarse de una temática bastante en auge en la actualidad. Sin embargo, el número medio de coautores por investigación se encuentra dentro de un intervalo normalizado, es decir la mayoría cuenta con dos coautores. Centrándonos en el número de publicaciones por ubicación del estudio, los países de Europa y América cuentan con mayor número de publicaciones sobre esta temática, destacando por encima de todos los países angloparlantes. Finalmente, debemos enfatizar el uso multidisciplinar de las PEA, es decir, la mayoría de trabajos implementa las PEA de manera conjunta, unificando diferentes ámbitos y no centrándose en uno sólo.

Por último, enfocándonos en la última cuestión: ¿qué pautas y conclusiones significativas sobre las PEA en Educación Superior pueden extraerse del contenido de los artículos analizados? La gran mayoría de artículos analizados defienden que el uso de PEA en Educación Superior mejora de manera significativa la actitud, la motivación y el aprendizaje de los estudiantes. En esta misma línea, encontramos infinidad de conclusiones relacionadas con el uso de este tipo de prácticas para promover la equidad pedagógica y apoyar cualquier metodología centrada en el alumno. Por otro lado, en relación a aspectos menos positivos sobre el uso de las PEA cabe destacar la necesidad de formación docente y la existencia de una brecha casi infranqueable entre los beneficios que proporciona esta herramienta y su viabilidad de aplicación en cualquier contexto.

Para finalizar sólo queda exponer que las PEA han tenido y siguen teniendo gran repercusión en la Educación Superior. Aunque no se observan resultados similares en España, una gran

cantidad de países vecinos y lejanos concluyen que tanto las PEA como los REA son metodologías y recursos de gran utilidad para cualquier docente o alumno de cualquier facultad o grado superior, estando instauradas y normalizadas en gran parte de los mismos, pero aún con mejoras por realizar.

A través de esta revisión se han podido observar datos relevantes, pero no podemos obviar las limitaciones con las que cuenta la misma, y que en un futuro, se pretenden solventar. Este estudio analiza únicamente investigaciones encontradas en una de las bases de datos más relevantes en la actualidad (WOS) dejando de lado otras fuentes como Scopus, Dialnet…, las cuales se pretenden analizar en futuros artículos. De igual manera, debido a uno de los principales criterios de búsqueda (los artículos debían tener las palabras "Open Educational Practices") se cribaron aquellos artículos escritos en idiomas diferentes al español o al inglés, por lo que, de igual modo, en un futuro cercano se pretende incluir cualquier artículo que contenga estas palabras en cualquier idioma. Siguiendo en esta misma línea, debemos tener en cuenta que, no sólo se sesgaron publicaciones en otros idiomas diferentes al anglosajón con nuestras palabras de búsqueda, sino que la misma base de datos (WOS) ya sesga esta búsqueda, mostrando casi de manera única artículos escritos en inglés, hecho que puede haber afectado a la ubicación geográfica de los artículos. Para poder sobrepasar esta limitación, como se ha dicho anteriormente, en futuras investigaciones sería recomendable utilizar bases de datos que cuenten con publicaciones en diferentes países e idiomas.

Al relacionar la mayoría de revisiones las PEA con un aumento de motivación en el alumnado, se estima este trabajo muy recomendable y necesario, no sólo para entender el término en toda su extensión, sino también para futuras investigaciones similares, tanto para las que quieran conocer las debilidades, fortalezas, oportunidades y amenazas de las propias PEA, como para aquellas que quieran trabajar la falta de motivación habitual del alumnado y la propuesta de ejemplos para evitar esta desmotivación.

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ANEXOS

Anexo I

Título de la investigación	Año	Nombre de los autores	Ubicación	N.º de participantes	Método de investigación	Área temática	Coautores	Citas
Institutional mapping of open educational practices beyond use of Open Educational Resources	2018	Nascimbeni, Fabio; Burgos, Daniel; Campbell, Lorna; Tabacco, Anita	Italia	181	Estudio cuantitativo	Multidisciplinar	3	15
Assessing the Potential Toward Open Educational Practices in Kyrgyzstan	2018	Walz, Anita; Bekbalaeva, Jyldyz	Kirguistán	35	Estudio mixto	Multidisciplinar	1	5
Designing Continuing Professional Development MOOCs to promote the adoption of OER and OEP	2018	Karunanayaka, Shironica; Naidu, Som; Rajendra, J. C. N.; Ariadurai, S. A.	Sri Lanka	11	Estudio cuantitativo	Multidisciplinar	3	5
Exploring Initiatives for Open Educational Practices at an Australian and a Brazilian University	2018	Bossu, Carina; Meier, Marineli	Australia y Brasil	2	Estudio cualitativo	Multidisciplinar	1	2
Practicalities of implementing open pedagogy in higher education	2019	Paskevicius, Michael; Irvine, Valerie	Reino Unido	11	Estudio cualitativo	Multidisciplinar	1	3
Using open education practices across the Mediterranean for intercultural curriculum development in higher education	2019	Wimpenny, Katherine; Nascimbeni, Fabio; Affouneh, Saida; Almakari, Ahmed; Maya Jariego, Isidro; Eldeib, Ayman	Países del Sur Mediterráneo	70	Estudio cuantitativo	Multidisciplinar	5	1

Título de la investigación	Año	Nombre de los autores	Ubicación	N.º de participantes	Método de investigación	Área temática	Coautores	Citas
PRAXIS: Open Educational Practices and Open Science to face the challenges of critical Educational Action Research	2019	Czerwonogora, Ada; Rodes, Virginia	Uruguay	600	Estudio cuantitativo	Multidisciplinar	1	5
Open Education and Learning Design: Open Pedagogy in Praxis	2019	Paskevicius, Michael; Irvine, Valerie	Canadá	11	Estudio cualitativo	Multidisciplinar	1	15
Open Practices in Public Higher Education in Portugal: faculty perspectives	2019	Cardoso, Paula; Morgado, Lina; Teixeira, Antonio	Portugal	348	Estudio cuantitativo	Multidisciplinar	2	2
Who opens online distance education, to whom, and for what?	2020	Lee, Kyungmee	No especifica	29	Estudio cuantitativo	Ciencias Sociales	0	10
Openness reexamined: teachers' practices with open educational resources in online language teaching	2020	Pulker, Helene; Kukulska-Hulme, Agnes	Reino Unido	17	Estudio cualitativo	Idiomas	1	7
Supporting open educational practices through open textbooks	2020	Pitt, Rebecca; Jordan, Katy; de los Arcos, Beatriz; Farrow, Robert; Weller, Martin	Reino Unido	96	Estudio cuantitativo	Multidisciplinar	4	14
Accessibility within open educational resources and practices for disabled learners: a systematic literature review	2020	Zhang, Xiangling; Tlili, Ahmed; Nascimbeni, Fabio; Burgos, Daniel; Huang, Ronghuai; Chang, Ting-Wen; Jemni, Mohamed; Khribi, Mohamed Koutheair	No especifica	31	Estudio cuantitativo	Multidisciplinar	7	33

Título de la investigación	Año	Nombre de los autores	Ubicación	N.º de participantes	Método de investigación	Área temática	Coautores	Citas
Open science practices in higher education: Discussion of survey results from research and teaching staff in Germany	2020	Heck, Tamara; Peters, Isabella; Mazarakis, Athanasios; Scherp, Ansgar; Bluemel, Ina	Alemania	210	Estudio cuantitativo	Multidisciplinar	4	3
Caring in Practice, Caring for Knowledge	2021	Funk, Johanna	Australia	150	Estudio cuantitativo	Educación	0	4
MOOC in a timeline: a systematic literature review	2021	Chiappe, Andres; Amaral, Monique	No especifica	486	Estudio cuantitativo	Educación	1	2
Disrupted classes, undisrupted learning during COVID-19 outbreak in China: application of open educational practices and resources	2021	Huang, Ronghuai; Tlili, Ahmed; Chang, Ting-Wen; Zhang, Xiangling; Nascimbeni, Fabio; Burgos, Daniel	China	No especifica	Estudio cualitativo	Multidisciplinar	5	89
Open Textbooks and Social Justice: Open Educational Practices to Address Economic, Cultural and Political Injustice at the University of Cape Town	2021	Cox, Glenda; Masuku, Bianca; Willmers, Michelle	Sudáfrica	18	Estudio cuantitativo	Multidisciplinar	2	12
Open learning design for using open educational practices in high school learning contexts and beyond	2022	Roberts, Verena	Canadá	23	Estudio cuantitativo	Multidisciplinar	0	0
Open educational practices in a Cultural Capability unit: learning at the cultural interface	2022	Lambert, Sarah; Funk, Johanna	Australia	109	Estudio cualitativo	Multidisciplinar	1	0

Título de la investigación	Año	Nombre de los autores	Ubicación	N.º de participantes	Método de investigación	Área temática	Coautores	Citas
Supporting educators' professional learning for equity pedagogy: the promise of open educational practices	2022	Tualaulelei, Eseta; Green, Nicole Catherine	Australia	74	Estudio cualitativo	Multidisciplinar	1	0
College student engagement in OER design projects: Impacts on attitudes, motivation, and learning	2022	Trust, Torrey; Maloy, Robert W.; Edwards, Sharon	Estados Unidos	69	Estudio cualitativo	Multidisciplinar	2	0
The why of open pedagogy: a value-first conceptualization for enhancing instructor praxis	2022	Werth, Eric; Williams, Katherine	Estados Unidos	9	Estudio cuantitativo	Multidisciplinar	1	1
Open thinking as a learning outcome of open education: scale development and validation	2022	Jung, Insung; Lee, Jihyun	Australia, Canadá, China, Chipre…	610	Estudio cuantitativo	Multidisciplinar	1	0

Anexo II

Título de la investigación	Objetivos	Resultados
Institutional mapping of open educational practices beyond use of Open Educational Resources	Trazar un mapa significativo de la capacidad de apertura dentro de una universidad.	El uso de PEA ha permitido determinar el nivel de capacidad de apertura existente en una universidad.
Assessing the Potential Toward Open Educational Practices in Kyrgyzstan	Identificar las PEA docentes actuales.	Atracción hacia la pedagogía centrada en el estudiante.
Designing Continuing Professional Development MOOCs to promote the adoption of OER and OEP	Conocer cuál es la mejor manera de diseñar MOOC efectivos en OER y OEP.	Los participantes pudieron participar y contribuir en el diseño de un MOOC.
Exploring Initiatives for Open Educational Practices at an Australian and a Brazilian University	Proporcionar contexto sobre las PEA en la Educación Superior.	La adopción de PEA parece estar muy lejos, debido a la ausencia de políticas e incentivos gubernamentales explícitos.
Practicalities of implementing open pedagogy in higher education	Explorar las formas en que los educadores están reformando sus prácticas de enseñanza y aprendizaje.	Las PEA pueden apoyar un papel más activo para el alumno.
Using open education practices across the Mediterranean for intercultural curriculum development in higher education	Desarrollar contenidos para la enseñanza y el aprendizaje con REA.	Transformación en la forma en la que se reconfigura un espacio de aprendizaje de educación abierta.
PRAXIS: Open Educational Practices and Open Science to face the challenges of critical Educational Action Research	Analizar las PEA de una institución superior.	Los profesores no suben todos los REA que se les solicita y una gran cantidad de participantes no completaron el curso.
Open Education and Learning Design: Open Pedagogy in Praxis	Explorar cómo las PEA afectan a los diseños pedagógicos de los docentes.	Los docentes encuentran formas de utilizar enfoques y tecnologías abiertas para apoyar experiencias de aprendizaje activas.
Open Practices in Public Higher Education in Portugal: faculty perspectives	Entender cómo las percepciones y prácticas de los profesores hacia los REA se relacionan con sus percepciones y prácticas abiertas.	Todavía hay una falta general de conocimiento en las PEA.
Who opens online distance education, to whom, and for what?	Examinar numerosas narrativas académicas sobre las PEA en la educación.	Falta una comprensión clara del proceso real de las PEA en los entornos de la Educación Superior.
Openness reexamined: teachers' practices with open educational resources in online language teaching	Conocer el impacto del uso de REA en el desarrollo de la PEA	La reutilización de REA tiene un impacto positivo.
Supporting open educational practices through open textbooks	Conocer el impacto de los libros de texto en la Educación Superior.	Los resultados revelan la adopción de libros de texto abiertos para apoyar una amplia gama de PEA.
Accessibility within open educational resources and practices for disabled learners: a systematic literature review	Proporcionar información sobre la diversidad funcional dentro de REA y PEA.	La accesibilidad todavía está en su infancia dentro de los REA.

Título de la investigación	Objetivos	Resultados
Open science practices in higher education: Discussion of survey results from research and teaching staff in Germany	Investigar las prácticas educativas actuales desde la perspectiva de la ciencia abierta.	Los docentes aplican formas tradicionales de enseñanza. No utilizan REA, ni sus cursos son abiertos.
Caring in Practice, Caring for Knowledge	Desarrollar un modelo sostenible para el cuidado del conocimiento de la Educación Superior.	Valoración positiva por el diseño de aprendizaje facilitado por las PEA.
MOOC in a timeline: a systematic literature review	Comprender el alcance y las limitaciones de los MOOC.	Existe un gran número de enfoques de investigación sobre MOOC, destacando las PEA.
Disrupted classes, undisrupted learning during COVID-19 outbreak in China: application of open educational practices and resources	Analizar la posibilidad de utilizar REA y PEA.	Tanto estudiantes como profesores carecen de habilidades para crear y publicar REA.
Open Textbooks and Social Justice: Open Educational Practices to Address Economic, Cultural and Political Injustice at the University of Cape Town	Analizar como las PEA promueven la justicia social a través de la "paridad de participación".	Los libros de texto abiertos tienen el potencial de modificar las historias de exclusión.
Open learning design for using open educational practices in high school learning contexts and beyond	Examinar el potencial de las teorías de la educación abierta y las PEA.	El aprendizaje abierto depende de las oportunidades para que los estudiantes diseñen itinerarios de aprendizaje.
Open educational practices in a Cultural Capability unit: learning at the cultural interface	Conocer de qué manera garantizan los educadores la equidad en las PEA.	Los PEA permiten trabajar con múltiples sistemas de conocimiento y disciplinas.
Supporting educators' professional learning for equity pedagogy: the promise of open educational practices	Estudiar la intersección de las PEA con la pedagogía de la equidad para los alumnos.	Los educadores tienen como objetivo centrar la pedagogía de la equidad, pero se ven limitados por la falta de oportunidades.
College student engagement in OER design projects: Impacts on attitudes, motivation, and learning	Examinar cómo la participación de los estudiantes como diseñadores de REA influye en las actitudes, la motivación y el aprendizaje.	El cambio del papel de los estudiantes a creadores de REA aumentó la motivación, mejoró las actitudes y contribuyó a la consecución de los objetivos.
The why of open pedagogy: a value-first conceptualization for enhancing instructor praxis	Examinar cómo el uso de términos dentro de la educación abierta puede crear barreras.	Buscar un consenso sobre un tema que tenga conceptualizaciones tan amplias como la Pedagogía Abierta puede ser difícil.
Open thinking as a learning outcome of open education: scale development and validation	Medir el pensamiento abierto de los estudiantes adultos como resultado del aprendizaje de PEA.	La OET podría contribuir a las PEA definiendo y elaborando el concepto de pensamiento abierto.

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Critical data literacy in praxis: An open education approach for academic development

Alfabetización crítica de datos en la práctica: Un modelo de educación abierto para la formación docente

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Abstract

This paper reports the pedagogical approach and outcomes of a series of academic development programmes organised between 2016 and 2022 in different countries, which are grounded in the ethos of open educational practices, critical thinking, citizenship and pedagogy as well as ideas around social justice, data justice and data ethics using Open Data as open educational resources, to enable critical reflections and practical exercises with academics from different regions. Our recommendations and conclusions provide practical advice promoting a dialogue between different stakeholders to facilitate the development of curricula, workshops and resources using an open model for academic development.

Keywords: Open data; open educational practices; critical data literacy; artificial intelligence; higher education

Resumen

Este artículo presenta el enfoque pedagógico y los resultados de una serie de cursos de desarrollo docente llevados a cabo entre 2016 y 2022 en diferentes países, basados en prácticas educativas abiertas, pensamiento crítico, ciudadanía y pedagogía crítica, así como en ideas sobre justicia social, justicia de datos y ética de datos, utilizando datos abiertos como recursos educativos abiertos para facilitar reflexiones críticas y ejercicios prácticos con docentes de diferentes regiones. Nuestras recomendaciones y conclusiones tienen como objetivo brindar consejos prácticos y promover un diálogo entre diferentes actores para facilitar el desarrollo de planes de estudio, talleres y recursos utilizando un modelo abierto para la formación docente.

Palabras clave: *Datos abiertos; prácticas educativas abiertas; alfabetización crítica en datos; inteligencia artificial; educación superior*

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1. INTRODUCTION

Higher Education (HE) has a social responsibility for forming critical and active citizens (Di Nauta et al., 2018; Pee, & Vululleh, 2020); therefore, it must enable spaces for academic development that foster critical citizenship connecting society, industry, innovation and research by developing transversal skills, which are defined as critical, innovative, interpersonal and intrapersonal skills and global citizenship (UNESCO, 2015). HE should therefore bridge educational processes with issues such as human rights; economy; migration; environment and sustainable development, and for that, the use of Open Data can be an effective tool to facilitate the interaction between teaching, research and society.

In research, we often say that data is rather benignly 'collected', suggesting that, like wild flowers or berries, it occurs in nature and belongs to no-one. The language of the business of data also implies that data is already present, but it tends to be discussed as a raw material which, through technological innovation, can more aggressively be mined or extracted (Mezzadra & Neilson, 2017). Without for a moment wishing to conflate the purposes of researchers and tech companies, we note that both ways of speaking about data buy into, and rather conveniently reinforce, the 'commonsense' idea that data comes from, and represents or reflects reality - that it transparently reports on the nature of the real, rather than being something made by human or machine.

To enhance critical thinking through citizenship and research skills, we promote the adoption of open education and science principles, including the use of Open Data (OD) as open educational resources (OER). Through the analysis of OD, using different methodologies in real-life scenarios, we can bridge learning and social problems, promoting research-based learning activities in multidisciplinary teams using the same raw material used in scientific, journalistic and public policy contexts, to promote a collaborative digital-enabled culture to empower people in sharing data, information, and knowledge (Ramachandran et al., 2021).

Van Es and Schäfer (2017) argue "students need to be educated to become critical data practitioners who are both capable of working with data and of critically questioning the big myths that frame the datafied society" (p. 12). Therefore, we aim to support academics in developing critical and inquisitive relationships with data (Atenas et al., 2020; Holmes et al., 2022) to question it uses to address the data-literacy gap, to prevent widening the inequalities and power dynamics embedded in data-practices (Richterich, 2018).

Our approach in building critical data literacies aims at facilitating the Continuing Professional Development (CPD) for academics, supporting them in developing evidence-based learning and teaching programs and activities driven by OD, fostering critically and collaboratively research skills by studying their socio-political environment, cultural relationships and interactions between groups to uncover power relations and inequalities.

We report here the experiences and outcomes of a series of academic CPD courses delivered between 2016 and 2022, which are grounded in the ethos of open educational practices (Cronin & MacLaren, 2018), critical thinking, citizenship and critical theory as well as in social justice, data justice and data ethics (Markham, 2019, 2020; Floridi, 2021), to enable reflective and practical exercises with academics from different regions. Our recommendations and

conclusions aim at providing practical advice to promote dialogue between different stakeholders to facilitate the development of teaching and learning activities and OER.

1.1. Our approach to critical data literacy

Data literacy is defined by Prado and Marzal (2013), as the set of skills that "enables individuals to access, interpret, critically assess, manage, handle and ethically use data" (p. 126) whereas, critical data literacy is defined by Sander (2020) as "the ability to critically engage with datafication by reflecting on the societal implications of data processing and implementing this understanding in practice" (p. 2). To critically interact with data, we followed Kellner's (2003) ideas of "education for democratising and reconstructing education to meet the challenges of a global and technological society" (p.1), as critical theory can enable us to identify how socio-economic structures are being produced and reproduced in a datafied society, allowing us to and rethink our pedagogies using a critical, feminist and data justice approach (Braidotti, 2016; Dencik et al., 2016; Dencik & Sanchez-Monedero, 2022; D'Ignazio & Klein, 2020; Heeks & Swain, 2018; hooks, 1994; Taylor, 2017).

In bringing this range of frameworks and ideas into conversation with each other and with learners on our programmes, we fostered a curriculum for academic CPD that acknowledges the circumstances of oppression in the current datafication of society, to enable academics to build critical competences on their learners. As OD in teaching contexts, offers multiple opportunities to develop transversal, civic, literacy and numeracy skills, stimulating the development of critical thinking, developing research and citizenship skills necessary for life in a democratic yet datafied society (Atenas, et al., 2023; Buttiglione & Reggi, 2015; Couldry, 2020).

This aligns with the call for action on the European Union's framework for digital competence (2022) which states that everyone should acquire understanding of new and emerging technologies including Artificial Intelligence (AI) and be aware of data ethics, including data protection and privacy, to prevent bias and discrimination, supporting the development of critical citizenry.

2. METHODOLOGY

We present an open and sustainable model to support academic CPD, to enable through a critical approach a series of data literacies that can facilitate the understanding of the risks, challenges, barriers and opportunities in the use of data for educators and students. Our approach for curriculum design and co-creation, showcases how we have enabled active citizenry and research skills in academic development, presenting the outcomes of a series of courses through the data collected between 2016 and 2022 in the form of evidence-based curricula, resources, and pre and post course surveys.

We provide an overview of the courses where our model was applied and their outcomes through quantitative and qualitative data analysis, showcasing a series of results in regards with curriculum design and data literacy, from formulating a problem, collecting, cleaning and analysing data until narrating results using data storytelling techniques.

This has allowed us to identify gaps in knowledge and key resources and spaces educators need to gain a thorough understanding of data, datafication and data literacies from different angles, including OD, AI and learning analytics to present recommendations to shape curricula both for academic development and learner-centred activities.

3. RESULTS

3.1. Curriculum design

Our design rationale was framed in the current discussions around datafication of society (Schäfer & van Es, 2017) and data justice (Dencik et al., 2016; Taylor, 2017), as we argue that HE must lead in fostering critical socio-technical pedagogic approaches to build capacity in social engagement with issues of datafication, data-driven systems, and data-informed claims. Critical data literacies are needed to counteract what Ball (2015) describes as 'the tyranny of numbers'. We considered that to strengthen individual and collective agency, academic CPD should have a focus on social justice and participation, as data can easily marginalise data illiterate groups, rendering their points of view and lived experiences into data entry points and objects of study.

OD per se cannot universally promote justice, thus we agree with Gurstein (2011) that to prevent negatively impact on groups considered vulnerable, it is necessary to emphasise in data literacy training fostering the skills needed to critically debate the meaning and significance of data, to find responsible ways in the use of OD within the democratic debate (Atenas et al., 2015; Johnson, 2014; Taylor, 2017).

3.2. Curriculum co-creation

Our pedagogic approach is organised around involving students and educators in designing research using quantitative and qualitative techniques, to present their results in an open and ethical manner (Gilardi & Lozza, 2009). Co-creation is at the heart of our model and transversal to all activities and content we designed and co-curated with different stakeholders from academia and civil society to model good practices in collaborative pedagogies, while our participants were guided to co-create their own activities.

Our curriculum evolved due to the complexities and intricacies of the rapid developments in the data landscape as in our first courses we focused in promoting the adoption of practices from Open Government such as policy co-creation and participatory data stewardship using of OD towards enabling collaborative research, while in last courses the driver was questioning the impact of big data, machine-learning, and artificial intelligence (AI), due to the massive scale of data-driven automated decision-making can be life-altering by propagating and perpetuating gender and other social bias.

The outcomes of the courses, such as research-based learning activities, action plans and research proposals were designed to be shared, contributing to building a culture of open education, to support fellow educators in adapting, contextualising and reusing pedagogic reflective and practical activities with their learners.

3.3. Curriculum framework

We aimed at upskilling educators and learners across HE on data and datafication linking technical and socially-driven data skills across the data cycle to address issues and understand the ethical dimensions of data (Louie et al., 2022), to critically apply ideas of social and data justice into research-based learning, building on the idea of agency, so participants can acknowledge the problems and conundrums of datafication of society. The courses were designed to develop innovation skills in educators using open and emerging practices creating spaces for dialogue and research between students, educators, civil society and experts in OD to enhance education (Zamorski, 2002).

We first outlined pedagogical, reflective and collaborative practices that course participants could replicate or adopt in their teaching to scaffold understanding of data and datafication promoting the idea of civic monitoring and participation by humanising data using a human-centred-approach (see Table 1).

Table 1

Curriculum framework by level and proficiency

Activity/Level	Initial	Intermediate	Advanced
All levels	Invite subject and data-experts to discuss face to face or online with your students about local and global issues	Engage students with political and legal deliberations and discussions at local and global level asking to them analyse the data related to it	Establish a model for students to understand the process and engage them in policy making by reviewing and analysing data and official reports
Undergrad	Engage students in evaluating facts and contrast information by analysis data sources news from newspapers	Encourage students to use digital tools to engage and monitor political activities and to assess reports and news by analysing their data	Support students in assessing data from their government to identify problems and compare local with global information
Postgrad	Support students in identifying organisations that are campaigning on citizenship issues; enable instances for students engage in civic monitoring activities and evaluation of data driven arguments	Promote collaboration between civil society and students to gain work experience supporting their activities and contributing to enhance their data practices enabling instances for students to work in real scenarios with their data	Support and encourage students to write their final dissertations using OD aiming to find applicable solutions to local and global problems and support them to publish them in open formats to make these accessible to the public

To implement our curriculum, we were supported by researchers and practitioners from the academia and civil society, which allowed us to work with educators using real-life scenarios to develop knowledge through critical reflections contextualised in different countries (Littlejohn, et al., 2012). Through these courses we aimed at challenging the current economic and political

status quo fostering inquiry in the power structures of the datafied society and in the education sector (D'Ignazio & Klein, 2020).

3.4. The experiences

Our courses were funded by grants from Fundación Avina; the Inter-American Development Bank; the Organisation of American States; the HDI network and IRDC Canada, and were supported by the ILDA, the Centre for Open Education (NREA) at the University of La República and Agency for Electronic Government and the Information and Knowledge Society in Uruguay; the Presidency and the University of Costa Rica; the Government of Mendoza (Argentina) and, the University of Chile.

Several civil society organisations, academics and research centres contributed with their experiences to co-create the curricula including colleagues from ILDA; School of Data; Abriendo Datos Costa Rica; Data Wheel; Data Uruguay; Grupo de Investigación en Gobierno, Administración y Políticas Públicas ; Data for Development; University College London; University of Augsburg; the Data Justice Lab; Monithon EU and A Scuola di Open Coesione; LATAM digital; Open Contracting; Open Data Charter; Open Knowledge International and the Interdisciplinary Centre for Data Science and Machine Learning as well as the Open Education UNESCO chair at the University of la República in Uruguay, the UNESCO Chair in Open and Distance Education at the University of Brasilia and the UNESCO coalition in Open Education.

The courses were hosted in different countries and had a variety of approaches and participants public as can be seen in Table 2.

Table 2

The academic CPD experiences

Year	Title	Host country	Type of course	Type of participants	Number of registrations	Number of Awards and completions
2016	Open-Data as OER: project, explore and narrate	Uruguay	Face-to-face	Academics	60	45
2017	Open-Data and Open Government Policies and academic practice	Costa Rica	Face-to-face	Academics, Researchers; public officials	58	40
2017	Open-Data practices in the HE sector	Chile	face-to-face	Academics, Researchers; librarians	65	58
2018	Open-Data and Open Governance: A tool for participation	Costa Rica	Online-asynchronous	Academics, Researchers; public officials	110	60

Year	Title	Host country	Type of course	Type of participants	Number of registrations	Number of Awards and completions
2019	Open-Data and Open Governance: A tool for participation	Argentina and Uruguay	Online-asynchronous	Academics, Researchers; public officials	140	112
2019	Open-Data in academic practice	Uruguay	Face-to-face	Academics, Researchers; librarians	42	25
2021	Understanding the data: praxis and politics	Uruguay	Online-asynchronous	Academics	125	80
2022	Artificial Intelligence: present and future for development	Uruguay	Online-asynchronous	Academics, Researchers; public officials	50	35

Our approach was dialogical to support the participants to develop their understanding and reasoning by examining dilemmas to propose solutions by designing collaborative research-based learning activities to enable critical thinking through the use of data with students.

3.4.1. 2016 – Open Data as OER: project, explore and narrate. Uruguay

This course was co-delivered with the NREA, and led by academics and data experts from Chile, Uruguay, UK and Italy and followed the model of the A Scuola di Open Coesione (Ciociola & Reggi, 2015), a pedagogic approach to develop in a short period of time, a series of skills for educators they could adopt to work with OD in multidisciplinary contexts to find solutions to real problems.

This course aimed at creating interdisciplinary instances of the use of OD as OER, using strategies to develop critical thinking, preparing educators to support students in analysing data to effectively communicate their research results, enabling a citizenship-led curricula for social participation. The outcomes were a series of group projects that addressed different social issues, providing a series of reports to the local authorities on its impact on family economy and society. Also, the groups produced a series of OD-led OER activities for anyone to access and adapt in their teaching.

3.4.2. 2017 – Open Data and Open Government Policies and academic practice - Costa Rica

This international course was co-designed in collaboration with the University of Costa Rica and *Abriendo Datos Costa Rica* for academics, librarians and researchers in the use of OD as OER to promote curricular innovation. The academic team for this course comprised scholars, researchers, lawyers and members of the civil society who for a week, guided participants in understanding basic concepts of OD and Open Government to create learning activities with their students.

The training materials were adapted OERs from A Scuola di OpenCoesione and School of Data, and the dynamic of the course was dialogical and collaborative, so participants had to organise themselves into groups to solve a challenge using OD and report their results to the public and the competent authorities at the ConDatos and Abrelatam - Costa Rica conferences.

3.4.3. 2017 – Open Data Practices in the HE sector - Chile

This course promoted the adoption of open practices in education, government and sciences practices and data in academic practice. It was designed with a focus on individual and collective reflection about the value of open-research, public information and OER, considering that Chile is an early adopter of OD principles and charters, to enhance local teaching and research practices.

We aimed to raise awareness of potential uses of OD and open government data in research and teaching, using strategies to support the publication of teaching materials and research outcomes in open formats, reviewing different strategies for the use of public information, Wikipedia, Wikidata and OD, promoting the adoption of citizen science approaches in collaboration with the civil society to develop democratic and citizenship skills.

3.4.4. 2018 – Open Data and Open Governance: A tool for participation - Costa Rica

In partnership with the presidency of Costa Rica, and considering that Costa Rica does not have a law on Access to Information but does have a decree in OD and is a member of the Open Government Partnership, this course was focused on training Costa Rican public officials and academics from public universities to implement the objectives of Costa Rica's National Open Data Strategy which focuses on: Transparency and Access to Information; Fight against corruption and Citizen participation.

In our work with the participants from academia, we aimed at developing a critical mass that could effectively reuse the data published by the government and also, to become active in the discussion of their national action plan for Open Government Partnership.

3.4.5. 2019 – Open Data and Open Governance: A tool for participation - Argentina - Uruguay

The course aimed to promote the use of Open Government Data and civic participation in collaboration with Government Agencies in Uruguay and the Government of Mendoza in Argentina, so participants could understand the impact of open government and OD, from their role as public officials or academics and as citizens. The training plan was designed to scaffold skills to lead OD projects in their organisations to improve the services, teaching and research in the public sector and academia.

The course presented a series of challenges and practical examples to understand the role participants must have in their organisations, providing participants with a series of theoretical and practical knowledge on OD to build and consolidate communities of practice that promote and champion the reuse of open government data, promoting interaction between government, civil society, private sector and academia.

The main outcome of the course was a series of proposals for the development of institutional and research plans, curricula and enquiry-based learning activities using OD to inform policymaking addressing social issues.

3.4.6. 2019 – Open Data in academic practice - Uruguay

This course explored the educational potential of OD as a driver for interdisciplinary dialogue in the design of pedagogical practices. Participants were offered opportunities to design OERs and activities in two simple phases: A conceptual and dialogic introduction and a practical co-creation exercise.

The conceptual introduction presented the principles, political context and existing practices in open education, data and science, citizen science, responsible research and pedagogic innovation to collectively explore the connections between data literacy and active citizenship in HE, presenting a series of interdisciplinary challenges and co-creation exercises grounded on the sustainable development goals. The outcomes of this course were a series of multidisciplinary project-based learning ideas shared as OER to foster activities in which students could help their local communities to solve real life problems.

3.4.7. 2019 - Understanding data: praxis and politics - Uruguay

This course was co-designed based on the idea that the society requires critical data literacies to address datafication of society and data-driven politics and academic practices (Atenas, 2021). The participants had 14 different nationalities and the course was facilitated by a large group of academics, researchers and members of the civil society enabling dialogues to provide educators with tools to operate ethically, technically and politically in a datafied society, adopting a critical perspective to question the ethical implications of data in people's daily life activities.

Our curriculum was grounded on the idea of ethics as a method, so we discussed issues such as data ethics; data privacy; data justice; personal and collective agency and legal and regulatory frameworks on OD and AI, towards promoting critical approaches to AI, including issues such as opacity and bias in algorithms, and regulations for automated decision-making and predictive analytics and power imbalances in data.

Our aim was to enable participants to contest the uses of data with the wherewithal to challenge the advancement of data inequalities, promoting inclusive growth, sustainable development and human-centred values.

The main outcomes of the course were a series of OER available for the HE community published in English and Spanish, and a series of reflections and research-based activities openly available in areas related with smart cities; data feminism; medical ethics; data and childhood; AI and education and data for development and socio-economic innovation.

3.4.8. 2019 - Artificial Intelligence: present and future for development - Uruguay

This course was designed for academics and professionals in positions of decision-making in the public, academic, private and civil society sectors, who participate in different aspects of the cycle of public policies related to AI for development. The design of this course sought to

train key stakeholders in enabling the principles of AI for development, through dialogues and OERs created and adapted ad-hoc for the course. The pedagogical approach considered the study of cases of good and bad practices, the review of the international and regional panorama on public policy issues and recommendations for the development of effective and sustainable projects on AI in the public and HE sector.

The dialogues focused on a series of cross-cutting questions, such as the present and landscape of AI policies globally covering themes such as human rights, health, poverty, ethics, privacy and data governance the risks of AI; bias, exclusion and mitigation strategies; the, and explored what is required for effective co-creation of policies in the local context. The main outcomes of the course were a series of projects outlined by the public sector and civil society and research projects in academic fields, that can enhance the reflection on the state of AI in the region, considering the different edges that present the challenges in AI for development.

3.5. Review of competences development in participants

The rubric described in Table 3, was used across all the programmes between 2016 to 2022 to measure the level of the participants both at the beginning and end of each the course as a self-assessment questionnaire, without providing the skills levels in the questions, so they could self-evaluate their proficiency and understanding of different elements of data literacy.

Table 3

Competence self-assessment rubric

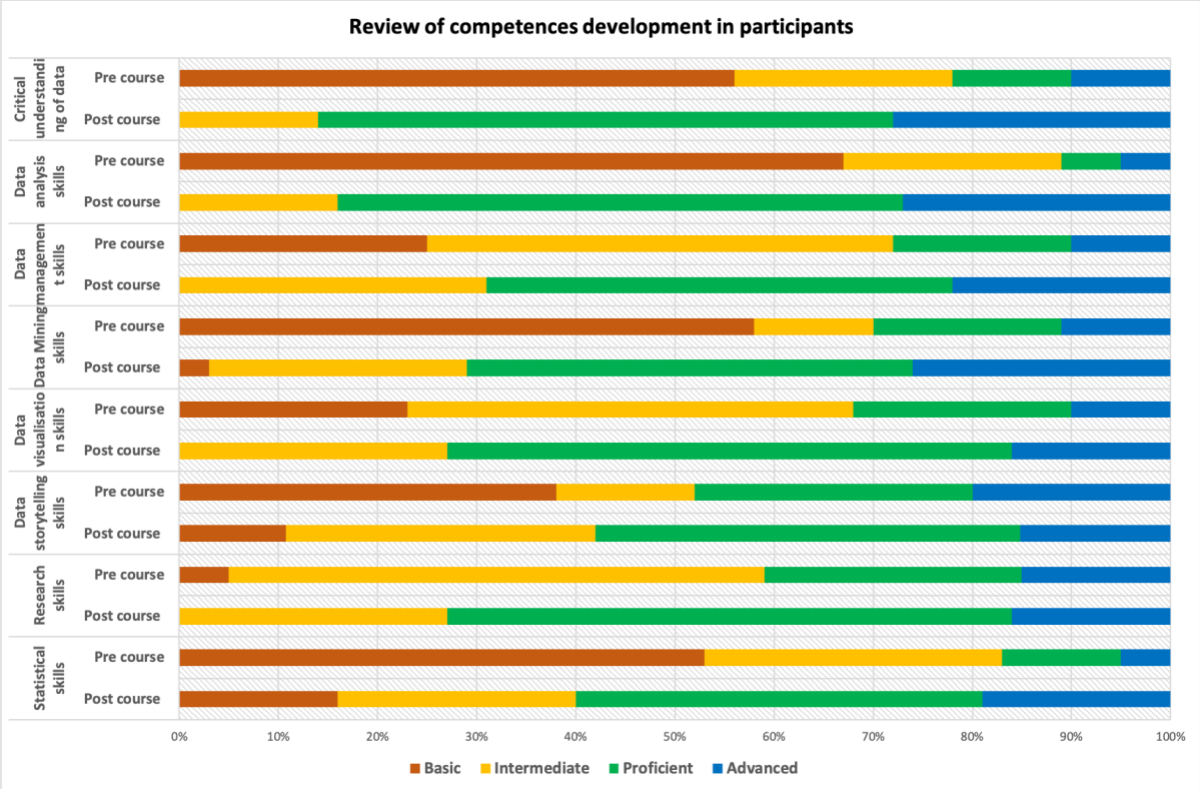
Skills/Level	Basic	Intermediate	Proficient	Advanced
Critical understanding of data	Understand basic concepts and principles of OD	Capacity of use data to verify information from the media	Capacity of analyse local phenomena using data, writing critical reports with solutions	The capacity to develop and present complex evidence-based arguments in academic formats
Data analysis skills	Capacity of analyse data using quantitative and qualitative methods	Capacity of using data-analysis software such as SPSS or Nvivo	Proficient use of data-analysis software using quantitative and qualitative methods on their own disciplines	Ability to present complex data-analysis reports in the form of research papers or posters
Data management skills	Capacity to identify datasets from different sources	Capacity to select datasets from different portals in different formats	Capacity to extract, filter and compare data from different data sources creating a single dataset	Capacity to filter and format data in different formats analyse it creating complex datasets
Data Mining skills	Capacity of locate CSV files on the data portals	Capacity to extract data from PDFs	Capacity to extract data from different sources and create datasets	Capacity to use complex methods to combine datasets to develop data-analysis reports

Skills/Level	Basic	Intermediate	Proficient	Advanced
Data visualisation skills	Capacity to create graphics and charts	Capacity to use data-analysis software software to develop simple infographics	Capacity to use graphic design software to develop infographics	Capacity to use data visualisation techniques to present their findings using complex statistical modelling
Research skills	Understanding of the scientific method and concepts of quantitative and qualitative methods	Capacity to structure their research and apply different techniques to obtain results	Capacity of replicate experiments and studies following research methods explained in the literature	Capacity to compare data and information from different sources and research papers and replicate experiments and studies to produce new research findings
Statistical skills	Capacity to perform basic statistical operation including averages, media and median	Capacity to perform statistical operations using clusters, standard deviations, significance, chi square, correlation or regression analysis	Capacity to use data modelling techniques for different statistical methods such as forecasting to predict future events	Capacity to write queries in order to perform complex statistical analysis functions and create models and complex graphs and visualisations

The progression data on the courses from between 2016 to 2022 reflects the average progression on a sample of 180 participants out of the 455 people that completed our training programmes. In general terms, we can see a consistent advancement from basic skills on the competences listed on Table 3 to intermediate or proficient self- assessment of competences. However, the progression to advanced skills was quite limited, perhaps because participants did not feel confident with the new knowledge they acquired, and also, because some of the advanced skills required more practical exercises. Therefore, we provided to the participants with OERs so they could continue advancing their skills upon completion of the course (see Figure 1).

Figure 1

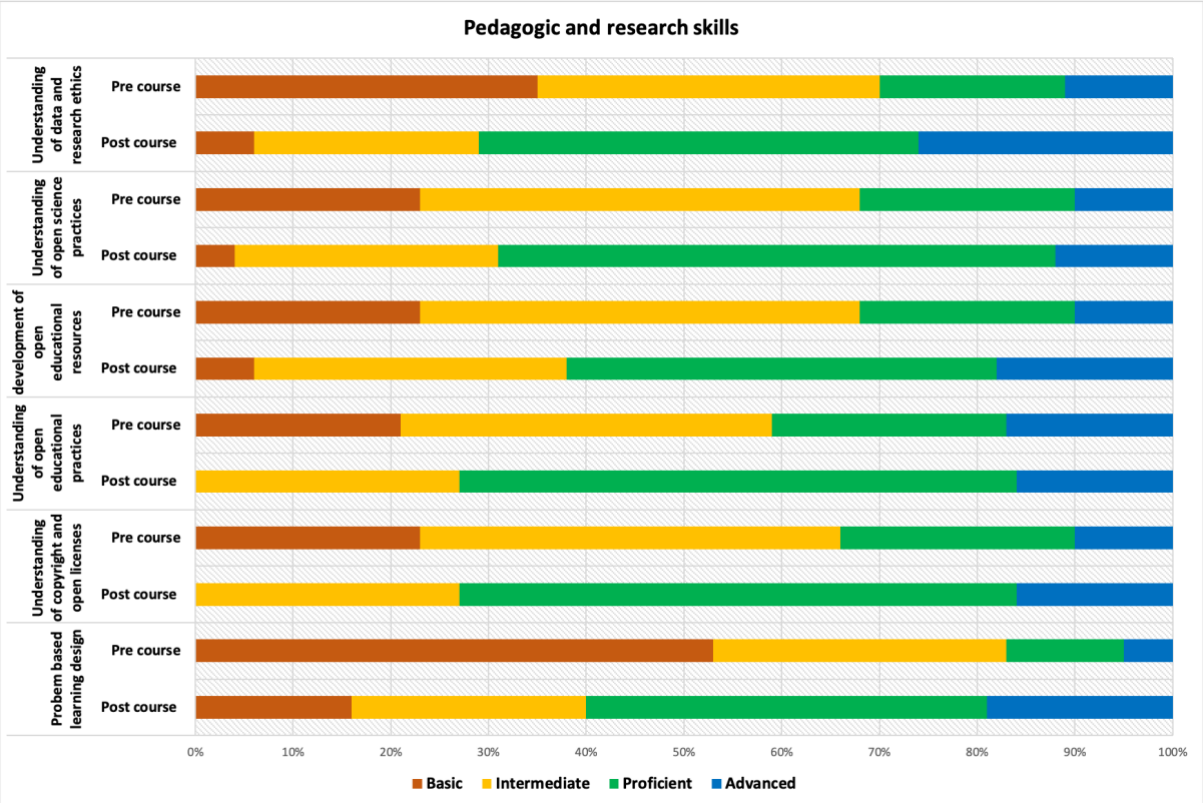
Review of competences pre and post-course



The questionnaire allowed us to see how the participants built confidence in collaborative and co-creation skills to develop OER and open science research-based learning activities, as part of the curriculum of the course aimed at promoting the adoption of these practices by encouraging the reuse, adaptation, contextualisation and publication of openly licensed materials (see Figure 2).

Figure 2

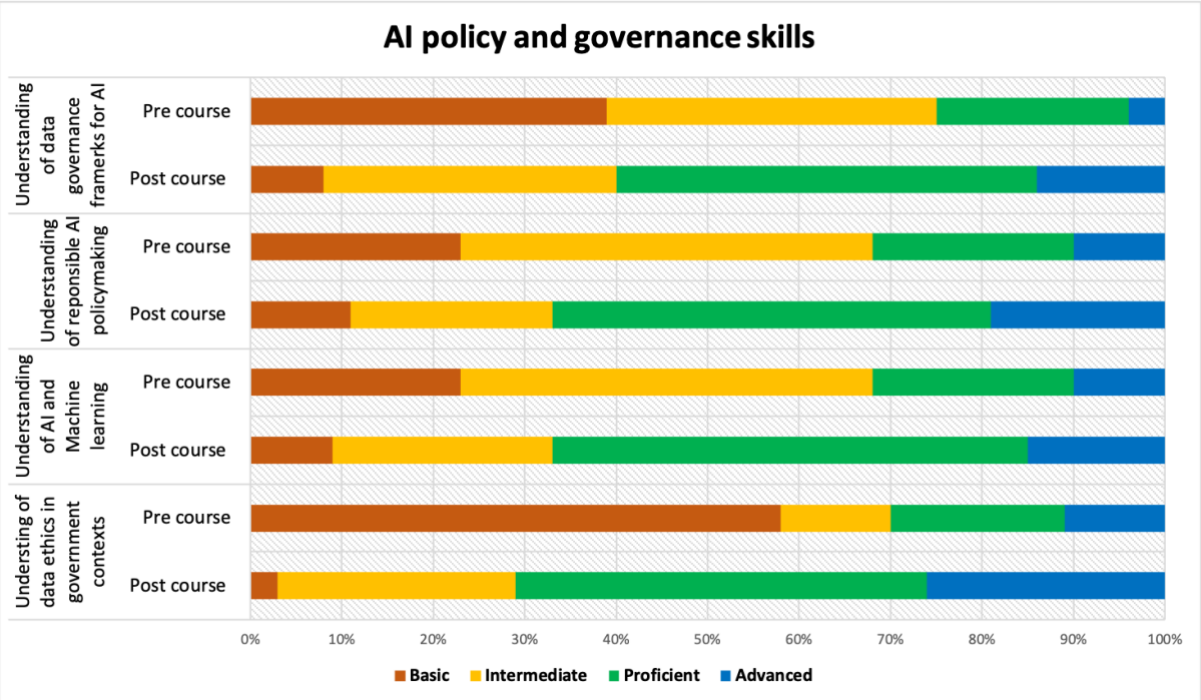
Pedagogic and research skills



Also in the courses U*nderstanding data: praxis* and *politics* and *Artificial Intelligence: present and future for development* we included questions to assess understanding on issues related with AI and machine-learning in relation with its uses, legal frameworks, policy, and governance dimensions, as we expected that participants from these courses could actively participate in policy and governance arenas in their institutions, as most of them were leading research and teaching in these dimensions (see Figure 3).

Figure 3

AI policy and governance skills



3.6. Feedback from the courses

Our courses were complex and enriching and grounded in the ethos of open education, as these proposed a series of personal and group reflections about our lives as academics and citizens. We enabled spaces for discussion, dialogue, creativity and co-creation in international and multidisciplinary contexts. Therefore, these courses were challenging for the participants and for the pedagogic teams, but in general terms the participants embraced them as a dare with a collaborative spirit, giving us the space to further the discussions and engage with their observations and projects.

Across the years, the participants' feedback can be summarised in the value of reviewing different perspectives when presenting a phenomenon or problem to students to develop critical thinking, providing different perspectives to solve a challenge. The participants consistently commended our innovative training model which offered a variety of formulas to answer questions through OD to facilitate diverse activities. A participant mentioned that "*The format of the course was very enjoyable, and the tutors are very professional and expert, they know what they are talking about, it was a pleasant learning experience*" (Uruguay-2016) and that "*I really enjoyed it a lot, the subject of access to information seems fascinating to me, the course was too good with super bright, attentive and patient instructors. Such a complex subject became very easy to understand and apply*" (Chile-2017).

The feedback reflects the success of our curriculum and how participants appreciated the work of the facilitators and the content, the safe spaces for dialogs and also, having access to experts in the field to guide them on their learning. One participant commented that "*What I liked the most were the speakers and the amount of knowledge I had access to*" (Costa Rica-2017), while

another participant mentioned that "*What I liked the most was being able to listen to experts from our region as normally 99% of the materials and training come from the global north*" (Costa Rica-2018).

We put a lot of focus on developing communities of practice across the courses, and, as a participant mentioned, "The first utility of data in higher education is the possibility of enlarging the OD community with the incorporation of students so that they add value to the different data sets" (Uruguay-2016). Participants also mentioned the "usefulness of learning to critically analyse the information presented by the media as it changes the way of looking at information and research" (Uruguay-2021). Also, the participants discussed the opportunities given by the courses to co-create research with students because everyone has the same access to the data that will allow them to do cooperative investigations using multidisciplinary approaches to add value to research.

Finally, one of the most frequent comments on the courses' feedback were the references to the dialogical approaches and spaces for collaboration. For example, one participant noted that "The course was very enriching for me on several levels, such as quality of the content, the interdisciplinary dialogue, and the participation of people from various countries" (Uruguay-2021). While someone mentioned that they valued "The exchange of ideas and the contributions of the colleagues, the feedback from the tutors, the clarity of the readings and material, the participation in the group work, all this was enriching" (Uruguay-2022).

The feedback allowed us to improve our practices and document our methodologies to share them with other practitioners and academics that are willing to enable critical data literacies and promote the use of OD in the HE context to upskill fellow educators, researchers and most of all students to develop lifelong skills to participate in the datafied society.

4. RECOMMENDATIONS AND CONCLUSIONS

Given the diverse background and fields of expertise of scholars taking the different courses and their uneven knowledge on research methods, we proposed a series of structured synchronous and asynchronous activities dealing with various topics associated with data and its relationship with open education, government and science, transparency, AI, innovation, privacy, ethics and inclusion, as well as access to public information and data journalism.

Thus, we outlined a series of suggestions to work with their students grounded on social justice values that can be easily adapted and contextualised in different HE institutions as shown in Table 4.

Table 4

Recommended activities and dynamics

Element	Activity	Dynamic	Expected outcome
Data inequalities	Work with students in assessing data from their governments to identify who is misrepresented in the picture	Engage with students to review Open-Datasets to understand who and how are represented or missing in the datasets	To raise awareness of how data is collected and portrayed and how data inequalities
Social issues	Present a social problem to your and ask them to find reports and press notes about them	Engage students with political and legal deliberations at local a global level asking to them analyse the data related to it	Engage your students in understanding the processes of policy by analysing policies, data and official reports
Data justice	Engage students in evaluating facts and contrasting information analysing data presented in news media	Encourage students to use to engage and monitor political activities and to assess reports and news by analysing their data	Support students in assessing data from their government to identify problems and compare local with global
Social Participation	Support students in identifying organisations campaigning in citizenship issues to enable instances for students to engage in civic monitoring evaluating data driven arguments	Foster arenas for collaboration with the civil society to promote students working with local communities in their projects	Promote dissertations based on analysis of OD that engages with local or global problems; encouraging students to openly publish their findings

We suggest that thematic activities are led by a diverse group of experts, aiming to present diverse and heterogeneous views of the topics towards problematise issues discussed beyond the cases showcased in these sorts of activities.

Activities for academic CPD should scaffold learning by integrating in the curriculum global and local perspectives and expertise to provide participants with a wider panorama of the critical issues of a datafied society. Alike our pedagogic approach, we promote the inclusion of mentorship from academic advisors and guest experts to enhance dialogue and collective reflections.

To develop critical perspectives which examine and challenge power dynamics through data, our approach was built in layers which examine particular perspectives including data ethics, data feminism, agency and social justice and data justice. We contend that this approach supports educators in enhancing their teaching practice, providing them with the strategies necessary to design learning activities that help their students develop a critical understanding of the ethical dimension of data-dynamics and identify problematic data practices. In turn, we hope that students will be empowered and inspired to examine and challenge the power structures that perpetuate intersectional oppressions, and adopt a data justice lens when considering issues related to privacy, consent, personal agency, and data sovereignty.

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Número especial: Prácticas educativas abiertas en educación superior

Los NOOC para el desarrollo de competencias digitales y formación virtual: una revisión sistemática de la literatura

NOOCs for developing digital competences and online training: a systematic review of the literature

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Resumen

Desde el año 2016, los NOOC han aparecido como una alternativa para la formación continua en diferentes áreas temáticas. Se trata de una herramienta que brinda tanto a estudiantes como a docentes la oportunidad de adquirir competencias y conocimientos mediante un formato creativo, innovador y flexible. En búsqueda de examinar y recuperar evidencias empíricas sobre el uso de los NOOC para la capacitación y formación virtual se realizó una revisión sistemática. Se extrajeron cinco estudios en función de criterios de selección determinados, las bases de datos consultadas fueron: Google Académico, SciELO, ScienceDirect, Redalyc, Scopus y la Web of Science (WoS), el periodo seleccionado para la búsqueda de la información fue de 6 años, de 2017 a 2022. Dentro de los principales resultados obtenidos se observa que la metodología utilizada en los documentos analizados, destaca el tipo de investigación cuantitativa y mixta. En relación con los instrumentos de validación encontrados en las distintas investigaciones, se utilizaron encuestas iniciales (pre-test) y finales (post-test). Finalmente, los artículos analizados arrojan evidencia empírica y científica que demuestra que los cursos de menor duración tienen menores tasas de deserción y que los NOOC funcionan como estrategia efectiva para el aprendizaje de conocimientos y nuevas competencias.

Palabras clave: NOOC, competencias digitales, formación virtual, revisión sistemática

Abstract

Nano Open Online Courses (NOOCs) have been providing an innovative alternative for continuous training across various thematic areas since 2016. These tools allow learners and educators to acquire skills and knowledge in a creative, flexible, and innovative way. We conducted a systematic review to examine and gather empirical evidence on the effectiveness of NOOCs in virtual education and training. We selected five studies based on defined criteria and consulted databases, including Google Scholar, SciELO, ScienceDirect, Redalyc, Scopus, and the Web of Science (WoS). The information search covered six years, from 2017 to 2022. Our review revealed that the analyzed studies predominantly used quantitative and mixed research methods. Researchers employed initial (pre-test) and final (post-test) surveys for validation instruments in these studies. The analyzed articles provided empirical and scientific evidence that shorter-duration courses experience lower dropout rates. Furthermore, they confirmed that NOOCs are an effective strategy for acquiring new knowledge and skills.

Keywords*: NOOC, digital competences, online training, systematic review*

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1. INTRODUCCIÓN

Los cursos en línea masivos y abiertos, comúnmente conocidos como MOOC por sus siglas en inglés *Massive Open Online Course,* son inherentes al principio de la educación abierta debido a la cobertura que pueden alcanzar a través del internet y las herramientas digitales basadas en las TIC para su diversificación y reutilización (Chiappe y Amaral, 2021). Como bien señala Leal (2012), las prácticas abiertas implementadas por Wiley, Downes, Siemmens y Couros en sus respectivas instituciones educativas en los años 2007 y 2008 establecieron los principios de los MOOC. Los MOOC se caracterizan por acercar a los estudiantes a temas de vanguardia, además de propiciar la motivación para adquirir y compartir conocimiento mediante plataformas que soportan este tipo de cursos (Sánchez Acosta y Escribano Otero, 2014). El acceso a los MOOC es gratuito y las sesiones que se gestionan para su desarrollo son totalmente virtuales, las cuales pueden ser síncronas o asíncronas. La formación a distancia es una de las particularidades fundamentales de esta herramienta educativa y permite a los estudiantes y docentes planificar y gestionar, de manera estratégica, la transferencia de conocimientos mediante metodologías que hacen uso de las tecnologías digitales (Vázquez-Cano, 2021). De tal manera que los MOOC contemplan diseños instruccionales que aseguran la calidad de los recursos didácticos diseñados para la población a la que se dirigen, además de evaluar las competencias y/o conocimientos que se adquieren mediante su uso.

Los MOOC representan una interesante práctica educativa abierta, el desarrollo de estos cursos para la enseñanza abierta muestra que la aplicación de modelos de interacción profesor/estudiante y estudiante/estudiante permiten el aseguramiento de la calidad relacionada con las actuales prácticas educativas en línea (Laverde, 2015).

Derivado de los MOOC, en el año 2016 se establecieron los NOOC (nano cursos abiertos en línea), que se basan en las características fundamentales de los MOOC, con la ventaja de requerir un tiempo de duración aproximadamente menor a 20 horas (Ruiz-Palmero et al., 2020). En el trabajo de González-López (2021) se refiere a los NOOC como un micro curso que se lleva a cabo *"just in time*" (aprendizaje en el momento), lo que significa que los usuarios pueden adquirir en poco tiempo los conocimientos y habilidades requeridas para mejorar sus competencias digitales y desempeñarse de manera eficaz en el ámbito personal y profesional. El objetivo de este nuevo formato busca dar solución a uno de los grandes problemas de los MOOC en relación con las altas tasas de deserción (INTEF, 2016), lo que posibilita la capacitación laboral en temas específicos de forma pertinente y eficaz.

Los NOOC, al igual que los MOOC, fomentan las prácticas de la educación en línea para profundizar en determinados tópicos y áreas del conocimiento, así como desarrollar una educación inclusiva (Gómez-Puerta et. al, 2018). Los NOOC brindan a estudiantes y docentes la oportunidad de explorar, gestionar y evaluar el conocimiento mediante la creatividad, innovación y flexibilidad que posee el uso de esta estrategia educativa. Así pues, los NOOC pueden ser considerados como parte del repertorio de las prácticas educativas abiertas puesto que el proceso de enseñanza-aprendizaje ocurre "en cualquier momento y desde cualquier lugar, mediante el uso de herramientas informáticas de acceso libre, de forma asincrónica o sincrónica" (Chiappe, 2012).

La primera referencia sobre los NOOC aparece en la taxonomía de Clark (2013) como micro-NOOC. Lo que se busca con estos nuevos formatos es tener una capacitación eficiente desde cualquier lugar y en cualquier momento (Banderas Navarro, 2017, Campal, 2017). A partir de

entonces se han desarrollado diversas propuestas bajo esta modalidad en el ámbito educativo. La pandemia de Covid-19 fue un acontecimiento apremiante para las instituciones de educación superior debido a que enfrentaron la necesidad de contar con docentes y estudiantes digitalmente competentes para continuar con los procesos de enseñanza-aprendizaje en entornos virtuales. Esta abrupta transformación hacia la educación digital propició: 1) el desarrollo de marcos conceptuales y modelos para la educación virtual a distancia y 2) la proliferación de cursos masivos virtuales para el desarrollo de una competencia, destreza o el estudio de un área del conocimiento. Actualmente se cuenta con diversos marcos conceptuales y propuestas institucionales sobre los NOOC, por ejemplo, en el trabajo desarrollado por Basantes-Andrade et al. (2020) se llevó a cabo el diseño e implementación piloto de un curso en nano-MOOC como herramienta de formación en competencia digital docente. En la primera fase de este estudio se realizó una revisión bibliográfica con la finalidad de identificar el marco conceptual y la caracterización de la competencia digital, en la segunda fase se hizo el diseño de la investigación y finalmente en la tercera fase el desarrollo y aplicación. Cabe destacar que dentro de los principales hallazgos de esta investigación se tiene que los marcos de competencia digital propician una estructura sistemática y global sobre los conocimientos y capacidades que los docentes deben alcanzar para comprender y orientar el proceso de enseñanza-aprendizaje con TIC, además que la implementación piloto de los cursos en formato nano-MOOC fue positiva y permitió cubrir la necesidad inmediata de formación de los docentes. Sin embargo, aunque existe evidencia de su uso hay carencia en la literatura científica que describa y analice, de manera integral, las propuestas formativas en dicha modalidad y sus resultados. Por ello, en el presente trabajo se propone conocer el estado de la cuestión sobre las diferentes propuestas de los NOOC y su impacto en la educación.

Debido a la importancia que ha tenido la implementación de los NOOC en la educación abierta, se llevó a cabo una revisión sistemática que comprende un periodo de 6 años, con el propósito de identificar las estrategias de capacitación para la formación de competencias digitales docentes mediante el uso de herramientas tecnológicas educativas. Es importante destacar que, para el tema de los MOOC, existe una amplia bibliografía que indaga su uso en el proceso de enseñanza-aprendizaje en los diferentes niveles educativos desde el básico al superior (Orozco et al. 2020, Romero Córdova et al. 2023, Veletsianos et al. 2016). Sin embargo, sobre los NOOC, aun cuando se encuentran estudios relevantes, la información es disgregada. De ahí la importancia de articular, mediante el análisis desarrollado en este documento, las principales metodologías y hallazgos que han tenido los NOOC en la formación de competencias.

La presente investigación se encuentra estructurada de la siguiente manera: en la Sección 1 se realiza una introducción sobre el origen, conceptualización e importancia de los NOOC. En la Sección 2 se presenta la metodología empleada para llevar a cabo la revisión sistemática, la cual se divide en búsqueda de la información, selección de las fuentes de información mediante criterios de inclusión y de exclusión, análisis y clasificación de la información y discusión de los resultados. En la Sección 3 se muestran los resultados. Finalmente, en la Sección 4 se describe la discusión y conclusiones derivadas de esta investigación.

2. MÉTODO

Se realizó una revisión sistemática de la literatura de acuerdo con la metodología que se muestra en la Figura 1, la cual consta de 4 etapas fundamentales con base en la propuesta de Mejía-Sierra et al. (2022): 1. Búsqueda de la información, 2. Criterios de selección, 3. Análisis y clasificación de la información y 4. Discusión de los resultados.

Figura 1

Etapas para la Revisión Sistemática

2.1. Búsqueda de la información

En esta etapa se realizó una búsqueda avanzada en las bases de datos SciELO, Redalyc, Google Académico, Science Direct, Scopus y la Web of Science (WoS) mediante una cadena booleana de consulta en la que se incluyen los términos (NOOC) AND (competencia digital) AND (formación docente) OR (capacitación docente). La búsqueda se replicó en las bases de datos ya mencionadas, utilizando los términos en inglés (NOOC) AND (digital competence) AND (teacher training). Se seleccionó un periodo de 6 años (2017 a 2022) y como tipo de documento se establecieron artículos científicos y tesis de grado (maestría y doctorado). Con base en esta terminología se obtuvieron un total de 35 documentos: 14 en Google Académico, 8 en Redalyc, 6 en Web of Science, 5 en Scopus, 1 en ScienceDirect y 1 en SciELO.

2.2. Criterios de selección

Después de realizar la búsqueda en las bases de datos especializadas, se leyó el resumen (abstract) para seleccionar aquellos documentos que trataran el tema de estudio de acuerdo con los siguientes criterios de inclusión y exclusión.

2.2.1. Criterios de inclusión

- Trabajos de investigación publicados durante el periodo 2017-2022.
- Trabajos de investigación relacionados con el impacto de los NOOC en la educación.
- Trabajos de investigación en los idiomas español e inglés.
- Trabajos de investigación cuya metodología estuviera relacionada con la capacitación de competencias digitales o con la formación virtual.

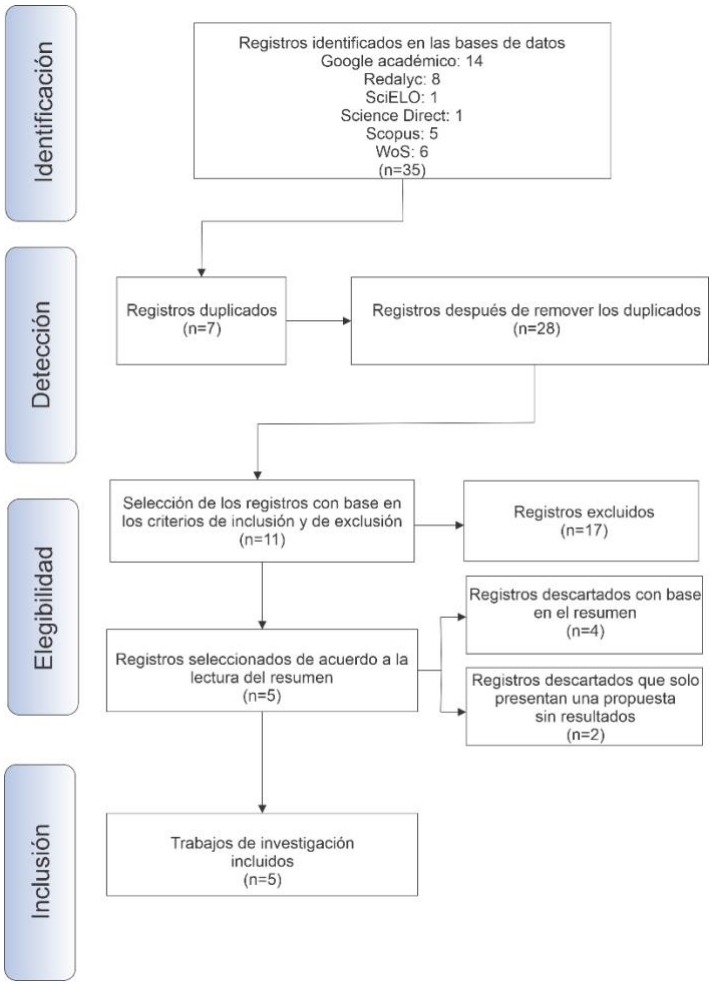
2.2.2. Criterios de exclusión

- Trabajos de investigación publicados antes del año 2017.
- Trabajos de investigación en idiomas diferentes al español o inglés.
- Trabajos de investigación cuya metodología no estuviera relacionada con la capacitación de competencias digitales o con la formación virtual.

En la Figura 2 se muestra el diagrama de flujo del proceso sistemático de la revisión de la literatura, quedando como resultado 5 trabajos de investigación distribuidos de la siguiente forma: 2 de Google Académico, 1 de Redalyc, 1 de SciELO, 1 de ScienceDirect.

Figura 2

Diagrama de flujo del proceso sistemático de la revisión



2.3. Análisis y clasificación de la información

En esta etapa se realizó un análisis cuantitativo y cualitativo de los documentos recopilados. El primero permite analizar la información con base en datos numéricos mientras que el segundo permite identificar las características comunes que comparten los trabajos de investigación. A continuación, se detalla cada uno:

2.3.1 Análisis cuantitativo

En este análisis cuantitativo se tomaron en cuenta, el total de publicaciones que se han realizado en un periodo que comprende de 2017 al 2022, el tipo de metodología empleada y los instrumentos de validación más utilizados.

A continuación, se presentan las preguntas de investigación que se tomaron en cuenta para el análisis cuantitativo:

¿Cuántas publicaciones sobre el uso de NOOC para la capacitación y formación virtual docente se han realizado del 2017 al 2022?

¿Cuál es el tipo de metodología predominante para el desarrollo de los NOOC con relación a la capacitación y formación virtual docente?

¿Cuáles son los instrumentos más utilizados para la validación de los NOOC en torno a la capacitación y formación virtual docente?

2.3.2 Análisis cualitativo

Las preguntas que guiaron el análisis cualitativo son las siguientes:

¿En qué países se han desarrollado NOOC para la capacitación y formación virtual docente?

¿En qué nivel educativo se han desarrollado los NOOC para la adquisición de competencias digitales docentes?

¿Cuáles son las competencias digitales docentes que se pueden obtener mediante los NOOC?

Con base en el análisis cualitativo y cuantitativo se incluyeron 5 trabajos de investigación que respondían a las características señaladas. La muestra de documentos analizadas se puede consultar en la Tabla 1.

Tabla 1

Muestra de documentos analizada

Base de datos	Tipo de documento	Año de publicación	Autores	Título de la investigación
Redalyc	Artículo de investigación	2017	Pérez-Sánchez et al.	Los NOOC para la formación en competencias digitales del docente universitario. Una experiencia piloto de la Universidad Nacional de Educación a distancia (UNED)
SciELO	Artículo de investigación	2020	Martín-Cuadrado et al.	Las competencias digitales docentes en entornos universitarios basados en el Digcomp
Google Académico	Tesis de maestría	2021	Jurado-Mendoza	Los NOOC como estrategia tecno-pedagógica para la formación de competencias digitales en docentes de la Unidad Educativa Fiscomisional La Inmaculada, Otavalo
ScienceDirect	Artículo de investigación	2022	Andrade et al.	NANO-MOOCs to train university professors in digital competences
Google Académico	Tesis de licenciatura	2022	Bastidas y Mora	NOOCs como apoyo al desarrollo de la competencia: creación de contenidos digitales, a los docentes en formación de licenciatura en informática de la Universidad de Nariño.

3. Resultados

Se consultaron 6 bases de datos de las cuales se obtuvieron 35 registros, mismos que se revisaron aplicando los criterios de inclusión, exclusión y pertinencia, dando un total de 5 trabajos de investigación científica para ser analizados (Ver Tabla 4).

Tabla 4

Artículos incluidos de las Bases de Datos

Base de Datos	Artículos encontrados	Artículos incluidos
Google Académico	14	2
Redalyc	8	1
ScienceDirect	1	1
SciELO	1	1
Scopus	5	0
WoS	6	0
Total	35	5

El análisis de los resultados, en relación con el contenido temático, se obtuvo a partir de las palabras clave o keywords utilizadas, demostrando que los trabajos están enfocados en el área de competencias digitales. En orden de importancia, los conceptos que le siguen son "formación docente" y "educación superior". La Figura 3 muestra una representación gráfica de los conceptos clave encontrados en la revisión sistemática.

Figura 3

Nube de palabras

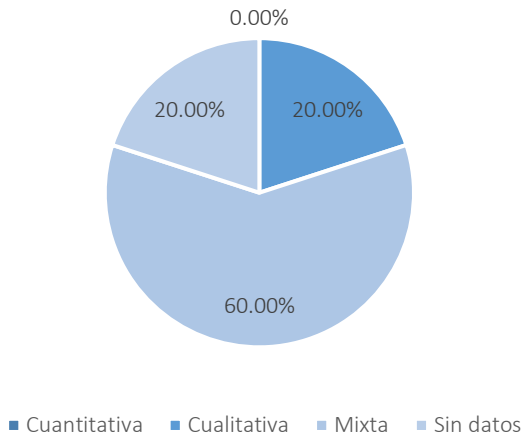
3.1 Resultados cuantitativos

Respecto a la metodología encontrada en los documentos analizados, destaca el tipo de investigación cuantitativa y mixta como se muestra en la Figura 4. Entre los estudios de tipo

cuantitativo se identifican estudios pre y post test, así como los grupos de control y experimental. En los estudios mixtos se encontró el uso de la estadística descriptiva y estudios comparativos, mientras que en los estudios de corte cualitativo se evidencia el uso del estudio de caso.

Figura 4

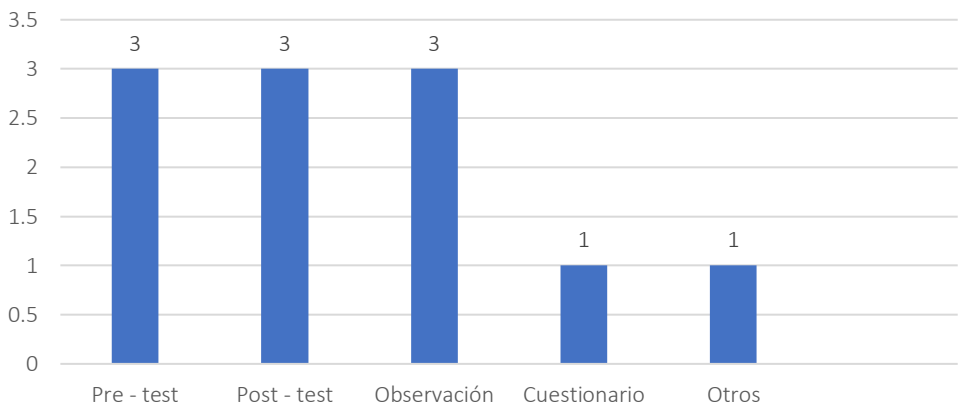
Tipo de metodología



En relación con los instrumentos de validación (ver Figura 5), se observa que las encuestas iniciales y finales, también conocidos como pre-test y post-test se aplicaron en las 5 investigaciones. Seguido de las encuestas, la observación es la herramienta de validación más utilizada la cual está presente en 3 de las investigaciones. Dichos resultados son consistentes con el tipo de metodología que predomina en los trabajos de investigación, que es la metodología de tipo mixta, con el 60% de los trabajos enmarcados en esta metodología.

Figura 5

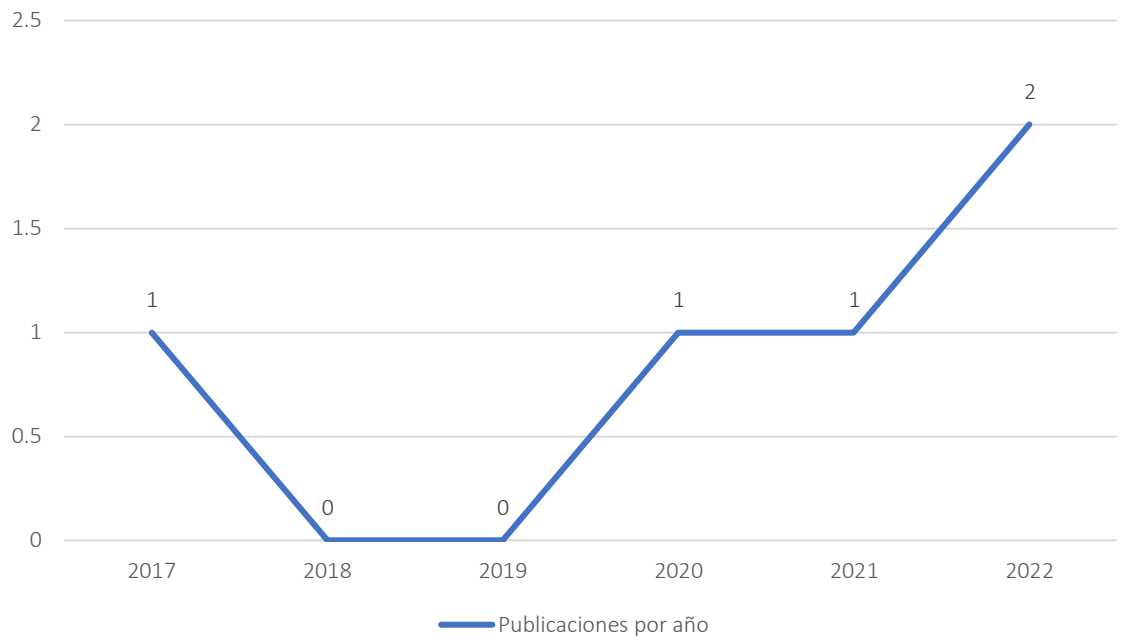
Instrumentos de validación



En la Figura 6, se observa el número de publicaciones por año en relación a la formación de competencias digitales.

Figura 6

Número de publicaciones por año



3.2 Resultados cualitativos

En el trabajo desarrollo por Pérez-Sánchez et al. (2017) se describe la ejecución de nueve nano cursos (NOOC) cuyo objetivo es mejorar la formación de docentes universitarios en materia de competencias digitales. Los autores señalan que la necesidad de formación en competencias digitales surge de la inmersión del profesorado en el uso de las herramientas tecnológicas, así como de su nuevo rol como guía en la construcción de conocimientos.

En la búsqueda documental, los autores encontraron que los cursos abiertos existentes estaban planteados en modalidad MOOC y que los temas de formación docente y competencias digitales eran tratados por separado, de modo que la propuesta de formación era bastante innovadora y hoy se considera una de las referencias más importantes en el tema. Se desarrollaron nueve cursos tomando como base las áreas competenciales y descriptores del DigComp 2.0, los autores se enfocaron en el área de información en función a las competencias de:

1. Navegación, búsqueda y filtrado de información.
2. Evaluación de información.
3. Almacenamiento y recuperación de información.

Destaca la implementación de una prueba de autoevaluación que permite a los participantes conocer su nivel de manejo —básico, intermedio y avanzado— en cada una de las competencias. Los resultados posibilitan a los estudiantes tomar una decisión autónoma y consciente sobre el nivel al que desean inscribirse en cada uno de los NOOC. Así pues, cada estudiante diseña su propio camino para completar el nivel avanzado en cada categoría. Los NOOC están diseñados para 5 horas de formación y se espera que aprendan conceptos, procedimientos y aptitudes para cada una de las competencias. Están distribuidos en tres niveles de dificultad y al completar cada nivel los estudiantes consiguen diferentes

acreditaciones hasta completar la certificación final tras una prueba que demuestra que se ha adquirido el conocimiento suficiente para ser certificado en el área de competencia.

La propuesta tuvo lugar de noviembre de 2016 a febrero de 2017. La estructura de los cursos NOOC comprende: un módulo de presentación, cinco unidades de contenido y una actividad final que demuestra que se han realizado con éxito las prácticas propuestas. Las conclusiones más importantes del trabajo de investigación son: la consolidación de los NOOC como una estrategia para el aprendizaje, la importancia de contar con un alto grado de interacción y retroalimentación en las propuestas de modalidad a distancia.

Martín-Cuadrado et al. (2020) diseñaron dos NOOC considerando dos competencias: 1. Información y Alfabetización informacional y 2. Comunicación y Colaboración. De tal manera que la primera área competencial del DigComp, conocida como NOOC1, culminó su cuarta edición en diciembre de 2019; la primera edición de la segunda área llamada NOOC2, se presentó en enero de 2020. Resultado de la emergencia provocada por el Covid-19, se han replicado versiones especiales para la primera y segunda competencia de los NOOC2 con el propósito de ser útil a los docentes universitarios para que puedan adaptar sus contenidos en entornos virtuales de enseñanza-aprendizaje. A su vez, se busca que los cursos puedan proporcionar a los docentes apoyo para su propia formación como estrategia de capacitación en entornos digitales, de tal manera que no sólo se impulse la capacidad de manejar herramientas tecnológicas y dispositivos de vanguardia, sino que el docente sea capaz de adaptarlas de acuerdo con su área de conocimiento. El diseño curricular descrito se caracteriza por ser abierto, ya que la formulación de objetivos se adapta a las necesidades de cada estudiante y son los aprendices quienes seleccionan los contenidos de aprendizaje (Chiappe, 2012). Dada la complejidad de la tarea, que depende de las necesidades metodológicas y tecnológicas de cada momento, este estudio ha seguido una metodología basada en la Investigación-Acción (Putman y Rock, 2017; Reason y Bradbury, 2008). De este modo, el docente se convierte en investigador de su propio proceso, permitiendo que cada edición de los cursos NOOC se vaya optimizando cualitativamente con la implementación de las mejoras de los errores detectados.

En el trabajo desarrollado por Jurado-Mendoza (2021), se implementaron NOOC como una estrategia tecno-pedagógica para la formación de competencias digitales en docentes de la Unidad Educativa Fiscomisional la Inmaculada, Otavalo en Ecuador. La propuesta surge a partir de los cambios pedagógicos impulsados por la pandemia de Covid-19, que implicaron el uso de las TIC de forma segura y crítica en los procesos educativos. La unidad educativa, donde se desarrolló la propuesta, identificó la necesidad de contar con personal docente capacitado en competencias digitales por dos razones: para garantizar un buen rendimiento académico en su alumnado y porque su modalidad de trabajo durante la emergencia sanitaria sería virtual. El trabajo se realizó siguiendo un enfoque cuantitativo de corte descriptivo y de campo. La primera parte de la investigación consistió en una prueba diagnóstica para determinar el nivel de competencia en las siguientes áreas: información y alfabetización informacional (PC1), la competencia digital de comunicación y colaboración (PC2), creación de contenidos digitales (PC3), la seguridad de la información (PC4) y la competencia digital de solución de problemas (PC5). En los resultados, los docentes presentaron deficiencia en dos áreas competenciales: PC3 y PC4. Para atender la necesidad formativa se desarrollaron cinco cursos en formato NOOC a través de la plataforma Moodle ABNOOC. El diseño instruccional utilizado fue PACIE

(Presencia, Alcance, Capacitación, Interacción, E-learning), el cual se constituye en tres bloques: 1) Bloque 0, que permite la interacción con la plataforma; 2) Bloque académico, en el que se lleva a cabo el proceso de aprendizaje; 3) Bloque de cierre, donde se responde a la encuesta de finalización. La metodología elegida facilitó el manejo de la plataforma y la comprensión del contenido, todos los participantes concluyeron los cursos y dieron comentarios positivos sobre su experiencia en la encuesta de satisfacción. Los investigadores destacan la importancia de realizar pruebas diagnósticas de manera regular que permitan generar planes integrales de capacitación docente. También señalan la importancia de la participación de los profesores en actividades de formación continua para mejorar su desempeño. De esta manera, el trabajo de Jurado-Mendoza (2011) busca sentar las bases en la institución para las prácticas educativas abiertas en el cuerpo docente.

En el año 2022, Andrade et al. llevaron a cabo una investigación que buscaba conocer el nivel de competencia digital de los docentes e indagar si los cursos en formato de nano-MOOC ayudan a mejorar sus competencias digitales. Para lograr su objetivo, desarrollaron una investigación de tipo descriptivo-inferencial comparativo cuasi experimental en la Universidad Técnica del Norte. Diseñaron e implementaron cinco nano-cursos en la plataforma Moddle, de nombre ABNOOC, con el propósito de capacitar a los participantes en las áreas que mostraron mayores limitaciones. El resultado más importante del trabajo de Andrade et al. (2022) es su aporte de evidencia sólida, científica y académica para demostrar que los nano-MOOC contribuyen al desarrollo continuo de las competencias digitales de los docentes. Es importante destacar que los autores afirman que sus resultados no pueden extrapolarse para la formación de docentes, es indispensable considerar las características de los profesores, el contexto, su nivel de competencia digital en relación con diversas variables para lograr una propuesta de capacitación que atienda los requerimientos y necesidades del profesorado universitario.

Por otro lado, Bastidas y Mora (2022) diseñaron e implementaron una serie de nano cursos virtuales como estrategia para el desarrollo de la competencia sobre la creación de contenidos digitales. Los cursos están dirigidos a los docentes en formación de la licenciatura en Informática de la Universidad de Nariño. El primer paso de la investigación fue advertir el nivel de conocimiento de los estudiantes mediante encuestas; a partir de sus resultados se determinó que las temáticas a tratar serían: 1) derechos de autor y licencias, 2) contenido digital icónico, 3) contenido digital visual, 4) contenido digital auditivo y 5) contenido digital audiovisual. El modelo instruccional utilizado para el desarrollo de los NOOC fue ASSURE. Además, se tomó en cuenta la opinión de los estudiantes en cuanto a los recursos educativos que les gustaría usar a lo largo de los nano cursos. Al finalizar los NOOC, se implementó una encuesta de evaluación en la que los estudiantes afirmaron que los recursos educativos digitales diseñados para explicar los contenidos fueron claros, la duración fue adecuada y consideran que fortalecieron la competencia de creación de contenido digitales. Entre los hallazgos de la investigación, se puede destacar que el aprendizaje mediado por los NOOC hizo posible la adquisición de destrezas y habilidades de manera ágil y efectiva para los estudiantes.

En la Tabla 2 se presenta, de manera esquemática, el análisis de los artículos correspondientes a los NOOC para la formación de competencias digitales.

Tabla 2

Artículos analizados sobre NOOC para la formación de competencias digitales

	Artículo 1	Artículo 2	Artículo 3	Artículo 4	Artículo 5
Año	2017	2020	2021	2022	2022
Autor(es)	Pérez-Sánchez et al.	Martín-Cuadrado et al.	Jurado-Mendoza	Andrade et al.	Bastidas y Mora
País	España	España	Ecuador	Ecuador	Colombia
Nivel académico	Universitario	Universitario	Educación general básica y bachillerato	Universitario	Universitario
Tipo de metodología	No se especifica	Investigación-Acción	Enfoque cuantitativo de corte descriptivo y de campo, Diseño instruccional se basó en la metodología PACIE	Cuantitativa descriptiva-inferencial, cuasi-experimental comparativa (pre-test y post-test)	Cuantitativa de enfoque descriptivo
Plataforma utilizada (LSM)	Open edX	No se especifica	Moodle ABNOOC	Moddle (ABNOOC)	Moddle (Aula Virtual de la Universidad de Nariño)
Competencias digitales	• Navegación, búsqueda y filtrado de información. • Evaluación de información. • Almacenamiento y recuperación de información	• Información y alfabetización informacional • Comunicación y colaboración	• Información y alfabetización informacional • Comunicación y colaboración • Creación de contenidos digitales • Seguridad de la información • Solución de problemas	• Creación de contenidos digitales • Seguridad	• Creación de contenidos digitales
Instrumentos empleados para la validación	• Encuesta inicial y final de cada participante • Prueba de autoevaluación • Observación de los investigadores	• Test de diagnóstico • Encuestas iniciales y finales a cada usuario y la propia observación	• Encuesta • Cuestionario	• Encuesta inicial • Encuesta final	• Encuesta inicial • Encuesta final • Observación de los autores

4. DISCUSIÓN Y CONCLUSIONES

A partir de la revisión sistemática desarrollada en este documento fue posible analizar un conjunto de trabajos que se encuentran en la literatura, en los cuales se enfatiza que los NOOC representan una herramienta educativa, direccional, flexible y de corta duración para el aprendizaje y para el desarrollo de competencias digitales.

En el aspecto de capacitación, permiten al docente apropiarse de competencias digitales con el propósito de saber utilizar las herramientas además de adaptarlas a su área de conocimiento. Muestra de ello, el trabajo desarrollado por Pérez-Sánchez et al. (2017) manifiesta cómo el uso de los NOOC se consolida como una herramienta educativa que permite gestionar el proceso de aprendizaje y lograr competencias digitales en relación con la búsqueda y tratamiento de la información. Tal como señala Leal (2011), la resignificación de los Recursos Educativos Abiertos (REA) es un aspecto clave en las prácticas educativas abiertas.

En un trabajo posterior, los autores Martín-Cuadrado et al. (2020) determinan cómo los docentes, a través de las competencias digitales adquiridas, pueden adaptar sus contenidos en entornos virtuales de enseñanza-aprendizaje. Resultados que coinciden con la segunda etapa del "Movimiento Educativo Abierto", que propicia integrar a las prácticas educativas los REA (Santos et al., 2012).

Por otra parte, el uso de diseños instruccionales para la creación de los NOOC permite alcanzar los objetivos de aprendizaje y evaluar los contenidos educativos digitales. Como parte de las prácticas educativas abiertas, dichos cursos brindan herramientas para concretar prácticas educativas que fomenten la integración de tecnologías para la creación y uso de REA. En el trabajo de Jurado-Mendoza (2021) se implementaron los NOOC haciendo uso del diseño instruccional PACIE (Presencia, Alcance, Capacitación, Interacción, E-learning), facilitando el manejo de la plataforma y la comprensión del contenido. De la misma manera, en el trabajo de Bastidas y Mora (2022) se desarrollaron e implementaron una serie de nano cursos virtuales mediante el diseño instruccional ASSURE para el desarrollo de la competencia sobre la creación de contenidos digitales, se demostró que los recursos educativos digitales diseñados para explicar los contenidos fueron claros, la duración fue adecuada y que se fortaleció la competencia planteada.

Respecto a las experiencias en el uso de los NOOC para la formación virtual, en el trabajo de Da Silva et al. (2019) se comprueba que es posible lograr los objetivos de aprendizaje planteados y que las tasas de deserción son menores a diferencia de los MOOC. Asimismo, que el diseño de los recursos didácticos y las estrategias empleadas para la evaluación son fundamentales para la capacitación sobre un determinado campo de estudio (Rodríguez, 2020). Es relevante señalar que, además de la adquisición de conocimientos y habilidades sobre temas de interés que se pueden abordar mediante este tipo de cursos, implícitamente se desarrollan competencias transversales al fomentar el trabajo colaborativo o la mejora de alguna habilidad lingüística (Alonso-Ramírez et al., 2022).

Los aportes generales de esta revisión demuestran que se obtuvieron resultados empíricos favorables en torno a la formación virtual y sobre la capacitación de competencias digitales docentes. Cabe destacar que, de la muestra analizada, la mayor parte de los trabajos se enfocan en la apropiación de competencias digitales, desde la dimensión del diseño y creación de contenidos digitales hasta la alfabetización informacional, la comunicación y la colaboración.

Los resultados del análisis manifiestan la existencia de estudios empíricos sobre los NOOC que han favorecido la adquisición de determinados conocimientos y de nuevas competencias en una duración que se considera adecuada y efectiva. Particularmente, los NOOC fomentan la formación continua y el aprendizaje colaborativo entre personas que se interesan por temas en común. Es necesario denotar que, para obtener resultados favorables sobre su uso, debe

existir una planeación estratégica orientada al diseño de recursos didácticos que permita a los participantes lograr los objetivos de aprendizaje.

Si bien las conclusiones de este estudio sirven como un precedente para los futuros trabajos de investigación sobre los NOOC, es importante considerar tanto las limitantes como las futuras líneas de investigación que pudieran derivarse de la presente revisión sistemática. Una de las limitaciones de este trabajo es el tamaño de muestra reducido, como consecuencia de las palabras de búsqueda, el periodo de tiempo seleccionado y la escasez de trabajos científicos sobre el tema que nos concierne. Aunque las conclusiones de los trabajos revisados son evidencia importante, es necesario ampliar el tamaño de la muestra para poder realizar generalizaciones. Por otro lado, en esta investigación nos limitamos a analizar cursos dirigidos hacia docentes, dejando a un lado los trabajos dirigidos a estudiantes u otros profesionales; consideramos que esta puede ser una futura de investigación que puede arrojar más evidencia en relación a los NOOC y las prácticas educativas abiertas.

De acuerdo con los autores Laverde et al. (2015) quienes indican que diversas instituciones educativas continúan debatiendo cual es el efecto que los MOOC pueden tener sobre las practicas educativas abiertas, el crecimiento de la investigación académica sobre su uso en años recientes es un indicador claro sobre el interés que despierta este fenómeno en el sentido de explorar cuáles son sus limitaciones y contribuciones más significativas en relación con las prácticas de educación a distancia. Por tal motivo, es pertinente el estudio y la reflexión de las diferentes situaciones de enseñanza-aprendizaje bajo la modalidad NOOC, pues permite tener información sobre estrategias exitosas y estructurar nuevas prácticas educativas abiertas innovadoras.

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Open Educational Practices from the perspective of open educators: Contributions to teacher professional development

Prácticas Educativas Abiertas desde la perspectiva de educadores abiertos: Aportaciones a la formación del profesorado

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Abstract

Incorporating the principles of Open Educational Practices (OEP) into teacher training can help prepare future professionals for the challenges they face in their daily work, as curricula and practices are increasingly influenced by digital culture principles. As a concept that is still being consolidated, OEP can assume different meanings. This study, conducted with teachers in basic (ISCED 1-3) and higher education, aimed to identify the (1) the characteristics inherent to OEP; (2) elements of the identity of an 'open educator' and their relation to OEP; and (3) the perspective on OEP presented by the participants. The research method consisted of a combination of semi-structured interviews and document analysis. The results indicated that the participants perceptions were aligned with what is identified in the literature as "expansive" OEP, and that OEP is an evolutionary process in multiple dimensions. Based on the analysis, a framework was developed to assist teachers and educators in reflecting on and evaluating their practices, as well as promoting professional development in the context of OEP.

Keywords: Open Educational Practices, teacher training, Open Educational Resources, Open Education

Resumen

La incorporación de los principios de las Prácticas Educativas Abiertas (PEA) en la formación del profesorado puede ayudar a preparar a los futuros profesionales para los retos de su trabajo diario, ya que los currículos y las prácticas educativas están cada vez más influidas por los principios de la cultura digital. Como concepto que aún se está consolidando, las PEA pueden asumir diferentes significados. Este estudio, realizado con profesores de enseñanza básica (ISCED 1-3) y superior, tuvo como objetivo identificar (1) las características inherentes al PEA; (2) los elementos de la identidad del "educador abierto" y su relación con las PEA; y (3) la perspectiva sobre las PEA presentada por los participantes. El método de investigación consistió en una combinación de entrevistas semiestructuradas y análisis de documentos. Los resultados indicaron que las percepciones de los participantes se alineaban con una perspectiva que se identifica en la literatura como PEA "expansiva", y que el PEA es un proceso evolutivo en múltiples dimensiones. A partir del análisis, se elaboró un marco para asesorar a profesorado y educadores en la reflexión y evaluación de sus prácticas, así como en la promoción del desarrollo profesional en el contexto del PEA.

***Palabras clave**: prácticas educativas abiertas, formación del profesorado, recursos educativos abiertos, educación abierta*

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1. INTRODUCTION

The rise of the Internet has greatly impacted education – a scenario of constant transformation – demanding that teachers constantly acquire novel methodological and practical knowledge (Hegarty, 2015). In Brazil, the *TIC Educação* national survey (CETIC.br, 2020) presents data on the access, use, and appropriation of ICTs by teachers and students in basic education (ISCED 1-3), showing that the most common practice involving new media for teachers in urban areas is related to the promotion of novel teaching practices (78% of respondents). With regards to teacher training, a later survey indicated that only 49% of participating teachers had taken a course on the use of ICTs in teaching-learning activities during their undergraduate training. Among the respondents, 65% had participated in a continuing education course on the use of ICTs in teaching-learning activities in the 12 months prior to the survey (CETIC.br, 2022). These data indicate that the development of educational practices and methods associated with digital culture have become important to the exercise of the teaching profession. This was made particularly clear during the COVID-19 pandemic, when gaps in knowledge and skills of teaching professionals in ICT were evident, leading to a significant demand for teachers' professional development.

Within this context, there has been a renewed interest in the field of Open Education (OE), a field that seeks to update the principles of progressive education within the context of digital culture (Furtado & Amiel, 2019). Perhaps, the most evident push towards OE is through Open Educational Resources (OER), which are recognized as an essential component in attaining the goal of inclusive, equitable and accessible education for all (UNESCO, 2019).

To achieve that goal, changes to practices must also be considered. Open Educational Practices (OEP) are defined by Cronin (2017) as "collaborative practices that include the creation, use, and reuse of OER, as well as pedagogical practices employing participatory technologies and social networks for interaction, peer-learning, knowledge creation, and empowerment of learners" (p. 18). The field of OEP aims to contribute and better understand the intersections between educational practice and how knowledge is produced and disseminated within the context of digital culture. OEP ask that educators reflect on existing practice and identity, incorporating new abilities and knowledge, ultimately rethinking their very behavior and attitude towards teaching.

OEP is a growing field, with evolving definitions on the meaning of *open practice*. While some authors focus on the use of OER as an essential condition for the exercise of OEP (Conole, 2010; Pulker & Kukulska-Hulme, 2020; Wiley & Hilton, 2018), others take as their starting point the attitudes and behaviors of the teacher (Bali et al., 2020; Chiappe & Adame, 2018; Nascimbeni & Burgos, 2016). Still others emphasize the use of collaborative practices to promote learning (Bali et al., 2020; Cronin, 2017; Ehlers, 2011; Huang et al., 2020).

Following Tlili et. al. (2021), we aim to contribute to "understanding educational practices across different cultures" to help build "specialized strategies to encourage stronger international participation" (p. 13). This study expands on previous work (Sousa & Amiel, 2023) aimed at understanding what OEP means for teachers involved with basic education in Brazil. It aims to unearth underlying issues and the implications of openness into everyday educational practices, focusing on the following question: *How do educators in our sociocultural context conceptualize and exercise Open Educational Practices*? Addressing the perspective of Brazilian teachers working in basic education, the specific objectives of the study were to (1) identify the characteristics inherent to OEP; (2) identify elements of the identity of an open educator and understand their relation to OEP; and to (3) identify the perspectives presented by the participants regarding OEP.

1.1 Relationships between OEP and OER

OEP are practices guided by critical knowledge and social justice, producing modes of teaching and learning based on a theoretical conception of participatory construction of knowledge, which requires the development of democratic and accessible spaces (Bali et al., 2020). Following the OPAL (Open Educational Quality Initiative) framework, Ehlers (2011) comprehends OEP as practices that involve the creation, use and sharing of OER. Following from this premise, the model considers that the diffusion of OEP in organizations depends on (1) higher levels of presence of OEP into practice and (2) higher levels of involvement of "others" through sharing and collaboration.

Nascimbeni and Burgos (2016) go beyond OER and propose a matrix that emphasizes the role of the educators' attitudes in different areas of their professional activity to develop open practices: design, content, teaching and assessment. These are measured on three levels of openness, which start with individual actions in the low level and progress to a high-level collaboration in the ascendant layer.

Similarly, Huang et al. (2020) identified five essential conditions to OEP development: OER usage, open teaching (characterized as student freedom to participate), open collaboration, open assessment, and the employment of enabling technology. A relevant contribution of this model consists in the acknowledgment of a variety opportunities to develop OEP through the relationship established from different combinations among these elements, where technology acts as a support.

All models presented permit to orient existing practices into openness. However, the last two present a wider scope of analysis where the role of teachers to OEP implementation in the learning process.

1.2 Teacher training from an OEP perspective

Understanding how educators appropriate and define OEP, as well as describing the identity of the open educator become essential points to the formative process of these professionals. This reflection leads to rethink the ways of developing educational practice and requires teachers to reposition themselves in relation to their profession (professionalism), bringing about the articulation between educational processes and knowledge on open practices.

By investigating representations about open educators (their identity) one can begin to understand their relationship with personal identities, and thus, the knowledge needed to promote teacher professional development to foster OEP.

Chartier (2002) suggests that professional education is a culturally mediated process. It is the result of the production of meanings, significations and re-significations that occur in the interplay between representations (categories of meanings in which reality is constructed), practices (ways of acting and doing) and appropriations (forms that define the existence of a group, inscribed in their practices). This dynamic is established in the clash between the social representation of the meaning of 'being' an educator and the exercise of daily practice. This process is an assemblage of constant transformations but also a consolidation of practices (Alcoforado, 2014) that help situate one's professional identity, leading to new meaning in teaching practices and thus resulting in an appropriation.

Regarding the open educator, there is a strong relationship between personal and professional identity (Cronin, 2017; Daukšienė et al., 2020; Tur et al., 2020), in which personal interests, values, and attitudes influence engagement in OEP.

The knowledge needed for teacher professional development aggregates a set of individual and collective experiences permeated by one's social context (Nóvoa, 2009; Tardif, 2014). As such, we posit that becoming an open educator is a gradual and continuous process, which results from reconfigurations produced by a clash of practices, extant theories, and teaching knowledge that arise through being part of digital culture and the movement for OE. This occurs in constant dialogue with teacher's previous experiences, values, and attitudes (Cronin, 2017; Daukšienė et al., 2020; Karunanayaka & Naidu, 2020; Tur et al, 2020).

Thus, there are two relevant aspects to be considered in the formative processes of teaching professionals. First, the transformation of practices is prolonged and challenging (Tur et al, 2020), marked by oscillations between old and new professional identities. Second, these oscillations must be seen as opportunities for the constitution and consolidation of new ways of thinking, opening up opportunities to introduce innovations in educational practices.

Teacher identity formation is a relevant source of information to formulate strategies for the professional development of open educators. This includes the reflective action of teaching practice, the development of collaborative work with peers (Hegarty, 2015; Nóvoa, 2019) and the encouragement of professional autonomy in the learning environment (Inbar, 1994).

Reflective teaching practice consists of becoming aware of the promoting and limiting factors of openness through continuous examination of one's actions, taking into consideration different contexts and cultures (Hegarty, 2015; Nóvoa, 2009). Awareness becomes a starting point to promote change focused on areas where there might be room for improvement. It also can collaborate with understanding the latent meanings of OEP as it is enacted. Moreover, this perspective combines the proposition of innovation as incremental change (Inbar, 1994) with the use of *tactics* (Certeau, 1998) to adapt and modify educational practices that can be reassembled in the direction of openness.

Applied to the professional development of open educators, reflective action implies revealing to oneself the daily practices that promote and limit openness in one's teaching and learning context. This allows the teacher to intentionally direct his or her actions to the arrangement of a learning environment that favors openness in several activities that make up the educational process.

To resignify the teaching profession as a space of convergence between research and practice, presupposes the development of a collective and collaborative space for action and research, through the constitution of a community, in which teacher professional development can occur in parallel to the opening of pedagogical experimentation and the emergence of new practices (Nóvoa, 2009; Tardif, 2014). Therefore, a transition of the teaching identity in the direction of openness is facilitated by the engagement of professionals in communities of practice with peers, especially those that delve into open practices, constituting a network of support and sharing of experiences guided by Open Education.

Finally, autonomy to act in the learning environment allows teachers to put into practice swift solutions supported by tacit and explicit knowledge, as well as to propel their creativity. In practical terms, this means that teachers must be provided conditions for individual and collective experimentation and to change learning environments, having autonomy to directly influence the choices and actions that occur in these spaces. It is within this margin of freedom that open educational practices originate, translating into choices and solutions to problems that seek equity, broad access, and participation.

2. METHOD

This research began by a review of the literature based on article recommendation from experts and examining the reference lists of these articles. A non-systematic approach was decided based on two criteria. First, there were two recently published systematic reviews on OEP by Koseoglu and Bozkurt (2018) and Clinton-Lisell (2021), which were incorporated in the research. Second, an initial investigation of OEP literature in major databases for scientific articles in Portuguese (the context of this study) revealed too small a body of literature for a systematic review. The development of the interview instrument was based on the thematic coding of a review of the literature (Flick, 2009) resulting in three categories of interest: OEP characteristics (see Appendix 1); characteristics of the open educators (see Appendix 2); and practices of the open educator (see Appendix 3).

The second part of the study was aimed at gathering data from practitioners. People have differing and divergent perceptions of the same phenomena (Flick, 2009). In order to accommodate this diversity, this study was based on interpretivism as a theoretical perspective (Crotty, 1998). The study used semi-structured interviews (conducted online, due to the COVID-19 pandemic). The option for semi-structured interviews was justified by the possibility of combining an open perspective in relation to the object of study, provided by the collection of spontaneous verbal data, while maintaining a focus on the thematic area proposed by the study (Flick, 2009). Data was analyzed through codification and then categorization (Appendices 1, 2 and 3). The results of the research were, then, grouped into the three guiding categories of the study.

To engage in this research, participants needed to have some knowledge of OEP. Thus, participants were selected from those engaged in a course entitled *Open Education Leadership,* targeted at teachers, managers and technicians in basic education promoted by the Open Education Initiative (IEA[1]) with the support of UNESCO Brazil. From 2020 to 2021, the course involved more than 60 education professionals from all over Brazil. The course had theoretical and practical perspectives. Topics included: OER and related skills (understanding, searching, using, creating, and sharing); open licenses; authoring, production, and use of open repositories and platforms; and digital culture and digital rights.

After receiving an invitation, five from a group of 10 preselected teachers with experience at basic education and high school levels volunteered to participate. Aiming to gather complementary data on how teacher trainers understood OEP, two higher-education faculty who were part of pre-service teacher education were selected (Table 1). To guarantee their anonymity, codes were attributed to each participant.

[1] https://aberta.org.br

Table 1.

Study participants

Professional activity	Code	State
Informatics teacher (basic education)	I3	São Paulo
Geography teacher (basic education)	I4	São Paulo
Informatics teacher (basic education)	I5	São Paulo
Portuguese teacher (basic education)	I6	Pará
Teacher (technical middle school)	I1	Minas Gerais
Teacher (Pre-service teacher training/ *Licenciatura - Higher Education Professor*)	I2	Goiás
Teacher (Language and Literature/ Pedagogy - *Higher Education Professor*)	I7	São Paulo

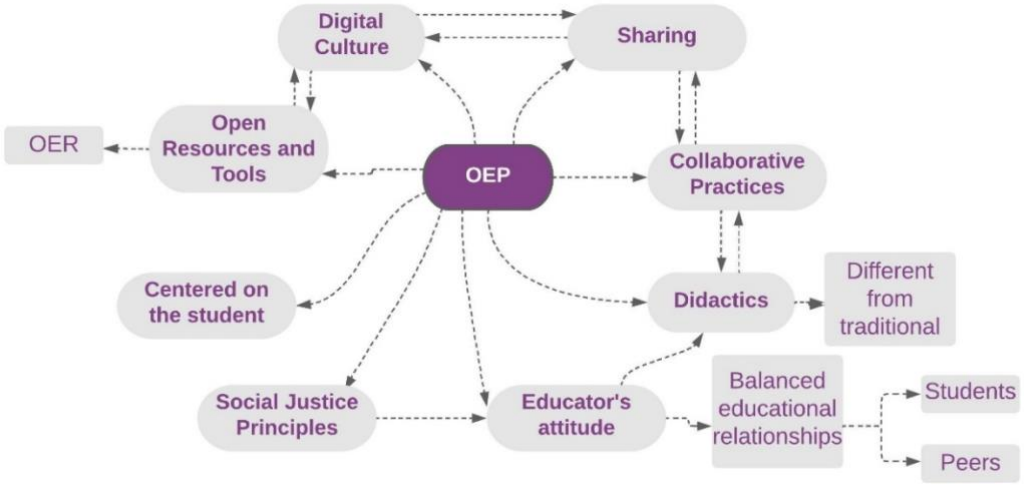
Based on the thematic coding, a questionnaire composed of nine open questions was elaborated (see Appendix 4). The first block, consisting of two questions related to the dimension *characteristics of the open educator*, aimed at obtaining data on teacher's personal and professional characteristics and context of their work. The second block had two questions related to the *characteristics of open educational practices*, focusing on unearth participants' conceptions of OEP. The third section, targeted the *practices of open educators*, aimed at understanding how participants dealt with issues and problems related to OEP. Before its use, a pre-evaluation of the instrument was carried out with three educators, to evaluate the wording of the questions.

3. RESULTS

The analysis of the *characteristics of OEP* (see Figure 1) points to OEP as practices that challenge traditional forms of teaching, with the predominance of a conception of practice as based on willingness to dialogue, broad access to knowledge, and respect and appreciation of the contributions of students/participants, bringing to the forefront the attitude of educator and the kinds of the educational strategies and didactics which are employed. This is closely associated to an *expansive* perspective on OEP (Cronin & MacLaren, 2018). Here, OEP are supported by a set of diversified and participatory activities, with or without the deployment of new media, which aim to promote collaboration, sharing and equilibrium in teaching-learning relationships, perceiving students as producers and co-authors of their own knowledge.

Figure 1.

Network of concepts related to OEP based on research with participants.



Open practices enacted by educators are supported by aspects of digital culture, especially through the use of OER and tools to promote learning experiences. However, there is an understanding that OEP do not *depend* on the use of OER. In contrast, the lack of knowledge about OER or the absence of OER that meet diverse educational objectives are limiting factors to engaging in OEP.

Research participants in higher education (I3 and I7) highlighted that OE and its related themes, such as OEP and OER, needed to be included into teacher training to provide theoretical and practical knowledge to future teachers. One of the participants indicated that a form of awareness of OE and OEP was to "show, whenever possible, repositories, for example, where I get my content: resources, images [...] among others that they also can use to produce their own activities, that they ought to do in class." (I7). Another participant emphasized how wide the field of OE is: "Leadership is a path, because there are many things to learn...in the course we noticed that we knew a little bit of what open education is, of software, of open educational practice...we know only a tiny little bit." (I3).

Regarding the *characteristics of the open educator*, participants revealed that the development of OEP is intrinsically related to the educator's attitude. Among the reasons for adopting open practices, on the one hand there are individual interest and previous experiences with OER/OE, and on the other hand, a felt need to revisit educational practices in the context of digital culture.

Many participants mentioned that their career trajectories led them to search for knowledge on OE and in OEP. Participant I1, a teacher in technical middle school said:

> I work in distance education since 2008. In this line of work, I've always, we've always, had zeal and care with author's rights […], the way we share... So, well, this was already something I knew, I already searched, as much as possible, for things that I could share that were open, that were 'freely available', precisely because of author's rights.

In a similar manner, participant I7 declared that his/her current practice in OER was facilitated by previous professional experience with these materials.

> In the Secretariat [of Education], I work in the innovation centre, and we produced the materials that we use nowadays for the technology and innovation area. So, we work on the preparation of this material for distribution to the network [of schools], to teachers and students. I also worked in the group that started thinking about open educational resources here in the Secretariat, in the development of the Secretariat's decree of open educational resources. (I7).

Focusing on the change of practices in the context of digital culture, the same participant (I7) revealed a need to embed contents in teacher training curriculum that can help teachers deal with their work.

> ...there is no way that a teacher can enter the classroom today without the minimum of technology, how can he produce content, how can he seek content... otherwise he will want to teach with the chalk and the blackboard. And then thinking that it should be in all curricula, something that is articulated, because it, technology, is seen as an accessory, it is an embellishment that must be articulated within the curricular components. (I7)

Most of the participants indicated that their primary role is knowledge mediation, leading to a predominance of learner-centered activities. A professional environment with broad sharing and collaboration in the development of experiences and projects was identified as a factor. This was corroborated by how the participants of this study indicated participating in communities of practice. As such, self-concept regarding their role as educators, and the culture of their professional environment, were factors that contributed to the engagement in OEP:

> And then I entered the school, and it is a school with an 'active methodology' proposal. And the most interesting thing is that it is also a school that seeks to be very democratic, that uses [student] assemblies, right? So that's when I started to have contact, let's say, with a more open education, in the sense of bringing dialogue. From the beginning I was instructed to do this and today I instruct the teachers. Today I have completely incorporated it. I really can't see doing education except from this perspective. (I4)

The analysis indicates that the change of practices towards OEP is enacted through having knowledge of open tools as well as changes in practice. Educators indicated a significant degree of skills with the use of new media and continually seek to improve on these skills. In terms of methods of teaching, the use of diversified strategies, promoting flexibility and collaboration in the construction of knowledge, was highlighted.

Finally, in regard to *practices by open educators*, the analysis of the practices that were part of the educational materials supports the representations espoused by participants in regard to OEP. They point to their understanding of these as flexible and collaborative educational practices that seek to constitute a learning environment that fosters the freedom and the autonomy of participants. Beyond providing access to knowledge, this implies generating opportunities for students, peers, and people from the community to contribute with ideas and activities regarding both knowledge building and educational practices. The practices identified by the participants exposed everyday situations in diverse learning environments that combine elements like open technologies, OER, collaboration and open teaching that contribute to the opening of practices (Huang et al., 2020). These vary according to teaching objectives and contexts.

This means that OEP is seen as a product of the quest for the diversification of teaching methods and strategies, with a predominance of those that stimulate situations of collaboration and sharing. Several collaborative strategies were identified including: interaction only between students; between educators and students; educators and their peers; and even those involving the wider community.

From the point of view of the *functions* of teaching, a concept explored by Nascimbeni and Burgos (2016), flexibility and participation are made possible by didactic choices (using project-based and problem-based learning to promote collaboration, for example), the selection and use of tools, the choice of content, the flexibility of planning, and the methods used to evaluate learning. In this context, the integration of new media, as well as the use, production, and dissemination of OER were frequently reported.

4. DISCUSSION

Based on this research, and aligned with an expansive perspective, we have come to define OEP as

> the combination of a set of educational activities guided by an ethical principle, strongly linked to the ideals of social justice, equity and transparency, achieved through the multiple functions of teaching (planning, instruction, evaluation, curriculum, activities, content, pedagogical practices, and resources), whose main objective is to provide experiences that enable the generation of knowledge and learning through sharing and establishing a collaborative network, in which people from different relational levels contribute (peers, external network, students, and teachers), benefiting from new media, but not considering necessary to promote individual and collective goals (Sousa & Amiel, 2023, p. 128).

Based on this synthesis, the study highlighted relevant areas for the development of OEP (see Figure 2), composed of six dimensions (Sousa & Amiel, 2023) that can be explored in order to trace a trajectory into open practices. It is important to emphasize that the intend to build a representation was to put in evidence theoretical aspects inherited in the participants' perceptions about OEP. Thus, the result reinforced elements observed in some frameworks, especially those developed by Nascimbeni and Burgos (2016) and Huang et al. (2020).

Figure 2.

Dimensions to the development of OEP

The findings of the study represent significant information that can support teacher training focusing on OEP. They indicate the need of educators and teachers to comprehend education in the context of digital culture, which includes OE and its foundations, to facilitate the adoption of OEP. It suggests, as previous studies have also indicated, that OEP can and should be integrated into pre-service teacher training (Stewart, 2020).

As a process supported by digital culture, OEP requires the development of knowledge and skills about new media, especially open resources and tools, to promote novel learning experiences. However, it is important to highlight that open tools are not the only way to promote OEP. Knowledge about open foundations can effectively help teachers to address OEP with or without the use of new media. We contend that taking an expansive view of OEP means accepting that the characteristics of an open educator (or open learner) are dimensions that are constantly undergoing evolution through reflective practice.

OEP is related to collaborative strategies and methods in teaching, which can support the promotion of participatory activities and stimulate another relevant skill for educators and teachers willing produce OEP: the promotion of more horizontal relationships in teacher-learning, fostering participation and modes of expression by students and other educational community members. The development of the aforementioned skills can contribute to the expansion of the learning environment beyond the boundaries of the classroom (in any modality), through interaction with members of the community, amplifying and diversifying points of view and learning strategies.

Finally, the results of this study can help teachers and educators to visualize openness in different areas of teacher's activities (Figure 2), recognizing avenues for openness and professional development.

5. CONCLUSION

'Openness' has become an important area of study in the field of education. As OER, open access, free and open-source software and open data have become mainstream, many new promising areas of inquiry have arisen to identify their intersection with educational practices.

In this article, we began by undertaking many aspects of OEP which are reflected in the literature. We, then, used those to study the characteristics and practices of educators who completed an Open Education Leadership course. Examining the perspectives of educators who identify as OEP practitioners also allowed us to also investigate the meaning of OEP from the perspective of these participants.

The results of the study reinforced the relevance of OER to the promotion of OEP but suggest an OEP conception that goes beyond OER and reaches many areas of teachers' activity. Moreover, the understood of the intrinsic relationship between educator's attitude and the development of OEP leads to consider the importance of introducing themes related to OE and OEP in the teachers' training process.

This study is an investigation of a specific context and specific group of educators. Therefore, we do not expect these findings to be automatically transferable to other contexts. Nonetheless, the findings do provide support to an increasing body of literature promoting an "expansive" view of OEP, identified in multiple studies and contexts. Further studies could be conducted to investigate the identities of open educators from different backgrounds, areas of practices and regions of the globe. As more and more educators associate themselves to ideals of openness and enact these meanings into practice, so will the meaning of OEP evolve, providing a rich understanding of how educators conceptualize openness in their practice.

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7. APPENDICES

Appendix 1

Major themes from the literature on OEP characteristics

Item	OEP Characteristics	References
A01	Openness present in the diverse functions and activities of educational practice	Beethan et al. (2012); Chiappe & Adame (2018); De Rosa & Rajiv (2017); Koseoglu & Bozkurt (2018); Nascimbeni & Burgos (2016)
A02	Activity is centered on the student	Arinto, Hodgkinson-Williams & Trotter (2017); Chiappe & Adame (2018); Cronin (2017); Cronin & MacLaren (2018); Ehlers (2011); Wiley & Hilton (2018)
A03	Predominance of the use of participatory collaborative practices in productive work	Arinto, Hodgkinson-Williams & Trotter (2017); Bakaitis (2019); Beethan et al. (2012); Chiappe & Adame (2018); Couros (2010); Cronin (2017); Nascimbeni & Burgos (2016); Daukšienė et al. (2020); Ehlers (2011); Hogan, Carlson & Kirk (2015); Koseoglu & Bozkurt (2018); Pulker & Kukulska-Hulme (2020)
A04	Non-binary – composed of levels of openness visible in teacher practices	Cronin (2017); Ehlers (2011)
A05	Occur in strict relationship with OER	Conole (2010); Hogan, Carlson e Kirk (2015); Karunanayaka et al. (2015); Murphy (2013); Pulker & Kukulska-Hulme (2020); Wiley & Hilton (2018);
A06	Benefit from the possibilities engendered by new media and the internet	Beethan et al. (2012); Cronin (2017); Hegarty (2015); Nascimbeni & Burgos (2016); Pulker & Kukulska-Hulme (2020)
A07	Ethical commitment to social justice, equity, and transparency	Arinto, Hodgkinson-Williams e Trotter (2017); De Rosa e Rajiv (2017); Koseoglu & Bozkurt (2018); Tur et al (2020)

Appendix 2

Major themes from the literature on Characteristics of Open Educators

Item	Characteristics of the Open Educators	References
B01	Influence of personal identity on the inclination to enact open practices	Arinto, Hodgkinson-Williams e Trotter (2017); Cronin (2017; 2018); Daukšienė et al. (2020); Pulker & Kukulska-Hulme (2020); Tur et al. (2020); Vidal (2009)
B02	Influence of personal identity on enacted practices	Arinto, Hodgkinson-Williams e Trotter (2017); Cronin (2017; 2018); Pulker & Kukulska-Hulme (2020);
B03	Influence of the culture of the professional environment on the activities of the educator	Arinto, Hodgkinson-Williams e Trotter (2017); Cronin (2018)
B04	Search to reconfigure educational practices considering digital culture and an ethical commitment to openness	Hegarty (2015); Tur et al (2020)
B05	Demonstrates significant ability in the use of digital resources (digital literacy)	Arinto, Hodgkinson-Williams e Trotter (2017); Cronin (2017); Karunanayaka et al. (2015)
B06	Tries, whenever possible, to promote accessible, flexible, and collaborative experiences	Beethan et al. (2012); Chiappe e Adame (2018); Cronin e MacLaren (2018); Cape Town Declareation (2007); Ehlers (2011); Hogan, Carlson e Kirk (2015); Koseoglu & Bozkurt (2018); Nascimbeni & Burgos (2016); Tur et al. (2020);
B07	Engagement in communities of practice	Arinto, Hodgkinson-Williams e Trotter (2017); Chiappe e Adame (2018); Nascimbeni & Burgos (2016)

Appendix 3

Major themes from the literature on practices of Open Educators

Item	Practices of the Open Educator	References
B08	Incorporates openness in the many aspects of teaching and learning	Koseoglu & Bozkurt (2018); Tur et al. (2020)
B09	Stimulates situations for collaboration and sharing	Bakaitis (2019); Chiappe e Adame (2018); Couros (2010); Cronin (2017); Nascimbeni & Burgos (2016); Tur et al. (2020); Wiley & Hilton (2018)
B10	Promotes the integration of new (educational) media and open tools	Cronin (2017); Hegarty (2015); Nascimbeni & Burgos (2016); Tur et al. (2020)
B11	Promotes the use, creation, and dissemination of OER	Cronin (2017); Hogan, Carlson e Kirk (2015); Conole (2010); Murphy (2013); Nascimbeni & Burgos (2016); Pulker & Kukulska-Hulme (2020)
B12	Practices challenge traditional forms of teaching	Cronin (2017); Cronin e MacLaren (2018); Daukšienė et al. (2020); Hogan, Carlson e Kirk (2015)

Appendix 4.

Semi-structured interview structure

Question	Items
Characteristics of the Open Educator	
Could you please tell me more about your personal professional trajectory and current professional activities?	B1-B8
You have completed the Open Education Leader training course. What were the motivations that sparked your interest in the course?	B1-B2
Characteristics of Open Educational Practices	
To you what is an "open educational practice"?	A1-A7
In the literature we find different perspectives on what constitutes an Open Educational Practice. I will mention some and I would like you to comment on the relevance of these characteristics to your perspective on Open Educational Practice.	A1-A7
Practices of Open Educators	
Do you incorporate OER in your practice?	B12
Do you in any way encourage or promote the use of new media or digital information and communication technologies (ICTs) and the internet with your students?	B11
Do you emphasize or encourage collaborative practices between your students? How do you promote this?	B10
In which ways do you think your practice challenges traditional forms of teaching?	B13

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Empowering Future Educators: Leveraging Openness by Design when Integrating Technology in Teacher Education Programs

Empoderando a los futuros educadores: aprovechando la apertura por diseño al integrar la tecnología en los programas de formación del profesorado

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Abstract

Teacher educators who design and teach educational technology courses have an important role to play in developing thoughtful approaches to using educational technology in teaching and learning through the development of digital literacies that make use of accessible, meaningful, and pedagogically appropriate technology. Several researchers have argued that K-12 teachers are well suited to both adopt and develop aspects of open education by growing awareness of open educational resources and practices. This paper aims to articulate the potential, gaps, and opportunities for teacher educator programs to bring aspects of open education into teacher training. Based upon a small survey with students in a teacher education program in British Columbia Canada, gaps in knowledge among teacher candidates are identified and reflections from participants provides motivation to consider how open educational resources and practices might be further integrated into teacher education programs. Kahle's (2008) design philosophy approach is recommended and discussed based on the results with a focus on using technology to prioritize openness that aligns well to prominent themes in teacher education programs.

Keywords: open education practices, open educational resources, teacher education, digital literacy, philosophy of educational technology

Resumen

Los formadores de docentes que diseñan e imparten cursos de tecnología educativa tienen un importante papel en el desarrollo de enfoques reflexivos sobre el uso de la tecnología educativa en la enseñanza y el aprendizaje mediante el desarrollo de alfabetizaciones digitales que hagan uso de una tecnología accesible, significativa y pedagógicamente apropiada. Varios investigadores han argumentado que los docentes de educación primaria son idóneos para adoptar y desarrollar aspectos de la educación abierta mediante la concienciación sobre los recursos y las prácticas educativas abiertas. Este artículo pretende articular el potencial, las lagunas y las oportunidades de los programas de formación docente para incorporar esos aspectos. A partir de una pequeña encuesta realizada a estudiantes de un programa de formación docente en la Columbia Británica de Canadá, se identifican sus lagunas de conocimiento y sus reflexiones proporcionan motivación para considerar cómo los recursos y las prácticas educativas abiertas podrían integrarse más en estos programas. Se recomienda el enfoque de la filosofía de diseño de Kahle (2008) y se discute en base a los resultados centrándose en el uso de la tecnología para priorizar la apertura que se alinea bien con los temas prominentes en los programas de formación docente.

Palabras clave: *prácticas educativas abiertas, recursos educativos abiertos, formación docente, alfabetización digital, filosofía de la tecnología educativa*

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1. INTRODUCTION

The rhetoric around technology use in K-12 learning contexts has, for several years, spoken to the importance of developing digital literacies in young people through the appropriate and meaningful use of educational technology in classrooms (Gruszczynska & Pountney, 2013; Kimmons, 2014; List, 2019; Marcus-Quinn & Hourigan, 2017). This requires that teachers themselves be well versed and critically selective about the use of technology to support learning and the implications in directing young people towards their usage. Teachers may use technology for teaching and learning for a variety of reasons including supporting in class learning, creating blended learning environments, intentionally creating fully online learning experiences, or while offering fully online education in a crisis, as was the case during the Covid-19 pandemic. In all cases, careful decisions must be made about what and how to use technology to best support learners. Importantly, the tools and technologies teachers use in the process of teaching and learning may impact young people's beliefs what tools for personal knowledge management are valued and worthy for use in their daily lives.

As a result, courses that introduce technology integration concepts as part of teacher education programs must be carefully designed to develop critical and intentional uses of technology. Within teacher education programs, teacher candidates are engaged with thinking about pedagogical choices and have chances to practice their approaches to teaching in learning the process of teacher education, all while receiving feedback along the way from teacher educators. As such, teacher education programs are in an excellent position to develop innovative approaches based on developments in learning science and technology, to meet the needs of society.

Increasingly, flexibility and access are becoming a component of educational offerings. Dede (2022) describes the future as "irreversibly hybrid" and thus teacher education programs must adapt to prepare teachers for supporting learning in technology mediated environments that enables personalization to individual learner needs and preferences. Developing digital literacies with future teachers can help prepare them for unpredictable futures in which flexibility and digital learning environments shall feature prominently. This increases the scope and challenge for teacher educators designing technology integration courses, by necessitating the development of approaches to technology enhanced face-to-face teaching while also leveraging knowledge about teaching and learning strategies that work in classrooms and how these may be applied online where appropriate. Thus, teacher candidates must understand what types of teaching are best suited to the various levels of technology infrastructure and the modality being used (Dede, 2022).

Teacher candidates are both student and teacher during their programs of study. While developing the understanding of teaching and learning in their specific areas of specialization, they are also given opportunities to take on the role of teacher as they engage in practicum experiences within school settings and during their coursework (Thompson et al., 2019). This creates an opportunity for candidates to experiment, practice, and receive feedback on their teaching as well

as, experience, from a learner perspective, various pedagogical strategies as they engage in study. This puts greater onus on teacher educators to model effective and intentional practices as part of their learning design efforts, as researcher has shown that educators often end up teaching in similar ways to how they were themselves taught (Oleson & Hora, 2014).

Complicating the landscape is the dominance of big educational technology vendors who appear to be perceived as the default environments for learning. From big tech companies such as Google and Microsoft, to more focused vendors pushing technology solutions in schools, questions about platform capitalism, datafication, vendor lock in, and privacy remain largely unchecked. Many of these platforms have been adopted by schools in an uncritical way historically, and this was advanced even further during the Covid-19 pandemic (Czerniewicz & Feldman, 2023; Stockman & Nottingham, 2022). A growing number of scholars are raising concerns about these issues and have offered critical analysis of big technology firms pervasive and uncritiqued usage in education (Castañeda & Villar-Onrubia, 2023; Krutka et al., 2021; Pangrazio et al., 2022).

With that in mind, teacher education programs have a key role to play in developing education literacies during teacher training that foreground openness, flexibility, and personalization. Scholars have argued that open education might present the opportunities for context-centric learning approaches, support more productive teachers in their early years of teaching, promote flexible and dynamic pedagogy, and provides a low-cost and low barrier way to develop and share teaching and learning materials in teacher education programs (Karunanayaka & Naidu, 2017; Petrides, 2017). As such, several scholars who have conducted research into open education practices within teacher education programs have found it to be a useful and welcomed addition to their programs (Kelly, 2014; Tang et al., 2020). Taking an expansive view of open education, this may include developing competencies around pedagogical approaches, resource selection, assessment design, and technology use that is driven by openness. There appear to be similar themes shared in teacher education programs such as accessibility, community engagement, inquiry-driven learning, multimodality, collaboration, mindfulness, and multiculturalism that align well to the philosophies underpinning open education.

The purpose of this paper is to investigate the levels of awareness, current practices, and understanding of open education concepts among teacher candidates at a University in British Columbia, Canada. The paper begins with a literature review of studies involving open education in K-12 settings, describes the theoretical framework for the study in relation to development of digital literacy for teachers, and presents the results from an exploratory survey to better understand knowledge about open education among teacher candidates.

2. OPEN EDUCATION RESEARCH IN K-12 SETTINGS

This paper argues for developing educational technology competencies within teacher education programs that leverage open educational resources (OER) and open education practices (OEP) to meet these emerging demands and variabilities for future teaching practice. Several researchers have argued that K-12 teachers are well suited to both adopt and develop aspects of open

education. DeBarger (2019) suggests that OER, specifically, may be an effective alternative to traditional resources to enhance both student and teacher agency. Marcus-Quinn and Hourigan (2017) acknowledge OER in the development and improvement of teaching effectiveness through more open sharing and development of pedagogy. Similarly, Allen and Katz (2019) posit that teachers are excellent candidates to evolve OEP and saw that increasing their opportunities to engage openly in a safe environment impacted their self-efficacy and willingness to share openly in the future (J. V. Allen & Katz, 2022).

The use of open education among teachers can involve many elements of their practice. Educators may consider aspects of openness when designing learning outcomes, selecting teaching and learning resources, and when planning activities and assessment (Paskevicius, 2017). With regard to locating resources and ideas for teaching, scholars have cited the challenges expressed by teachers in locating relevant, high quality, and topical resources in their subject area as a significant barrier and that integrating these resources into their curriculum is a time-consuming task (Allen & Seaman, 2016; De Los Arcos et al., 2014; Petrides et al., 2011). OER and the affordances they offer in relation to designing teaching activities and assessment, represent new and largely optional technologies for busy educators to integrate into their practice. Educators need a chance to practice and experiment with these new approaches, and therefore could benefit from intentional strategies that involve awareness raising as well as of capacity building in order to integrate open teaching and learning practices (Nascimbeni & Burgos, 2016). Researchers have explored technology integration with educators at length, most notably finding that perceptions around usefulness and ease of use contribute most to the ongoing usage of new technologies (Davis, 1989). Allocating time to develop literacies in working with OER, as well as time to work with colleagues to share these practices and approaches with their colleagues, are cited as significantly important considerations for fostering more open practices (Kimmons, 2016).

With regard to flexibility and autonomy, Kimmons (2015) study found that the use of open education can contribute to greater flexibility and autonomy for teachers, enabling them to be more involved with resource evaluation, adoption, and modification, where needed, to better meet the learning context and enable differentiated instruction. Similarly, Roberts (2022) found that open education lends itself to supporting personal and inquiry learning pathways for learners as well. Their research found that open education was well suited to support teachers in being more responsive to learner needs, differentiating learning, and bridging both formal and informal learning contexts (Roberts, 2022).

Yoon and Gilpin (2022) investigated the use of open education in a teacher education program, where teacher candidates worked collaboratively to create digital resources and build open websites. The findings suggest that working collaboratively and openly helped the students establish and reflect on their sense of identity from their current perspective as a learner, as well as considering their future role and practice as teachers. The researchers suggest that open education promoted equity-focused teaching and learning practices and also empowered new teachers to build confidence in the face of opposing feelings of control over curriculum choices from school boards and districts in their research context. Yoon and Gilpin (2022) conclude with the recommendation that in order for open education to find its way into K-12 classrooms, these

approaches to teaching and learning must be woven into teacher education programs in an intentional way so that teachers can experience being a student engaged with these practices, have chances to practice, in order to build confidence towards their future practice as a teacher.

Despite the emerging body of literature around open education in K-12 settings, scholars have argued that the research and practice of open education in K-12 is underdeveloped, lacks policy direction, and thus awareness largely remains quite low (Blomgren, 2018; Blomgren & MacPherson, 2018). Without knowledge of the opportunities made available through open education, teacher candidates have been shown to turn to other online marketplaces such as Teacher Pay Teachers to locate content and learning design ideas for their teaching (Thompson et al., 2019). These resources are often problematic and have been shown to include works that are offered without proper adherence to copyright and offered in formats that do not always allow for customization (Schwartz, 2019). Despite these issues, Teacher Pay Teachers resources have proven to be very popular amongst educators in North America. They remain problematic in that they are popular, highly discoverable, and yet come at, often, a personal cost to teachers. Without knowledge of other opportunities for sourcing learning resources, activities, and assessment tools, these sites remain attractive to teachers while being of dubious quality and without suitable peer review (Brown et al., 2023).

In the currently landscape, a significant opportunity exists for teachers to make use of OER for creative and educational activities. Knowledge about the appropriate use of these resources also constitutes ethical practice for working with and reusing digital media and can serve teachers well as they begin developing their practice and resource base. Furthermore, it has been argued that more open practices and the use of open resources may challenge economic and structural inequities embedded within our education systems (Cox et al., 2020). As well Bali et al. (2020) provide several examples of how open education learning design and approaches, when thoughtfully applied, can support pedagogical approaches that contribute to social justice and equity. With the increased availability of openly licensed digital textbooks around the world, more learners are being exposed to and can access a growing and diverse range of OER. Yet the extent to which learners are recognizing what is now possible with these resources or engaging with the digital literacies associated with open education are largely unknown.

3. THEORETICAL FRAMEWORK

While fears of a “digital divide” between those with and without access emerged as the internet first became popular (Hoffman & Novak, 1998), scholars now warn of a “participation divide” which may result in the underrepresentation of certain perspectives (Hargittai & Jennrich, 2016). The participation divide represents a rift between those who actively contribute to knowledge by creating information on the web and those who choose to only use the internet to consume information (Hargittai & Walejko, 2008). Divides have been shown to exist between those in different geographical locations, of varying socioeconomic status, and among racial and ethnic differences (Hargittai & Jennrich, 2016). Despite nearly ubiquitous access for many, the effective and efficient use of the internet for sharing resources and creative outputs are limited (Blank,

2013; Correa, 2010; Hargittai & Walejko, 2008; Schradie, 2015). Teacher education is a practical context in which we can invite learners to take a more active role in creating knowledge, critiquing traditional and emergent knowledge sources, and remixing multimedia on the web in ways that are legal, participatory, and social. These literacies form the basis OEP that could enable a teacher to provide great personalization to meet individual learner needs and preferences. Through the development of these digital literacies' teachers are also in a better position to support their learners with similar knowledge generation activities. Creating opportunities for individuals to practice working openly with digital media has been offered as a means to enhance digital literacies and reduce the online participation divide (Hargittai & Jennrich, 2016).

Educators may consider using design approaches that draw from the values and principles of open education as they both design and deliver educational experiences that make use of educational technologies. A good starting point may include considering openness by design, as a teacher begins sourcing and creating the resources used to support teaching and learning. Openness by design guides practice by ensuring educators build resources using openly licensed content, use open standards, and maintain attribution for remixed works. Kahle's (2008) recommendations for designing with openness in mind using educational technology appears to account for several important additional values and principles, namely: designing for access, designing for agency, designing for ownership, designing for participation, and designing for experience. Kahle's vision was for an approach to learning design that "would raise an additional set of questions (problems) based on the values of open education that are best addressed (resolved) during the design process" (Kahle, 2008, p. 30). At the time of writing, Kahle (2008, p. 27) described the importance of an open design approach as:

> Highlighting the core values of open technology and defining these as principles of design practice is an important first step toward accelerating the production and ultimately the adoption of innovative educational software that honors the complex needs and interests of educators and learners alike.

Considering Kahle's (2008) principles in the context of learning design, some examples of how these design elements map to practice are articulated as follows. When designing for access, teaching and learning resources are available freely and openly to educators and learners whenever possible in formats that promote accessibility principles, are multi-modal, and allow for remix and customization. Designing for agency involves educators and learners being invited to participate in knowledge communities that allow for the generation of knowledge that leverage personalized and contextual areas of interest. When designing for ownership, educators and learners retain learning materials and resources and can personalize them through modification, format shifting, remix, annotation, or archival. Designing for participation means educators and learners can actively participate in contributing to knowledge where applicable, collaborate with others, and engage in peer-review. Finally, designing for experience involves educators drawing from open resources to create teaching and learning materials that prioritize human-centred learning design principles to ensure they are interesting, relevant, and useful for learners to engage with and learn from.

4. METHOD

As teacher educators are trained in the process of pedagogy and spend a significant amount of time studying the design and delivery of educational experiences, there exists a unique opportunity to bring in OEP as a core competency for design when considering the use of educational technology. To better understand prospective teachers' current awareness of open education, an exploratory online survey was conducted with a group of teacher candidates at the University of Victoria in British Columbia, Canada. The objective of this research was to investigate the levels of awareness, current practices, and understanding of open education concepts among teacher candidates.

A survey that contained 35 questions was designed, including demographic information, about participants experience and awareness of open education concepts. The survey was piloted with graduate students and colleagues prior to launch. The survey was estimated to take approximately six to eight minutes to answer and was made available via the web. Participants who provided an email address were entered into a draw for one of five $50 Amazon gift cards. The survey was shared with 399 learners in the Fall of 2020 and 2021 and 83 participants completed the survey resulting in a 21% response rate. The study was reviewed by the institutional ethics committee and approved in prior to data collection.

5. RESULTS

Most respondents were aged 20-29 (65%), 23% were under 20, 8% were 30-39, and 4% over 40. Of the respondents, 48 were enrolled as part of the four-year Bachelor of Education program and 33 were part of post-degree professional program. The latter group would have already completed a four-year degree before starting in the teacher education professional program. Most respondents identified as female (80%), 17% male, 2% non-binary, and 1% who chose not to answer.

Participants were asked about their current approaches to finding resources when creating digital resources for school curriculum. Participants were able to select multiple strategies and the majority (55) selected one or more of the following strategies listed in

Table 1.

Table 1

Approaches to finding resources for digital resources or curriculum.

Strategy Used	Percentage of Respondents
I use a basic web search	73%
I use an advanced web search (e.g., filtering by source, content, date, etc.)	45%
I use a web search to locate resources that have open licenses (e.g., Creative Commons, Public Domain)	37%
I go to openly licensed databases (e.g., Creative Commons Search, Wikimedia, OER Commons)	36%
I find things on social media (e.g., Instagram, GIPHY, Twitter, Facebook)	19%
I purchase resources from content providers	8%
Other (included access through public or university library, ask classmates/peers)	14%

Once resources were identified, in many cases through a basic or advanced web search, participants were asked if they were aware of the default copyright and terms of use on internet resources.

Figure 1

Are you familiar with copyright and terms of use on internet resources?

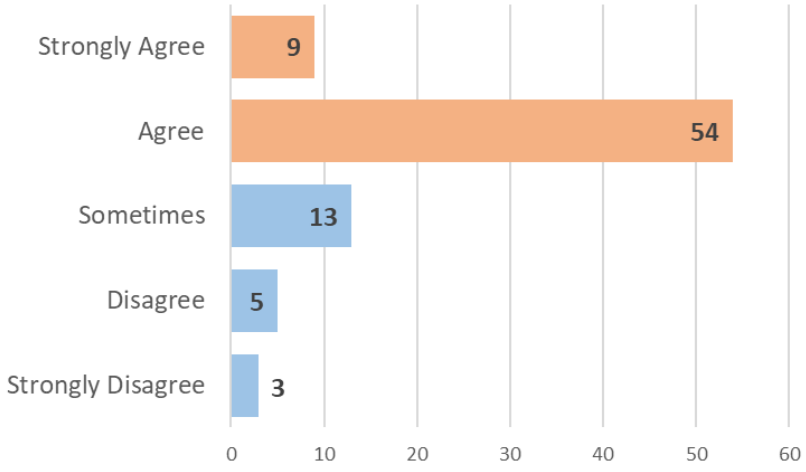


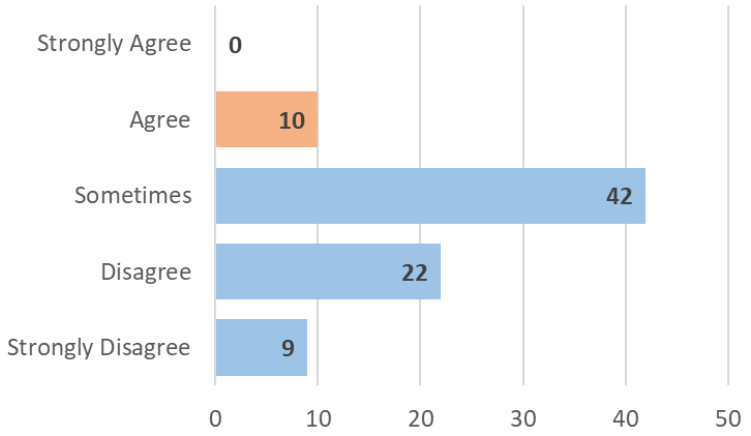
Figure 1

displays the responses to the question, are you familiar with copyright and terms of use on internet resources. Most respondents (54) agreed to this statement, with 9 strongly agreeing, 13 neither agreed or disagreed, and 5 indicating they disagree, and 3 strongly disagreed. Participants were also asked if they believed the copyright and terms of use on internet resources was clear and understandable. **Figure 2** displays responses to this question. Statements provided qualitatively in respect to this question included, ”I realize I haven't been very 'web' cautious in terms of

ensuring resources are 'open' to me" [TC52]. Such statements indicate a need for greater awareness about online copyright and how it might be navigated for creating teaching resources for future teachers.

Figure 2

Do you find the copyright and terms of use on internet resources to be clear and understandable?



Participants largely reported that the copyright and terms of use on internet resources was not clear and understandable or that they were unable to recognize and feel confident in interpreting them, with only 10 agreeing to this statement, 42 indicating sometimes, 22 disagreeing, and 9 strongly disagreeing. Qualitative comments in relation to this question included:

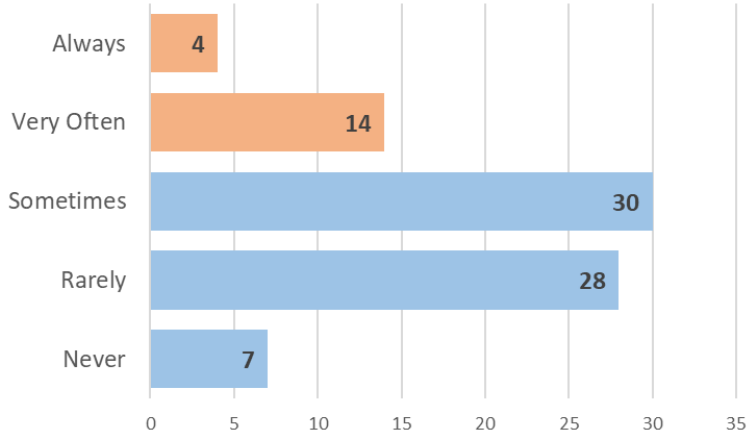
> *I definitely feel as though I should be more familiar with copyright licenses. I think that plagiarism is often discussed and different ways to cite are as well, but students don't actually understand why they are doing these things. [TC16]*

In this case the participant references the idea of plagiarism and citation, common and important topics within academic programs in relation to open copyright. The relationship between these concepts is important, as the idea of plagiarism and citing sources extends to open copyright models where one might be legally granted permission to use a digital resource through an open licence, then provide attribution and have freedom to create derivative and creative copies of the source material.

In relation to participants' practices in sourcing and using internet resources, participants were asked if they would review the copyright and terms of use of internet resources before using them. **Figure 3** displays responses to this question.

Figure 3

Do you review the copyright and terms of use of internet resources before using them?

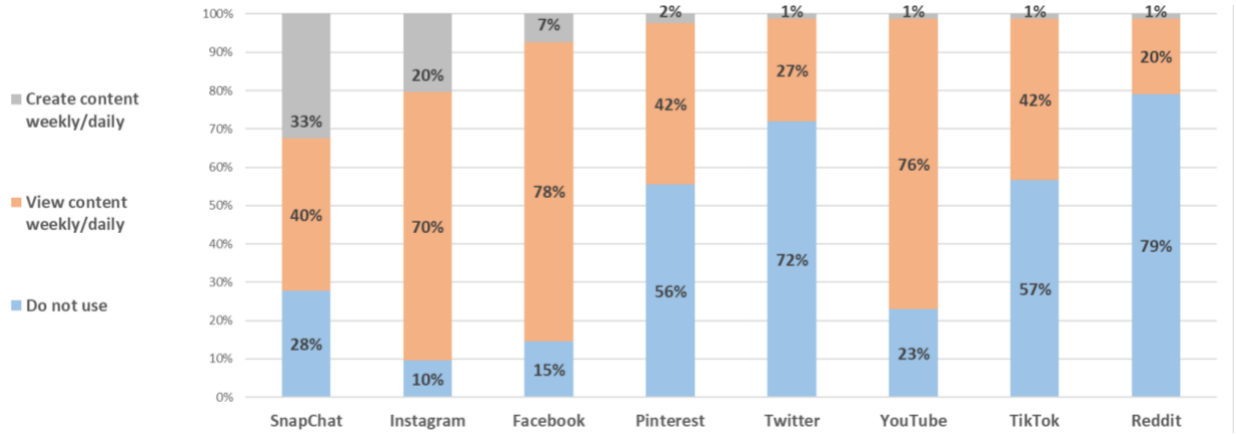


Participants largely reported that they did not necessarily review copyright and terms of use on internet resources before using them, with only 4 indicating always, 14 reporting very often, 30 indicating sometimes, 28 rarely, and 9 never. It is notable here that in the context of Canada, fair use/dealing allowances create opportunities for students and educators to use copyright works for the purpose of education with a limited group of learners but not share openly online.

Whether or not teacher candidates had started to consider the design of learning materials for teaching one could assume they were consuming and producing social media on popular websites. When considering the use of social media for content creation, participants were asked about their current access, consumption, and creation using popular social media tools. **Figure 4** displays responses to this question.

Figure 4

How do you engage with the following social media services?

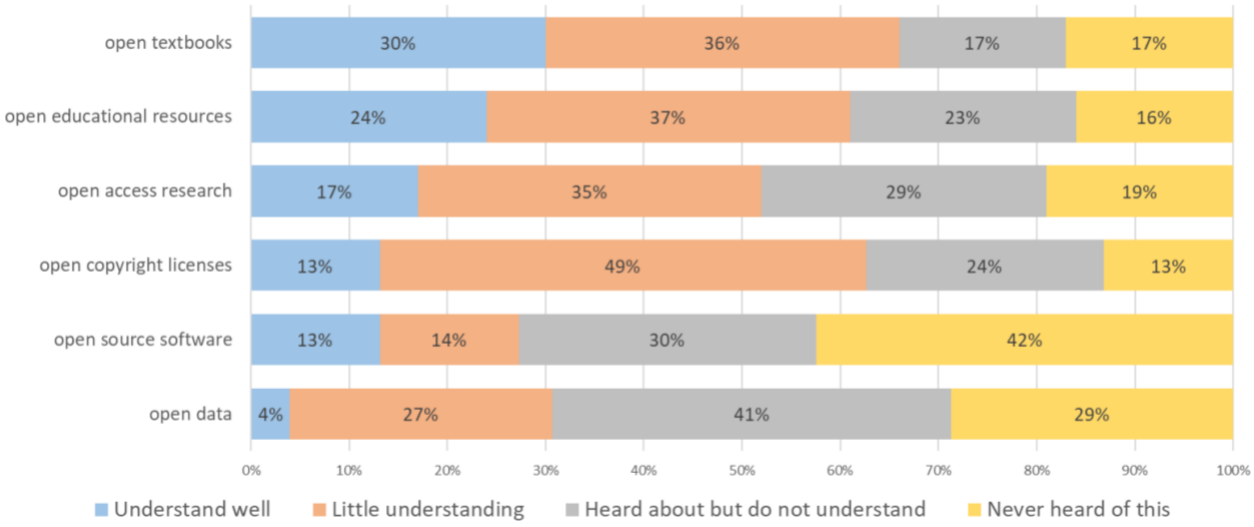


It is interesting to note that content creation activities in social media spaces was reported to low or negligible with only minor increases in content creation on Snapchat, Instagram, and Facebook. Many reported moderate levels of access to viewing content in social media, without content creation across all social media platforms.

Finally, when reporting on their awareness and understanding of open education concepts specifically related to resource access and creation, participants shared their levels of understanding among concepts like open textbooks, open educational resources, open access research, open copyright licenses, open-source software, massive open online courses, and open data. Figure 5 displays responses to this question.

Figure 5

Awareness and understanding of open concepts.



Participants reported limited understanding of most of the concepts with the greatest awareness being around open textbooks, open educational resources, open access research, and open copyright licenses. Many participants commented on this question in many cases recognizing their relevance but limited understanding of how to use them in developing their teaching practice. Two participants commented that they needed more information on these topics to develop competence in their use while recognizing their potential impact on digital literacies and access:

> *I think it is super important to learn about them, use them, and promote them within educational spaces. They are intimidating, but offer a lot of important learning, including greater digital literacy, and offer an alternative to privatized educational resources*. [TC2]

The issue of access and cost was further echoed by another respondent, "open access is fantastic for students. The high cost of textbooks and other materials is often prohibitive to our education" [TC24]. One other respondent noted that "as future teachers, we should be aware of all these terms" [TC3]. One respondent commented specifically on recognizing the value of OER for

supporting teaching in the early part of their career, "open educational resources, […] will be great resources for when I begin teaching" [TC73].

Another participant shared their hesitation to use open resources in the absence of a solid foundation of their usage rights:

> *As a future educator, I would really love to learn how to properly utilize these resources in a classroom but until I feel comfortable knowing the limits to their use, I will not. I am scared of accidentally doing something illegal in my use. [TC62]*

This passage draws particular attention to the need for training around how open education can be used in teaching and learning. Without developing confidence in their usage, this student is reluctant to try for fear or making a mistake. As a result, teachers may miss opportunities for sourcing, remixing, and contributing to open education.

6. LIMITATIONS

There are several limitations inherent in this study, most notable the small sample size of respondents to the survey. As well, respondents have self-reported their awareness and understanding of concepts in this study. One could argue that the terms and concepts may sound familiar in that they include clearly defined words, but respondents may lack a more in-depth understanding of their meaning and thus their potential impacts on teaching and learning. Further studies could look closer at the practices and approaches to using open education among teacher candidates and early career teachers following educational experiences that involve the development of OEP.

7. DISCUSSION AND CONCLUSIONS

Growing the awareness and adoption of OEP by teacher candidates may be an effective way to promote alternatives to traditional resources used within K-12 contexts with a goal of enhancing both student and teacher agency (DeBarger, 2019). Engagement in these approaches to teaching and learning enable flexibility that could better support learners' agency, autonomy, participation, and responsibility. Based on the findings from this study, learners need and have expressed an interest in being more informed about open education as a design approach (Kahle, 2008). This requires the development of open education literacies that focus on how to recognize and use resources that are made available with open copyright licenses such as Creative Commons. Additionally, teacher candidates need to know where to locate and assess educational resources that are free from copyright that they can adopt or adapt for use in developing their teaching and learning resources and how enables new learning designs.

Similar to the findings of Thompson et al. (2019), this study found that awareness of open education concepts and tools remains low among educators. Participants reported low levels of

understanding when asked about concepts including open textbooks, OER, open access publishing, open copyright licensing, open-source software, and open access data. These open education tools and resources can provide significant opportunities for the sourcing and design of teaching and learning materials, especially in the early years of ones' career. This speaks to the need for a greater awareness of OER and OEP among K-12 teachers and an important role for teacher education programs to address these needs and work to develop open education literacies. With the right amount of support, scholars have argued that "teacher educators are well-positioned to evolve future use of open practices within the K-12 curriculum" in the dynamic and active learning spaces often found in K-12 settings (Allen & Katz, 2019, p. 318). These practices may involve pedagogical approaches, assessment design, and technology use that is driven by openness in teaching and learning.

This need for literacy development to enable innovative teaching and learning in a more open world also provides an underpinning philosophy for the integration of technology in education. The importance of learning design is critical, not only in determining the intended outcome of an educational experience, but also in selecting resources, identifying activities, and developing assessment tools that provide friction free access, allow teachers to make modifications to meet contextual needs, and enable learners to have agency throughout teaching and learning processes. Teachers who take up technology in education may apply OEP as a design philosophy to make best use of the open internet. In doing so they can change the ways in which they source, remix, and create educational resources, find ideas for learning activities, and develop methods of assessment that prioritize learner agency and personalization. The alignment between learning outcomes, teaching activities, and assessment provides a framework to guide impactful instructional design and practice and has been recommended as one possible approach to designing learning that draws upon OEP (Paskevicius, 2017).

In thinking about the selection of technologies in the context of learning design it is useful to delineate between 'delivery technologies,' those that influence the cost and access to education, and 'design technologies,' which include the resources and tools that enhance learning (Clark, 1994). Examples of delivery technologies might include the learning management systems and learning portals, while design technologies are the resources, activities, and assessment tools teachers design to use with learners. Both design and delivery technologies play a role in supporting resources, activities, and assessment tools and increasingly are merging as tools and software advance. For example, an educator can design an online course experience using a tool such as a learning management system (LMS) or Google Classroom with that tool providing both the design of learning activities, resources, and assessment tools, while also providing the delivery of the learning experience online. This creates some tensions for both educators and learners; for educators, they may find themselves using or creating OER within closed delivery platforms. This may be at odds with the license depending on how it has been applied and limit the potential for the OER to continue evolving and remain accessible. Consider the use of the share-alike clause as part of the commonly used Creative Commons model which does require any OER used be shared openly as it was originally shared. For students, they may find their engagements and the artifacts they create as part of their educational experience become part of the closed system and in some

cases can be hard to detangle from online platforms. Again, digital literacies are necessary to both recognize and respond to these entanglements to ensure sustained and open access.

Openness by design provides teacher candidates with a starting point for considering how they might frame their use and application of education technology in their early years of teaching. While they are bound to be inundated with institutional systems, processes and pre-selected technologies once situated in their place of employment, a design approach that prioritizes openness can align well to those prominent themes in teacher education programs such as accessibility, community engagement, inquiry-driven learning, multimodality, fostering collaboration, mindfulness, and multiculturalism. Further research is needed on how best to model the elements of access, agency, ownership, participation, and experience within educational technology curriculum that is unwed to specific types of technologies and can be established as a design approach for the use of technology in education.

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Número especial: Prácticas educativas abiertas en educación superior

Diseño y producción interdisciplinar de un Objeto Educativo Transmedia en abierto para la formación permanente de profesionales de la educación

Design and interdisciplinary production of an open Transmedia Educational Object for lifelong learning of educational practitioners

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Resumen

El objetivo de este artículo es describir el proceso de diseño y producción interdisciplinar de un OET ejemplo de una Práctica Educativa Abierta (PEA), diseñado y producido desde un contexto de educación superior que contribuye a la formación permanente de profesionales de la educación con recursos educativos desarrollados con criterios de calidad educativa y científica. Bajo el enfoque metodológico de la Investigación Basada en el Diseño (IBD), se presenta el proceso de desarrollo tecno-pedagógico, los principios que han guiado su diseño y producción, así como la descripción del resultado final. El resultado es el OET Teenpods, que trata sobre temáticas relacionadas con el enfoque del Desarrollo Positivo Adolescente (DPA) y los Objetivos de Desarrollo Sostenible (ODS). El estudio, cuestiona los límites de educación formal y superior, no formal e informal; reflexiona sobre la transversalidad y utilidad de la educación transmedia como estrategia para generar PEA que fomenten la formación autodirigida de los profesionales de la educación a través de su participación, agencia y empoderamiento; y proporciona directrices y orientaciones para generar prácticas y Recursos Educativos Abiertos (REA) de calidad en la era digital.

Palabras clave: educación superior, educación transmedia, formación permanente, investigación basada en el diseño, recursos educativos abiertos, trabajo interdisciplinario

Abstract

The aim of this article is to describe the interdisciplinary design and production process of an TEO, an example of an Open Educational Practice (OEP) designed and produced in a higher education context that contributes to the continuing training of education professionals with educational resources developed with educational and scientific quality criteria. The Design Based Research (DBR) methodology is employed to present the techno-pedagogical development process, along with the guiding principles that have influenced its design and production, and a description of the final outcome. The result is the TEO Teenpods, which addresses issues related to the Positive Youth Development (PYD) approach and the Sustainable Development Goals (SDGs). The study questions the boundaries between higher and formal, non-formal and informal education; reflects on the transversality and usefulness of transmedia education as a strategy to generate open educational practices that promote self-directed training of education professionals through their participation, agency, and empowerment; and provides guidelines and orientations to generate quality practices and Open Educational Resources (OER) in the digital era.

Keywords*: higher education, transmedia education, lifelong learning, design-based research, open educational resources, interdisciplinary work*

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1. INTRODUCCIÓN

En los últimos años el número de Prácticas Educativas Abiertas (PEA) se ha visto incrementado notablemente, hecho que pone de manifiesto el creciente interés por el desarrollo de recursos educativos abiertos y procesos de aprendizaje ubicuos. La democratización del consumo y generación de contenidos digitales en contextos educativos formales, no formales e informales fomenta que la adquisición de conocimientos pueda realizarse en cualquier momento y lugar (Zawacki-Richter et al., 2020). La gran disponibilidad de recursos, abiertos a distintos usuarios y colectivos sociales desde sus propios dispositivos digitales, expande las posibilidades de aprendizaje hacia esta lógica ubicua y abierta (Colomé, 2019; Hilton, 2020). Este escenario supone el reto de adquirir criterios para seleccionar -como usuario y curador de contenido- o generar -como creador de contenido- recursos educativos de calidad (Marimon-Martí et al., 2022; Siedel y Stylianides, 2018). La gran cantidad de información y de datos en Internet convierten en objeto de aprendizaje recursos que no han pasado por un proceso de validación o supervisión de personas que garanticen su calidad y rigor científico-técnico (Gordillo et al., 2018). Asimismo, a diferencia de usuarios que crean y comparten contenidos de forma independiente e informal, las instituciones educativas se empiezan a organizar formalmente para sistematizar PEA orientadas a promover la consecución de determinados objetivos de enseñanza y aprendizaje. Sin embargo, la institucionalización de estas PEA es aún escasa por los pocos recursos destinados a ellas y por la priorización de la labor docente e investigadora del profesorado (Marín y Villar-Onrubia, 2022).

Desde la educación superior, la puesta en marcha de PEA también supone nuevas oportunidades de aprendizaje como servicio público en la sociedad actual. Entre las distintas posibilidades, estas prácticas facilitan la formación permanente de profesionales al proporcionar recursos de ampliación, especialización y actualización de conocimientos respecto a la formación inicial (Cai, 2019; Fernández-Rodrigo et al., 2019). Aunque son pocas las experiencias detectadas en la literatura, los centros de educación superior ponen a la disposición de los usuarios distintos cursos virtuales abiertos, masivos, cuentas de redes sociales con contenido educativo, Recursos Educativos en Abierto (REA), entre otros (Colomé, 2019). Estos recursos y prácticas promueven procesos de formación permanente en medios virtuales, que se ven favorecidos por la interacción y la participación entre usuarios, la flexibilidad para aprender de forma ubicua y la libertad de selección de distintos recursos que definen itinerarios de aprendizaje personalizados (Madden y Hardré, 2016; Networked Learning Editorial Collective, 2020). En el marco de las ecologías de aprendizaje digitales, cualquier usuario puede autodirigir su proceso de formación a través de Internet navegando por la red, seleccionando e interactuando con la información (Louws et al., 2019; Sagitova, 2014) y sin que haya una figura formadora que guíe de forma directa e intencional (Morla-Folch, 2019).

Para el diseño tecno-pedagógico de PEA, la educación transmedia, entendida como un proceso formativo proactivo basado en el consumo y la producción de objetos educativos a través del uso de diferentes plataformas y medios de comunicación (Raybourn, 2013; Scolari et al., 2019), supone un marco interesante. Por un lado, abre la posibilidad de generar recursos educativos como los Objetos Educativos Transmedia (OET), entendidos como un conjunto de actividades y recursos digitales o analógicos que se utilizan con una finalidad educativa (Erta-Majó y Vaquero, 2023). Por otro lado, implican directamente a cualquier persona en su formación,

involucrándolo activamente en consumo, (co)producción y expansión (Mynard y McLoughlin, 2020; Raybourn, 2013), pues están diseñados para que los usuarios puedan complementarlos y ampliarlos (Pence, 2012). Finalmente, permite el desarrollo de PEA, en tiempo y recursos, de forma permanente y autodirigida, pues conlleva que la navegación pueda hacerse accediendo a una gran diversidad de tipologías de recursos y contenidos que se pueden ajustar a diferentes necesidades formativas de los usuarios.

El estudio presentado en este artículo se sitúa, entonces, dentro del marco de las PEA desarrolladas desde un contexto de educación superior para la formación permanente y considerando las potencialidades de la educación transmedia (González-Martínez et al., 2019). En este marco, la temática de la práctica se desarrolla para dar respuesta a una necesidad real detectada en el rol de profesionales de la educación: la formación sobre una visión positiva y no estigmatizante de los y las adolescentes, delante de una demanda social para su bienestar y desarrollo personal. La perspectiva del Desarrollo Positivo Adolescente (DPA) (Lerner et al., 2009) deviene la temática principal del OET en abierto a construir.

En este contexto y ante esta necesidad, el objetivo de este artículo es describir el proceso de diseño y producción tecno-pedagógica de un OET sobre la perspectiva del DPA para la formación permanente de profesionales de la educación. Los objetivos específicos que guiaron el proceso de diseño y la producción del OET fueron: a) determinar las necesidades pedagógicas y didácticas para la formación permanente y autónoma de los profesionales; b) elaborar el contenido formativo en base a conocimiento científico-técnico emergente vinculado con el DPA; c) construir el OET considerando medios y herramientas digitales para la generación de recursos abiertos de calidad.

Bajo el enfoque metodológico de la Investigación Basada en el Diseño y con un equipo de trabajo interdisciplinario, se presenta el proceso de desarrollo científico-técnico, los principios que han guiado su diseño y producción, así como la descripción del resultado final: un OET ejemplo de una PEA diseñado y producido desde un contexto de educación superior que contribuye a la formación permanente de profesionales de la educación con recursos educativos desarrollados con criterios de calidad educativa y científica.

2. MÉTODO

El proyecto se orientó metodológicamente desde la Investigación Basada en el Diseño (IBD) al ser una estrategia que puede emplearse en procesos de diseño, producción e innovación educativa (De Benito y Salinas, 2016), y desde la cual se pueden abordar problemas complejos en contextos educativos reales a través del trabajo colaborativo e interdisciplinar, con el objetivo de elaborar soluciones innovadoras con las tecnologías digitales (Amiel y Reeves, 2008). Bajo esta metodología se siguió un proceso iterativo con la finalidad de producir un OET a partir de principios de diseño siguiendo las fases de Amiel y Reeves (2008): a) Análisis de problemas prácticos por expertos de forma colaborativa; b) Desarrollo de soluciones informadas por los principios de diseño existentes; c) Ciclos iterativos de prueba y perfeccionamiento de soluciones en la práctica; d) Reflexión para producir "Principios de diseño" y mejorar la implementación de la solución.

2.1. Participantes

Se conformó un equipo interdisciplinario experto en temáticas relacionadas con la adolescencia, que provinieran de distintas áreas de las ciencias sociales y de la educación: magisterio, pedagogía, derecho, psicología y comunicación. La finalidad de la interdisciplinariedad fue consolidar un equipo con distintas competencias y sensibilidades docentes que pudieran dar respuesta a las necesidades formativas de los profesionales de la educación sobre la perspectiva del DPA.

Un total de 12 participantes estuvieron involucrados en el proyecto con roles complementarios, como se muestra en la Tabla 1. Los participantes aceptaron formar parte del equipo con el reconocimiento de su autoría en la producción y publicación de los distintos recursos digitales que conformaran el OET.

Tabla 1

Perfil, rol y número de participantes del equipo de trabajo

Perfil de participantes	Rol	N.º
Investigadores/a (I)	Gestionan el estudio, coordinan el proyecto y son autores/as de este artículo.	3
Docentes (D)	Son docentes universitarios expertos en una temática relacionada con el DPA. De ellos: 7 son docentes e investigadores; 4 son docentes y profesionales que trabajan en una institución con adolescentes.	11
Técnico/a audiovisual (T)	Proporcionan soporte tecnológico elaborando y gestionando herramientas y recursos transmedia.	2
Total		**12**

2.2. Instrumentos y estrategias

Para elaborar el diseño tecno-pedagógico del OET, se empleó el Modelo TPACK (Koehler y Mishra, 2009) como instrumento y base conceptual que permite una guía para el análisis, diseño y evaluación de propuestas educativas de calidad mediante medios tecnológicos (Polly y Byker, 2020). Las acciones realizadas por el equipo interdisciplinario se conformaron considerando estratégicamente los elementos del Modelo de forma interrelacionada:

a) **Contenido:** Los Docentes establecen "qué" se pretende aprender a través de los recursos digitales para transferir el conocimiento sobre el DPA a los profesionales de la educación.

b) **Tecnología:** Los Técnicos audiovisuales se coordinan con los Docentes para elaborar los soportes digitales en consonancia con los contenidos sobre el DPA y con los Investigadores para adaptarse a los procesos pedagógicos del OET.

c) **Pedagogía:** Los Investigadores, y coordinadores del proyecto, realizan la investigación para determinar los procesos de enseñanza y aprendizaje a través del OET.

Con la finalidad de garantizar la interrelación entre el contenido, la tecnología y la pedagogía del OET, se realizaron reuniones de discusión y de consenso y encuentros de trabajo entre miembros de distintos perfiles para ir diseñando y produciendo el OET mediante un proceso de trabajo cíclico e iterativo acorde con el diseño metodológico.

2.3. Procedimiento

El procedimiento para diseñar y producir el OET se describe considerando las fases de la IBD (Amiel y Reeves, 2008):

a) **Análisis de problemas prácticos por expertos de forma colaborativa.** El contenido de aprendizaje del OET fue establecido por Docentes e Investigadores pretendiendo dar respuesta a problemas y necesidades pedagógicas, éticas y de responsabilidad social que son de interés para profesionales que trabajan con adolescentes. Se identificaron por consenso 11 temas pedagógicos emergentes (Tabla 2) que cumplieran con los siguientes criterios: los Docentes son expertos, las temáticas se relacionan con metas de los Objetivos de Desarrollo Sostenible (ODS) y las temáticas se vinculan con competencias del modelo de Desarrollo Positivo Adolescente propuesto por Oliva et al. (2010).

Tabla 2

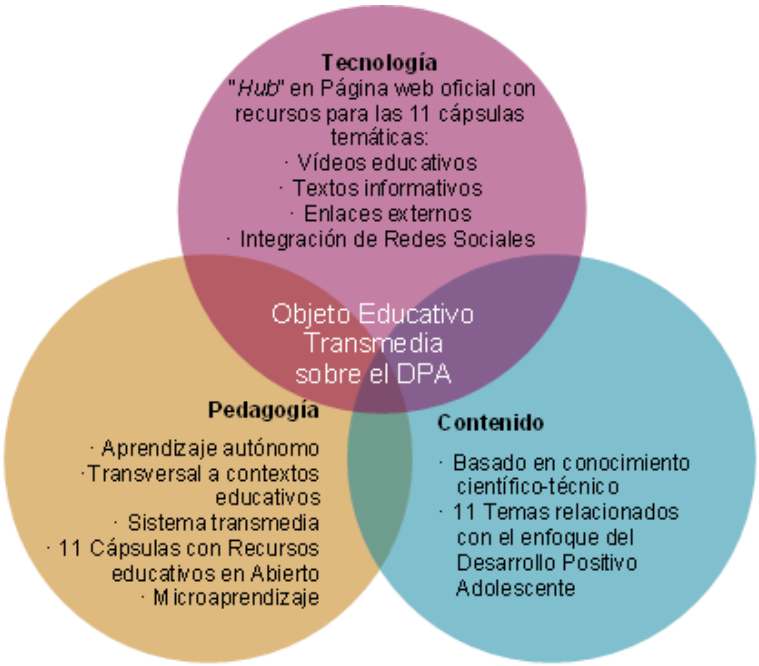
Tema y vinculación con metas de los ODS y competencias del Modelo del DPA de Oliva et al. (2010)

Tema	Metas de los ODS	Competencias del modelo del DPA
1. Enfoque de derechos de la infancia	13.3. Fomentar el estado de derecho y garantizar la igualdad de acceso a la justicia.	Justicia, responsabilidad social
2. Perspectiva de género y prevención de la violencia	5.2. Eliminar todas las formas de violencia contra las mujeres.	Igualdad de género, respeto a la diversidad
3. Matrimonios forzados	5.3. Eliminar todas las prácticas nocivas contra las mujeres.	Justicia, igualdad de género
4. Participación comunitaria	4.7. Educar para el desarrollo sostenible y la ciudadanía global.	Compromiso social, prosocialidad
5. Uso positivo de las tecnologías digitales	4.4. Mejorar las competencias de jóvenes y adultos para la vida profesional y académica.	Habilidades comunicativas
6. Jóvenes extutelados	1.3. Fomentar la resiliencia de personas en situaciones vulnerables.	Empatía, reconocimiento y manejo de las emociones
7. Parentalidad Positiva	16.2. Poner fin al maltrato infantil.	Habilidades relacionales
8. Jóvenes en acogimiento	1.4. Garantizar que las personas más vulnerables tienen acceso a servicios básicos.	Prosocialidad, empatía
9. Enfoque de Resiliencia Académica (ERA)	4.5. Eliminar la discriminación en la educación.	Capacidad para tomar decisiones, manejo de emociones
10. Cine como herramienta para aprender el DPA	4.7. Asegurar que el alumnado tiene conocimiento para estilos de vida y la ciudadanía global.	Creatividad, capacidad de análisis crítico
11. Salud mental	3.4. Promover la salud mental y el bienestar.	Autoestima, autoconcepto, autonomía

b) ***Desarrollo de soluciones informadas por los principios de diseño existentes.*** Los Técnicos audiovisuales e Investigadores se coordinaron para desarrollar soluciones tecnológicas y pedagógicas con la finalidad de transferir el conocimiento de las 11 temáticas a profesionales de la educación a través de un OET. Se tuvo en cuenta la revisión de la literatura que se presenta en el marco teórico del artículo y el Modelo TPACK, para establecer las bases del diseño tecno-pedagógico del OET (Figura 1).

Figura 1

Bases del diseño tecno-pedagógico del OET siguiendo el Modelo TPACK (Koehler y Mishra, 2009).



- **Pedagogía:** Se partió del concepto de cápsulas virtuales con la finalidad de ofrecer una cápsula transmedia para cada una de las once temáticas relacionadas con el DPA (Vidal et al., 2019). Dichas cápsulas se pensaron a forma de once "contenedores" de recursos educativos multimedia con los que el usuario pudiera interaccionar de forma abierta y libre, sin restricciones, siguiendo las características del Microaprendizaje (Jomah et al., 2016). En su conjunto, sería un OET.

- **Tecnología:** El contenido escrito fue revisado por el personal técnico y audiovisual con la finalidad de adecuar el contenido a las herramientas tecnológicas disponibles para elaborar las once cápsulas. El equipo de trabajo consensuó las herramientas y plataformas para elaborar los recursos educativos en cada cápsula. Se consideraron las indicaciones de Fleming (2011), Mangione et al. (2011) y de Gorgel Pinto (2017) en la selección de herramientas y plataformas para desarrollar recursos educativos digitales de calidad (Tabla 3).

Tabla 3

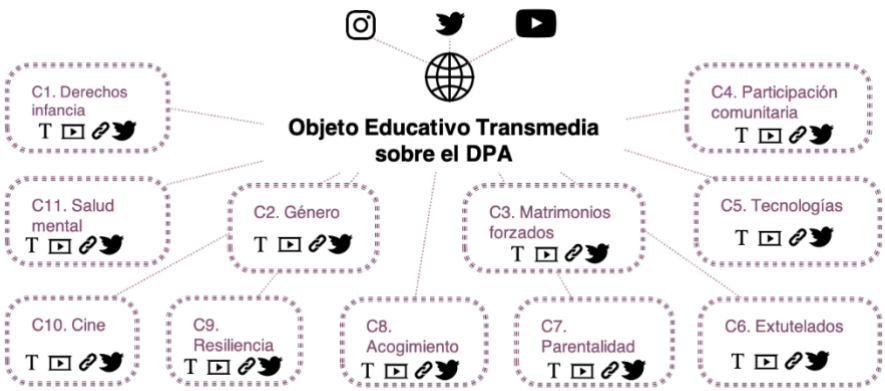
Herramientas y plataformas seleccionadas

Herramientas multimedia	Objetivo educativo y comunicativo
Textos informativos	Introducir, describir el objetivo y la ficha técnica e información.
Vídeo educativo	Explicar, por el autor/a, el contenido de conocimiento fundamental de la cápsula de un modo audiovisual.
Enlaces a recursos externos	Facilitar otros recursos educativos abiertos en cualquier formato y medio relacionados con la temática.
Enlaces a redes sociales	Proporcionar acceso directo a redes sociales para promover la participación del usuario con la expansión narrativa del contenido.
Plataformas digitales	**Objetivo educativo y comunicativo**
Instagram	Proporcionar recursos visuales de forma abierta, hacer difusión y promover la respuesta de los usuarios.
YouTube	Proporcionar los vídeos de forma abierta y facilitar la respuesta de la audiencia.
Twitter	Hacer difusión de los recursos y promover la comunicación con y entre los usuarios.
Página web	Ofrecer un entorno que contenga todas las cápsulas de forma organizada y simplifique la navegación transmedia ("*hub*").

Para la producción del OET, el contenido de aprendizaje fue adaptado a los medios tecnológicos y estrategias pedagógicas. Cada Docente escribió el contenido de su temática en un documento que fue revisado por los Investigadores y facilitado a los Técnicos audiovisuales para sus posteriores adaptaciones a los medios tecnológicos. El contenido de aprendizaje del OET se basa en el conocimiento científico-técnico y ha sido consensuado por el equipo interdisciplinar. La Figura 2 representa gráficamente la estructura que tiene el OET en relación con las 11 Cápsulas y los recursos digitales.

Figura 2

Estructura del OET con herramientas multimedia y plataformas digitales



c) ***Ciclos iterativos de prueba y perfeccionamiento.*** La producción del OET siguió los siguientes pasos para su prueba y perfeccionamiento: 1) Cápsula piloto. Los Técnicos elaboraron una primera producción de los once vídeos educativos, así como el montaje de la primera cápsula transmedia con todos los recursos, en forma de cápsula piloto; 2)

Validación. Se realizó un encuentro con todo el equipo de trabajo, en el cual se realizó una validación cualitativa del contenido digital de cada cápsula, proponiendo elementos de mejora y perfeccionamiento; 3) Perfeccionamiento. Se corrigieron los aspectos a mejorar definidos por el equipo de trabajo y se acabaron de producir todas las cápsulas considerando los mismos; 4) Publicación. Se estableció un título al OET con la finalidad de personalizar el proyecto y hacerlo distintivo antes de su publicación. El equipo de trabajo acordó nombrar a cada cápsula como *Teenpod*, de modo que el OET se publicó a través de los distintos canales dando lugar a once Teenpods.

d) ***Principios de diseño.*** Siguiendo las fases de la IBD (Amiel y Reeves, 2008; de Benito y Salinas, 2016), el proceso de elaboración OET ha permitido definir unos principios en forma de Decálogo para el diseño y producción de Objetos Educativos Transmedia. Aunque el decálogo se proponga para la transferencia del conocimiento de temáticas pedagógicas hacia profesionales de la educación, estos principios también pueden ser útiles para orientar la construcción de OET en otros ámbitos de conocimiento:

1. Considerar las potencialidades de los recursos educativos abiertos y el Microaprendizaje.
2. Trabajar de forma colaborativa con un equipo de trabajo interdisciplinario, considerando a todos los potenciales participantes y público objetivo.
3. Identificar las necesidades educativas de los destinatarios.
4. Transformar las necesidades educativas en objetivos de aprendizaje.
5. Seleccionar el contenido de aprendizaje considerando temáticas emergentes.
6. Acordar una metodología o enfoque pedagógico, como marco del diseño del OET.
7. Definir las herramientas tecnológicas más adecuadas al contenido de aprendizaje.
8. Desarrollar ciclos de validación de los recursos transmedia de aprendizaje generados.
9. Diseñar un entorno virtual para albergar e interrelacionar todos los recursos educativos transmedia de forma organizada.
10. Facilitar los mecanismos para la difusión y reconocimiento de la participación e interacción de los usuarios.

3. RESULTADOS

El resultado de este proyecto es un OET estructurado en once cápsulas independientes, pero con recursos interrelacionados, que tratan temas relacionados con la educación y el bienestar de los adolescentes desde la perspectiva del DPA. El objeto se denomina Teenpods, palabra formada por los términos en inglés *pod*, que recoge el espíritu de este proyecto por resumir los contenidos en formatos breves y de fácil comprensión, y también el término *teen*, referido a los adolescentes (Figura 3).

Figura 3

Imagotipo de los Teenpods

Actualmente el OET está alojado en el servidor de la Cátedra Educación y Adolescencia Abel Martínez Oliva de la UdL con su propia página web (http://www.educacioiadolescencia.udl.cat). La página web consta de una página de inicio que presenta el proyecto y da paso a las once páginas principales de las cápsulas.

Cada Teenpods ha sido diseñado para albergar varios recursos interrelacionados de su propia temática, que pueden ser consumidos de forma aislada o conjunta. Hasta el momento encontramos los siguientes recursos en cada uno:

a) Introducción: Breve texto que describe la temática de la cápsula e invita a los usuarios a explorarla.

b) Interrogantes: Preguntas sobre la temática que se resuelven en el vídeo y en los recursos externos facilitados.

c) Recursos externos: Son Recursos Educativos en Abierto (REA) que provienen de otras fuentes de información.

d) Referencias: Contiene las publicaciones empleadas por los autores de las cápsulas en el establecimiento del contenido de aprendizaje.

e) Cómo citar: Se facilita a los usuarios la cita de cada cápsula para poder compartir el contenido mencionando a los autores/as. El OET está bajo licencia *Creative Commons (CC)* de reconocimiento, no comercial, compartir igual, permitiendo la generación de nuevo conocimiento, reutilización y remezcla siempre que se cite correctamente a los/as autores/as y no se haga con fines de lucro.

f) Información del/la autor/a: Se muestra una fotografía del/a autor/a, así como su ficha técnica con datos profesionales y enlaces a sus perfiles de redes sociales.

g) Vídeo educativo temático: Vídeo con finalidad didáctica que presenta de forma sistemática y con una profundidad adecuada los distintos apartados del tema de la cápsula (Marqués, 1999). El vídeo está albergado en el canal de YouTube de la Cátedra Educación y Adolescencia.

h) Enlace a redes sociales: Se fomenta, con llamada a la acción (*Call To Action, CTA*), que los usuarios compartan los recursos para su participación y difusión del contenido. Se fomenta el rol activo, en concreto, compartiendo el contenido junto la etiqueta "#TeenpodsCEA" en las plataformas YouTube, Twitter e Instagram.

i) Seguimiento de etiquetas (hashtags): Se dispone un espacio donde se incrusta el seguimiento de la etiqueta #TeenpodsCEA. Se pretende recoger de forma controlada la participación y colaboración de los usuarios a través de sus aportaciones en las redes.

j) Espacio de discusión: sección de comentarios donde los usuarios pueden compartir sus ideas acerca del contenido en formato textual en la misma página web.

Figura 4

Página de inicio del OET Teenpods en la página web. Fuente: Cátedra Educación y Adolescencia (2022)

4. DISCUSIÓN Y CONCLUSIONES

Este artículo aporta una experiencia sobre el proceso de diseño y producción tecno-pedagógica de objetos educativos transmedia, bajo un proceso de investigación y desarrollo científico, como ejemplo de PEA desarrollada y promovida desde la educación superior.

El OET resultante se considera como PEA, dado que se compone de distintos REA, que tienen como propósito proveer el acceso abierto a recursos digitales educativos, disponibles en línea a cualquier usuario a nivel mundial (Colomé, 2019). De acuerdo con los REA, los Teenpods son de acceso abierto sin uso comercial. Están diseñados para ser utilizados de forma autónoma en procesos educativos informales para la formación permanente y autodirigida, como en entornos personales de aprendizaje (Dabbagh y Castañeda, 2020). Asimismo, pueden emplearse como recursos facilitados por una figura docente en contextos educativos formales y no formales para profesionales de la educación, de forma presencial, en entornos *e-learning* o *b-learning* (Colomé, 2019). El OET -empleado en cualquier contexto educativo formal, no formal e informal- invita a los usuarios a (co)producir y (re)utilizar, a partir de dichos recursos, nuevos contenidos y procesos de aprendizaje a través de infraestructuras (educativas) más abiertas (Marín y Villar-Onrubia, 2022; Villar-Onrubia y Marín, 2022). En este sentido, el OET está diseñado en base a modelos pedagógicos que fomentan la participación, agencia y empoderamiento de los destinatarios (Andrade et al., 2011) en cualquier marco ecológico de aprendizaje (Morla-Folch, 2019).

El proceso de diseño descrito en el artículo proporciona directrices y orientaciones para generar prácticas y recursos educativos abiertos de calidad. Bajo el enfoque metodológico de la IBD con un equipo de trabajo interdisciplinario, son distintas las competencias que se han tenido que articular e interrelacionar: competencias relacionadas con el mismo contenido de aprendizaje, así como competencias pedagógicas, tecnológicas y transmedia (Esteve-Mon et al., 2021; Mangione et al., 2011; Scolari et al., 2020). Las tareas de coordinación, colaboración y comunicación entre los miembros del equipo de trabajo interdisciplinario se remarcan como acciones imprescindibles para facilitar el consenso y toma de decisiones, que han servido para resolver situaciones de dificultad y conflicto durante proceso de IBD del OET. Entre los principales problemas se detectó la necesidad de homogeneizar visual y gráficamente los distintos recursos que integran el OET, así como la síntesis de los contenidos en aquellos recursos audiovisuales.

El proceso de producción del OET que se describe en este estudio destaca por el trabajo interdisciplinario entre tres perfiles de expertos con distintos roles, que se basan en el Modelo TPACK (Koehler y Mishra, 2009): a) El rol Docente, que trata de establecer el contenido de aprendizaje; b) El rol Técnico audiovisual, que trata de proporcionar el contenido a través de los medios tecnológicos más adecuados; c) El rol Coordinador pedagógico, que se preocupa de la cohesión pedagógica de toda la propuesta y de que se cumplan los objetivos educativos considerando las necesidades de los usuarios. Esta conjunción de roles ha permitido, por un lado, desarrollar el OET Teenpods de acuerdo con la finalidad de promover el aprendizaje autónomo de forma holística y contribuir en la formación permanente de profesionales de la educación. Por otro lado, ha permitido proporcionar directrices para el diseño y producción de OET en cualquier ámbito de conocimiento, generando el Decálogo de principios para el diseño y producción de Objetos Educativos Transmedia; aunque la temática del OET esté relacionada con el Desarrollo Positivo Adolescente.

El diseño y producción del OET, entendido como resultado principal del estudio, pretende dar respuesta al reto educativo y social de promover el DPA mediante recursos de aprendizaje digitales de calidad. Los Teenpods contribuyen a solucionar necesidades de autoformación permanente de profesionales de la educación, considerando temas emergentes basados en

conocimiento científico-técnico y adaptándose a las nuevas maneras de aprender en la era digital. El OET resultante cumple con las características inherentes al término "transmedia" (Freire, 2020): a) Convergencia de Medios (*Media Convergence*) (Jenkins, 2006); b) Produtilización (*Produsage*) (Bruns, 2008); y c) Expansión colaborativa del conocimiento (*Collective Inteligence)* (Jenkins, 2008). En esta línea, se prevé continuar con el desarrollo y la expansión, que han sido diseñados estratégicamente para fomentar la participación, interacción y el aprendizaje colaborativo entre los usuarios.

Las acciones futuras de implementación y evaluación del OET resultante contemplan: a) la promoción y difusión del OET mediante redes sociales; b) el análisis del uso e impacto del OET en los usuarios y la generación de nuevo conocimiento de forma libre y abierta; c) la ampliación de contenidos de las cápsulas ya elaboradas, produciendo nuevos recursos interdependientes seleccionando los medios que mejor se adapten a cada temática; d) el aumento de cápsulas que engloba el OET dentro del marco del DPA; y e) el desarrollo de procesos de validación y evaluación cuantitativa y cualitativa considerando la participación de los usuarios. En este aspecto se focaliza la principal limitación de este estudio, pues no se ha realizado una validación externa e independiente de cada recurso diseñado y producido. El proceso de validación se realizó internamente a través de reuniones de discusión y consenso entre los miembros del equipo de trabajo, a través de las cuales se acordó el contenido y se propuso cambios de mejora.

Futuros proyectos tendrán como finalidad analizar y evaluar en profundidad el impacto de las prácticas educativas que se promueven, indagando cómo se emplean para la formación permanente de los profesionales de la educación, y bajo qué criterios y condiciones se seleccionan los recursos, adquieren conocimientos y producen aprendizajes. En este sentido, se propone indagar en cómo se desarrolla la expansión colectiva del contenido y se produce el aprendizaje transmedia. Los principios y criterios para evaluar la calidad de las propuestas transmedia (Gordillo et al., 2018; Jenkins, 2010) consideran la perspectiva de los usuarios para comprobar en qué medida se contribuye en el desarrollo profesional sobre la temática del OET, siendo esta una cuestión estrechamente vinculada con el concepto de PEA.

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Special issue: Open Educational Practices in Higher Education

Community, Fellowship, Openness: Supporting Early Career Researchers through Open Educational Practices

Comunidad, Becas, Apertura: Apoyando Investigadores Junior a través de Prácticas Educativas Abiertas

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Abstract

Open communities are an increasingly common feature of educational spaces. This article summarises the experience of a fellowship scheme for early career researchers in open education supported by The Global OER Graduate Network (GO-GN), an international network to support doctoral candidates. Nine fellows over a three-year period were supported to conduct six-month personal projects to facilitate their academic career development post-doctoral studies. The fellowship scheme was structured into three, annual cohorts between 2020 and 2022.

Results from qualitative surveys and interviews indicate a positive and meaningful impact of the scheme. A key aspect of this type of initiative is the support given by more experienced academics and peer fellows. The fellowship scheme enabled the sharing of research among other PhD students and early career researchers through regular webinars and to broader audiences at internationally recognised conferences.

The results of this paper are of potential interest to those supporting doctoral researchers and organisations interested in running similar fellowships or other support schemes for doctoral researchers or other stakeholder groups.

Keywords: *fellowship, early career, open education, open educational practices*

Resumen

Las comunidades abiertas son un cada vez más comunes en espacios educativos. Este artículo resume la experiencia de un esquema de becas para investigadores junior en educación abierta respaldado por La Red Global de Estudiantes de Doctorado en Educación Abierta (GO-GN), una red internacional que apoya a candidatos doctorales. Nueve becados durante un período de tres años recibieron apoyo para realizar proyectos individuales de seis meses para facilitar sus estudios posdoctorales para el desarrollo de su carrera académica. El esquema de becas se estructuró en tres cohortes anuales entre 2020 y 2022.

Los resultados de las encuestas cualitativas y entrevistas indican un impacto positivo y significativo del plan. Los aspectos clave de estas iniciativas son el apoyo brindado por académicos y colegas más experimentados. El esquema de becas permitió compartir la investigación entre otros estudiantes doctorales e investigadores junior a través de seminarios web y con una audiencia más amplia en conferencias reconocidas internacionalmente.

Los resultados de este artículo son de interés potencial para aquellos que apoyan a los investigadores doctorales y a las organizaciones interesadas en administrar becas similares u otros esquemas de apoyo para investigadores doctorales u otros grupos interesados.

Palabras clave: *becas, investigadores junior, educación abierta, prácticas educativas abiertas*

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1 INTRODUCTION

In the context of education, free and open exchange increases access to knowledge for everyone, everywhere, at any time (Bozkurt, 2019). Open education aims to make it easier for learners to access knowledge. This can be achieved by providing open educational resources (OER) (Marín & Villar-Onrubia, 2022), online platforms, and services to connect communities of learners and educators. Bozkurt et al. (2019) found in their review of trends that openness can be understood as a cluster of related concepts (e.g. open education; open learning; OER; open educational practices (OEP)) where there is increasing interest. Bozkurt and Zawacki-Richter (2021) similarly found that open approaches have provided distance learning institutions with fresh purpose.

OEP can take many forms and shapes. The diversity of OEP can be understood as a strength but also entails that approaches can be diffuse and contextual. Some (e.g. Beetham et al. 2012) have described OEP as arising from the use of OER. Such practices consolidate scholarly and practical practices around OER, using them as a focal point to facilitate innovation and collaboration in learning, teaching and research beyond traditional academic boundaries (Hegarty, 2015). Increasingly, however, such open approaches seem to be broadened to include wider goals such as social justice and the expression of inclusive values (Lambert, 2018; Bali et al., 2020). OEP thus increasingly represent a move away from open content creation only to a more diverse open practice approach, which includes (but is not limited to) collaboration, design, teaching and research in openness (Bossu & Stagg, 2018; Cronin, 2018; Ehlers, 2011; Pulker & Kukulska-Hulme, 2020).

In this paper, we explore a fellowship scheme for early career researchers in open education as an example of OEP. This fellowship scheme is one of the activities supported by GO-GN. The Global OER Graduate Network (GO-GN, n.d.) is a network of doctoral candidates around the world whose research projects include a focus on open education, including OER and OEP. GO-GN started in 2013 and is funded by The Hewlett Foundation and managed by The OER Hub (a team of open education researchers) based at The Open University (UK). GO-GN currently has 145 members and alumni, with 29% of the membership based in the Global South (Weller et al. 2022). Doctoral researchers are at the core of the network; around them, experts, supervisors, mentors and interested parties connect to form a community of practice.

The GO-GN network organises and funds an annual face-to-face workshop and offers regular webinars and online events to members and the broad open education community. These activities help to showcase members' research and to provide a supportive and collegial environment for students. In addition to the events, GO-GN also produces resources and publications to support members' research in open education, including a *Research Methods Handbook* (Farrow et al., 2020); *Conceptual Frameworks Guide* (Farrow et al., 2021) and *Equity, Diversity and Inclusion in Open Education* (Bossu et al., 2023). While there are similar doctoral networks, such as the Open Research Fellows (OpenEdGroup, n.d.) and the Global Doctoral Consortium (ICDE, n.d.), GO-GN is the only example to foreground openness in practice as a core feature of the network. Respectful sharing and mutual support are encouraged within the GO-GN network, and members are encouraged to explore different forms and values associated with open practice.

While GO-GN was initially created to support doctoral students during their PhD studies, recent developments led the network to offer opportunities for those who were in transition from being a student to becoming professionals, including academics, researchers, and practitioners. This transition can bring frustration, uncertainty and insecurities to former doctoral students, as some see themselves in unstable professional circumstances, such as temporary, and part-time contracts (Ackers & Gill, 2005). The GO-GN fellowship scheme was therefore designed to assist former doctoral students who have previously engaged with the network to expand their research through activities that would benefit their careers. Nine fellows over a three-year period were supported to conduct six-month personal projects in open education to facilitate their academic career development post-doctoral studies. Here, we also present results from qualitative surveys and interviews with former fellows, which revealed the different ways in which they were supported. We also reflect on lessons learnt from running the fellowship scheme and what improvements were made to the scheme during the three-year duration.

The discussions in this paper can be of interest to those supporting similar OEP communities, including doctoral, postdoctoral and early-career researchers. We also framed the discussions using the OpenEdu framework (Inamorato dos Santos et al., 2016), which is a framework created to support higher education institutions and decision-makers to make informed decisions regarding open education and OEP. In the present paper, we employ the OpenEdu framework to propose design implications for similar OEP initiatives and future fellowship schemes.

2 BACKGROUND

The transition from doctoral to postdoctoral roles can add stress and uncertainty to early career researchers (Castellacci & Viñas-Bardolet, 2021). A number of challenges are reported for early career researchers, who are academics at the beginning of their careers. One of the challenges they face is that some take roles that do not reflect their research expertise and related experiences. Another challenge is that some are expected to work overtime for little or no paid hours (Allmer, 2018). Gender inequality seems also to be an issue amongst newly graduated academics because of differences in salaries and responsibilities (Casad et al., 2021). These challenges have been aggravated by the Covid-19 pandemic and its impact on Higher Education and its institutions as jobs are scarce and workloads are high (Kim & Patterson, 2022).

Evidence from studies like Fontinha et al. (2018) where authors surveyed data from 510 academics and researchers working in eight UK Universities confirmed the significant differences between permanent and temporary workers regarding tenure. Passaretta et al. (2019) examined the mid-term occupational outcomes of two cohorts of PhDs who graduated in Italy, showing that academic reforms and economic crisis coincide with decreasing employment in academia and increasing chances of having part-time contracts, being employed abroad and working in research-related occupations outside academia.

Given this context and challenges, focusing on facilitating programmes that can ease the jump from PhD to a post-doctoral position as a researcher or lecturer may be key. This appears to be the case in medicine (Beaulieu et al., 2022; Searle et al., 2006), for example, and could be extended to other disciplines including open education. In doing so, such schemes have the potential to:

1. Increase the research networks of those involved in fellowship programmes.
2. Facilitate the publication of joint research articles and submission of bids for funding.
3. Enable post-doctoral researchers to assume principal investigator roles.

The GO-GN fellowship scheme is not the only fellowship of this kind available, other open education schemes were created to support those engaging with open educational practices and related initiatives. For example, the Open Education Influencers (n.d.) at Nelson Mandela University recruit open education community voluntary mentors to support colleagues and activities within the institution itself. The annual OER Research Fellowships, managed by the OER Research Group (OpenEdGroup, n.d.), focus on increasing the range of research into the impact of OER and provision of mentorship for a broad range of successful applicants including faculty and doctoral researchers. The North West University OERs Fellowship was an opportunity for interested university staff to include new openly licensed online resources in their classes to receive support and funding for creating or adapting open learning content as well as researching the process (Olivier et al., 2022).

Although the initiatives above support practitioners to get involved in open education (research and development) and also provide opportunities to build communities of practice around open practices, the GO-GN fellowship scheme seems to be the only one that specifically focuses on supporting, including financially, early career researchers working on open education during their post-doctorate years. This also means that the findings of this research is of great significance and makes a contribution to the existing body of knowledge in open education.

3 METHOD

The GO-GN Fellowship scheme launched in 2020 and ran over a three-year duration (2020-2022) (Iniesto et al, 2022). GO-GN conducts an annual evaluation survey where a recurrent claim from members is to provide more support for those finishing their doctoral studies through to becoming alumni (Weller et al., 2022). The motivation for the fellowship scheme, therefore, was to provide support for, and formal recognition of, members after they have formally finished their doctoral studies. The Fellowship scheme provides visibility and a way for alumni to share their expertise openly in the network and beyond.

The scheme aimed to encourage and recognise mentoring, content production, and network activity for alumni. Therefore, the scheme intended to foster connections to other networks, promote GO-GN at strategic events and promote GO-GN equity, diversity, and inclusion guidelines (Bossu et al., 2023). Reflective of the GO-GN network's overall strategy to increase awareness and membership in the Global South, fellowships also focused on specific regions or countries, amplifying local knowledge and connections while increasing the prominence of the network. In this sense, the scheme expanded on what has worked well previously in recruiting researchers to collaborate with GO-GN, providing a means to keep alumni involved and recognise their work.

Initially, the scheme launch had to be delayed and reorganised due to the Covid-19 pandemic, to acknowledge that travelling for network promotion and face-to-face research could be limited. Consequently, suggested activities fellows could submit proposals for included:

- Undertaking a piece of targeted OER/OEP-related research.
- Producing an overview of OER activity in a region.
- Strategic events identification, fostering connections to other networks and promotion of GO-GN.
- Recruitment of new GO-GN members.

Support was provided for successful fellowship proposals in a number of ways. First, through a financial stipend to support fellowship activities. Second, via promotion of fellowship activities through the GO-GN website and social media. Third, regular check-in points were offered to fellows with the programme leader and team to discuss progress and see if any support was needed. In addition, all fellows presented their research proposals online at "fellows research special" sessions, which were regular GO-GN webinar slots dedicated to the scheme. All cohorts participated in a discussion panel to reflect on their experiences (GO-GN, n.d.). The first cohort presented the results of their fellowship projects at OER21xDomains conference, the second at OE Global 2021 and the third at OER22 where GO-GN were conference co-chairs. Those who were able to attend and present their work at these conferences received financial support from GO-GN by having their registrations covered. Fellows were requested to provide three blog posts for the GO-GN website and the production of an output review report at the end of the fellowship.

3.1 Sample

The fellowship scheme was a competitive process open to GO-GN alumni (within three years after completing their doctorate) to apply. The application form, reviewed by the GO-GN team, focused on two main areas:

1. Postdoctoral background. The applicant should detail research after the doctorate, networks, and research groups they have collaborated with, current role and connection with networks to expand GO-GN.
2. Fellowship. Provision of a summary of the fellowship idea, the main actions to prioritise during the fellowship, a timeline with those actions and a preliminary budget.

For the 2020 call for participation, there were five applicants, four in 2021 and three in 2022. Applicants selected were invited to an interview with the team. There were four fellows selected in the 2020 cohort, two in 2021 and three in 2022. Selected fellows were from different parts of the globe, including Africa (Kenya), North (Canada x2) and South America (Brazil and Uruguay), Europe (The UK and Ireland) and Oceania (Australia x2). One-third of the total fellows were from the Global South as made explicit in the call.

The fellows' research proposals - all of which focus on some aspect of openness in education - exemplified the range of schemes, with most of them being proposals displaying continuity with themes, conceptual frameworks and methods used in their doctoral research. Other approaches were also proposed, for example, developing OER outputs through community co-creation, and the initiation of an open knowledge network. A detailed overview of each of the GO-GN fellows' experiences can be found in Iniesto et al (2022).

3.2 Research method

All nine fellows and the GO-GN team attended a kick-off, a midterm, and an end-of-fellowship meeting. A feedback survey was completed as part of the midterm and end-of-fellowship meetings. Surveys were completed by fellows a few days before the meeting so the GO-GN team could prepare for the session. In all meetings at least two members of the team were present.

In both qualitative surveys, fellows were asked to identify "achievements", "risks", "impact", "support needed from GO-GN" and "lessons learnt". In the final survey, extra questions were included to prompt "dissemination" and "next steps after the fellowship". At the end of the scheme, during July, August and September 2022, fellows were invited to participate in a 30-minute interview which covered two main topics: "the fellowship experience" and "their views as GO-GN members". The first topic, which is of interest to this research, covered the following questions:

1. What worked well during your fellowship? What could have been improved?
2. What was the biggest takeaway from your fellowship?
3. Were there any challenges? How did you overcome these?
4. How did GO-GN support you during the fellowship?
5. Has having a GO-GN fellowship benefitted you and your work in any way?
6. What advice would you give to anyone considering a GO-GN fellowship?

All fellows signed a consent form to use their data for research purposes. Thematic analysis was the approach used to analyse data gathered through open questions (Gavin, 2008).

4 RESULTS

Data from the mid-term survey, final survey and interview were anonymised, following Braun and Clarke (2019). The thematic analysis process involved a deductive approach where themes were identified and clustered manually. The first two authors reviewed potential themes using references and frequencies. Finally, the themes were compared with the original data to see if they were appropriate for interpretation. The four key themes identified in the analysis were:

1. Risks and challenges. These involve all the problems identified by the fellows to design and carry over their proposal.
2. Learning process. This theme includes all the reflections on what and how fellows have learnt during their fellowship.
3. Impact and career development. Publications, sharing, public engagement and career development from the fellows during the fellowship and their future plans.
4. Support. Reflections on the help and guidance provided by the team, other fellows, and members of the open community.

The following subsections detail the four key themes with quotes. (Names from fellows have been anonymised considering their low number and potential identification.)

4.1 Risks and challenges

When analysing the data from both surveys and the interviews, it was clear that one of the risks considered by fellows was related to uncertainties brought about by the Covid-19 pandemic:

> *"I think the main risks were in the possibility of conducting the interviews. It took me a lot of work and required a lot of persistence to do them, and the teachers attended the interviews during their working hours at the school."* (Midterm survey)

The pandemic seems to have affected their research, including complexities in finding participants but ultimately, they received good feedback from those involved considering the complex context:

> *"Amazing engagement with the current rhetoric around pedagogy and student engagement in culturally charged issues. I'm finding many students appreciate the design and interactions they afford."* (Final survey)

> *"It was done during the pandemic when everyone was busy, so that was a challenge, everyone who was involved said that it was an oasis of happiness during these difficult times."* (Interview)

One key challenge reported by fellows was that some research plans had to be redesigned because of an underestimation of the amount of work and the limitation of six months to complete the fellowship, as exemplified in the quotes below:

> *"It has been a real struggle and at some point, the task seemed to be too big and unrealistic."* (Final survey)

> *"My research project was a new project, it wasn't something I had started before my fellowship began, the six months timeframe was somewhat short for my project (…) I think being able to have a slightly longer time to do my particular project would have been better."* (Interview)

4.2 Learning process

Even with time constraints, the fellowship scheme was proven to offer flexibility:

> *"I think having a better flexibility as well the touch zones, having the blogposts that worked as a diary, that was helpful to keep accountable to a broader audience but also the team was very flexible with me, taking a bit more time to collect more data and add to my analysis, that was very helpful to me."* (Interview)

Some fellows used their fellowship as an opportunity to receive additional support and engage with new methodologies to expand their research knowledge, as explained by the participant below:

> *"Another thing that worked well, is the support being able to reach out and for more skilled development support I didn't get during my PhD, when you are doing your PhD, you focus on one methodology and one kind of analysis and I was using a new analysis I haven't used before, this was helpful to get my head around another form of analysis."* (Interview)

Sharing the fellowship proposal in the webinars within the GO-GN community and disseminating it at conferences was considered a good experience:

> *"The fellowship was a great opportunity to reconnect with the GO-GN network and share the fellowship idea early on through an online session where we could present our half-cooked ideas and get tremendous feedback from the group, which is not something common in other contexts. We presented at a conference and also got tremendous feedback from an even broader community."* (Interview)

As well as an opportunity to reconnect with the network, *"The fellowship brought the structure that enabled me to connect, I'd be thinking about who in the network would be useful to touch base with and to consider"* (Interview). While lessons learnt involved understanding the value and improvement of OEPs:

> *"I always seek to publish open access but have been less open about sharing the early stages of a project. Through the fellowship, I've seen how sharing those initial research ideas, sketches, and plans can be formative and beneficial. Getting feedback from a larger population in the early stages of a project can improve the process."* (Final survey)

Collaboration with stakeholders has not ended with the fellowship and fellows anticipate continuing their research in Open Education:

> *"Throughout the fellowship, I've been able to identify some allies and individuals who have similar interests in bringing Open Education into teacher training programs. I hope to develop these relationships further."* (Final survey)

Collaboration was also identified as an enabler of equity and inclusion, several fellows decided to involve more researchers in the team to support the community approach:

> *"Flexible collaborative working practices provide a valuable breathing space, enable diverse voices to be heard and create room for inclusion, invention and imaginative thinking, problem-solving and expression."* (Final survey)

> *"I turned my fellowship into a collaborative project, and I was very happy that I did because it enriched the experience in the journey but also the output, the diversity of ideas helped and being open, there were disagreements, but they were used in a constructive way to learn from each other"* (Interview)

4.3 Impact and career development

Regarding impact, fellows considered their fellowship outputs to be useful for policy making, supporting teachers and being more in touch with other alumni:

> *"I think the fellowship will have a significant impact. It will give visibility to the enormous work that teachers have done [in open education], and relevance to their voice seldom heard in the story of educational continuity during Covid-19."* (Final survey)

As well as having an impact on their careers by improving their CV:

> *"If you read my CV now and before are two different things, in this University even though I have not been promoted I am holding the 'researcher of the year' [award] at the University."* (Interview)

As for including more practical experience for their career development, fellows explained:

> *"It has given me a lot more practice on talking about what I do and elevating the pitch, through the fellowship the ability to gather evidence to keep centring student voices and to make that part of an open practice has helped to articulate the value of that a lot".* (Interview)

The fellowship was also an opportunity for career development during times of uncertainty when jobs were affected due to the pandemic, *"Because I just finished my PhD the year beforehand, I was feeling I should have a post-doc lined up, nothing was going on and there was Covid"* (Interview), and:

> *"The fellowship came at a very challenging time we had been through Covid and there was a lot of redundancy and uncertainty, it was very important that we come together and found ways for open education to progress and to maintain hopeful about what could be achieved within HE so for me the fellowship enabled me to stay connected to the network internationally at the time where I was feeling very isolated."* (Interview)

4.4 Support

In terms of support, the flexibility of the scheme, critical feedback and having multiple conversations with GO-GN team members were reported as helpful support, as demonstrated by the quotes below:

> *"The support from GO-GN was multifaceted and very important. I engaged in different types of community work, but I have never been an open education professional. (…) As a GO-GN fellow, I can share the work we are doing together with this network as an open education researcher."* (Interview)

> *"GO-GN was there through the process, we had critical conversations, we had the opportunity to share the thoughts and the product at different stages, and we got very critical feedback, but this is exactly what we needed."* (Interview)

The level of support received was recognised to the extent that fellows recommended the fellowship scheme to future GO-GN graduated alumni:

> *"The fellowship is so broad and applies to recent graduates, graduates from a few years ago, small projects, larger projects, single projects, and collaborative projects, so my advice is please considered it if you are a GO-GN graduate or soon-to-be graduate cause it is for anyone to further their work in the area of Open Education"* (Interview)

One of the reasons for this could be that the network is supportive of fellows and their proposals even if they are varied or were not in the original call:

> *"Go for it, if you are considering it, you probably already know the network well, one thing I've always talked about with GO-GN members is how isolating is doing doctoral research in your home institution, (…). If you know all that you can do a fellowship and have so great support and motivation to reconnect with the network, the fellowship is a great place to participate and look for other opportunities to give back to the network."* (Interview)

The fellowship also allows for creativity and different research in a research-funded project, suggestions from fellows were to apply to similar available schemes:

> *"I'd tell them like any research you go with an idea but you may not get the answer to what you think you are looking for, and that is OK, the fellowship is an opportunity to explore things that you want to do, it is more like your dissertation because it is not restricted by outside forces, you get to choose what direction you want to go in so it is a really good opportunity to do something you are passionate about."* (Interview)

5 DISCUSSION

This section discusses the key themes presented above, explores some of the lessons learnt, and the design implications for future offerings of fellowship schemes.

Feedback from the qualitative data has been mostly positive, as the fellowship has been a supportive experience for participants' career progress and development. Key findings from the fellowship scheme, as reported by the "risk and challenges" theme, include the need to build flexibility into the scheme so as to a) support innovative proposals that are beyond the anticipated scope of the scheme and b) enable more flexible timelines to accommodate unforeseen delays and opportunities.

The "learning process" involved the facilitation of new and innovative ideas and openly sharing those with other members to receive constructive and helpful feedback. The fellowship scheme has been proven to be a learning experience for all fellows and the GO-GN team. Being open in terms of sharing research ideas and providing feedback requires openness in communication and willingness to make changes from all parties – these are all elements of an authentic open educational practice initiative. In addition, the trusting relationships with fellows and the nature of the network itself have been essential for the success of individual fellows and their projects

For the "Impact and career development", we need to appreciate that the fellowships are unique in context, design and impact. The metrics of success for a fellowship vary as each fellowship has had different types of impact on individuals (e.g. increased appreciation of open practices or impact on career recognition) as well as resulting in the production of specific research outputs or assets.

In terms of "support", it is evident from the results presented that there is a clear need to provide consistent support to fellows through regular contact and meetings with the scheme lead team. This support seems to have kept them motivated and helped with their research progress. The frequent meetings between the fellows and the GO-GN team also created a collegial environment where creativity and curiosity could flourish. These are probably some of the reasons why some of the fellows recommended this fellowship scheme to future ones interested in expanding their knowledge in open education.

In order to reflect on the implications of this experience and research findings, we have mapped our findings with the core and transversal dimensions of the OpenEdu framework (Inamorato dos Santos et al., 2016) for academic career development. This framework has been selected because it offers opportunities for further reflection on our project findings and its alignment with OEP principles. The aim is to deepen reflections on improvements for design and implementation for future offerings of this or other similar OEP initiatives.

Table 1 summarises the description of core dimensions associated with making personal and network practices more "open". Highlights include focus on fair equal access, open innovative proposals, facilitates open pedagogies, recognition, collaboration, and supports the development of open research skills.

Table 1.

Core OpenEdu dimensions and design suggestions

Dimension	Design suggestions
Access	● Support and facilitate access to participants of the Global South (add a quota if necessary). ● Send tailored individual messages to possible applicants to encourage their participation/raise awareness of the call, particularly to facilitate Global South participation. ● Make the call available through several channels and resources (i.e., not everyone uses Twitter), for example, newsletters and multiple social media. ● Make available a repository of similar experiences for candidates to reflect on their proposals. ● Organise informal meetings to discuss the scheme and proposals with potential candidates. ● Include financial support.
Content	● Ensure that the scope of the fellowship is broad to support innovative proposals. ● Support open practices and look for opportunities to suggest open approaches as part of the fellowship scheme. ● Provide various spaces and ways for fellows to share their experiences and outputs (e.g. webinars, blog posts). ● Outputs produced from the scheme (reports, blog posts, presentations…) should be openly licensed to enable dissemination and encourage reuse.
Pedagogy	● Introduce activities that allow self-reflection such as blog production or research diaries. ● Suggest opportunities to incorporate more open approaches and practices within a fellowship.
Recognition	● Fellows should be recognised publicly, via a website, badge or certificate that can be linked to their CV. ● Opportunities to fast-track other aspects of the network's activity (such as producing non-English language versions of leaflets to promote the network) may also present themselves during the fellowship and should be supported accordingly. ● Individual fellowship expertise and experience of their context and community should be prioritised and can yield important insights for the network beyond the fellowship remit.
Collaboration	● Activities that promote collaboration between fellows themselves should be promoted (meetings, internal presentations, conference presentations). ● Regular meetings between the fellowship scheme team and fellows to capture feedback and motivation should be scheduled.
Research	● Facilitate the presentation at international conferences and journals, including the possibility to have a special issue in an open journal. ● Enable and support the development of skills for research projects such as proposal design, project management etc. through fellowship schemes.

The transversal dimensions of open education cover 'how' educational practices are opened up (Table 2). Notably, designing an OEP fellowship scheme requires strategic, technological, quality assessment and leadership aspects.

Table 2

Transversal OpenEdu dimensions and design suggestions

Dimension	Design suggestions
Strategy	● Consider aspects such as the length of the fellowships and if there are vacation periods in between that may impact initial plans/schedules ● List conferences happening during the fellowships so fellows can present and increase their networks. ● Implement equity, diversity and inclusion guidelines from the start.
Technology	● Use tools that promote interaction when people are in different countries and even continents, so as to enable collaboration despite time differences and access to the Internet.
Quality	● Include mid-term and final surveys, and interviews to capture and improve the experience and act on feedback to improve further iterations of the scheme.
Leadership	● Empower fellows with the ownership of their research and implications for their career development.

6 CONCLUSIONS

Koseoglu and Bozkurt (2018) in their literature review explored two major strands of OEP research: those who discuss OEP in the context of OER, mostly in terms of their creation, adoption, and use, and those who discuss OEP concerning other areas, including open scholarship, open learning, and open teaching or pedagogy. The second strand applies to the fellowship scheme for early career researchers in open education presented. The scheme exemplified OEP considering the open research processes followed by fellows, the team, and external participants. Those involved (1) sharing research planning, data, and analysis among the stakeholders and (2) providing continuous feedback in meetings, webinars, and public presentations. Those aspects allowed reflection and critical thinking for those involved which benefits the impact of open research and career development.

Despite incorporating flexibility in the scope and duration of individual fellowships, some current limitations and improvements to consider are the six-month duration and one-call-per-year model. This implies that fellows need to have a proposal ready when the call opens; a more flexible programme could be implemented in the future with a more agile approach. It is also important to consider that some alumni may need additional support - whilst the GO-GN fellowship scheme worked with recognised GO-GN alumni with experience and who are well-established in the field, how best to support those with less experience or specific needs may also need to be considered.

As reported in the literature the transition from a doctoral degree to an academic position can be complicated for early career researchers including stressful situations (Ackers & Gill, 2005; Castellacci & Viñas-Bardolet, 2021). Opportunities to work together with peers and experts seem an appropriate approach to address inequality (Casad et al., 2021) and such schemes also develop or further hone research and project management skills. Fellowship schemes need to consider their key audience, different stakeholders and ways to support potential candidates. For that purpose, when designing the scheme, it is important to reflect on how to support equity, diversity and inclusion by considering the varied background, needs and cultures of candidates (Bossu et al., 2023).

Moreover, whether and how different stakeholder groups can provide support for each other or collaborate following OEP is also important to consider. In the instance of GO-GN, for example, there is a potential opportunity to involve our experts and friends in any future fellowship scheme as mentors. For fellowship schemes such as GO-GN, which focus on OEP, consideration of how best to encourage, support and foreground OEP values and practices in open research is core to the network's mission. In this paper, we contribute to bridging the gap in the literature regarding the impact of such schemes on postdoctoral researchers' career progression in open education and related fields. For that reason, we have proposed a set of lessons learnt and design implications that will hopefully be useful for the practical implementation of similar schemes enacting open educational practices and values in a particular context.

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