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**OER “Prodsusage” as a Model
to Support Language Teaching and Learning**

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Abstract: Language education faculty face myriad challenges in finding teaching resources that are suitable, of high quality, and allow for the modifications needed to meet the requirements of their course contexts and their learners. The article elaborates the grassroots model of “prodsusage” (a portmanteau of “production” and “usage”) as a way of imagining a movement toward the use and creation of open educational resources (OER) for language learning. Through a set of examples of video resources that fill a need for authentically compelling language learning materials, the authors demonstrate the potential of prodsusage to engage teachers and learners around digital resources, to the benefit of language teaching and learning. In support of this grassroots model, the authors propose practices and policies to address challenges involved in engaging teachers and learners around OER in higher education.

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Recursos Educativos Abiertos (REA) “produsuarios” como un modelo de apoyo para la enseñanza y aprendizaje de idiomas

Resumen: Profesores de lenguas se enfrentan a numerosos retos en la búsqueda de recursos didácticos adecuados, de alta calidad, y que permiten las modificaciones necesarias para cumplir con los requisitos de sus contextos y sus alumnos. Este artículo presenta el modelo de base de “produsuario” (un acrónimo de “producción” y “uso”) como una forma de imaginar un movimiento hacia el uso y la creación de recursos educativos abiertos (REA) para el aprendizaje de idiomas. A través de un conjunto de ejemplos de recursos de vídeo que atienden la necesidad de materiales de aprendizaje de idiomas auténticos y convincentes, los autores demuestran el potencial de los produsuarios para profesores y estudiantes en el uso de los recursos digitales, en beneficio de la enseñanza y aprendizaje de idiomas. En apoyo de este modelo de base, los autores proponen prácticas y políticas para hacer frente a los retos de conectar los profesores y estudiantes en torno a los REA en la educación superior.

Palabras clave: Recursos Educativos Abiertos (REA); Creative Commons (CC); Propiedad Intelectual (IP); materiales y métodos de instrucción; derechos de autor; calidad de la educación; política pública; produsuario; poder blando, aprendizaje de idiomas extranjero; lengua y literatura

Recursos Educacionais Abertos (REA) “produsuarios” como um modelo de apoio para o ensino e aprendizagem de línguas

Resumo: Professores de línguas enfrentam muitos desafios na busca de recursos pedagógicos adequados, de alta qualidade, que permitam cumprir com as exigências dos seus contextos e as modificações necessária para seus alunos. Este artigo apresenta o modelo base “produsuarios” (acrónimo de “produção” e “utilização”) como uma maneira de imaginar um movimento em direção ao uso e criação de recursos educacionais abertos (REA) para aprendizagem de línguas. Através de um conjunto de exemplos de vídeo que abordam a necessidade de materiais de aprendizagem da língua autênticos e convincentes, os autores demonstram o potencial do “produsuário” para professores e alunos no uso de recursos digitais para o benefício da educação e aprendizagem de línguas. Em apoio a este modelo básico, os autores propõem práticas e políticas para enfrentar os desafios de conectar professores e alunos em torno dos REA no ensino superior.

Palavras-chave: Recursos Educacionais Abertos (REA); Creative Commons (CC); Propriedade Intelectual (PI); materiais e métodos de instrução; direitos autorais; qualidade da educação; políticas públicas; produsuarios, aprendizagem de línguas estrangeiras; língua e literatura

Introduction

The importance of student interaction with “authentic” input in language learning is well established (Richards & Schmidt, 2002). Authentic language learning materials are defined as those taken from real-world sources, thus containing more realistic and natural examples of language use than those found in textbooks, listening passages, role-play conversations, or other materials developed specifically for instructional purposes (Richards & Schmidt, 2002). In result of the

explosive growth of the Internet, language teachers and learners enjoy unprecedented access to authentic materials in target languages, ranging from television show excerpts made available on YouTube, to social networking messages among native speakers; from online news articles, to net radio; from e-books, to online music sites. In addition to enabling access to authentic materials, the Internet offers language learners increased opportunities to engage in authentic communication with native speakers outside of the classroom through online social distribution channels, allowing language learners to exercise their language skills with real audiences and receive real-time feedback from beyond their classroom walls (Itakura & Nakajima, 2001; Pasfield-Neofitou, 2012).

Authentic video resources, in particular, commonly distributed through social media channels such as YouTube, can effectively attract and engage teachers and learners around language learning by way of their alignment to popular culture and to the values and interests of viewers, or by way of their “soft power” appeal (cf. Figueira, 2015; Nye, 2004; Nye & Kim, 2013;). For language teachers and learners, one of the advantages of authentic video resources is their often unscripted nature. For example, reaction videos (as popularized by series such as “Kids React To...” and “Elders React To...”) not only offer off-the-cuff reactions normally unavailable in scripted productions, but opportunities for learners to reflect on, for example, age- or gender-related sociolinguistic variations. Authentic video resources can also serve as a response to calls by researchers and educators for more “diverse images, contexts and characters” in language teaching materials--and specifically, serve as a replacement for existing portrayals that are less equitable or more hegemonic (Nagata & Sullivan, 2005, p. 27).

The ability to access, share and comment on authentic video resources online through sites like YouTube opens up a multitude of possibilities for learners to interact with them as materials that support the development of foreign language literacy and fluency. Yet because these resources are often created and shared under restrictive use permissions, there is a discrepancy between the widespread availability of these digital resources, and educators’ ability to tailor and integrate them into their curriculum to meet their needs.

In the interest of resolving that discrepancy, the present article demonstrates the potential for the small-scale use and creation of open educational resources (OER) to provide accessible, modifiable digital resources for language education. Examining a set of examples of video resources that fill a need for authentically compelling language-learning materials, the authors explain how “produsage” combines *usage* with *production* of digital resources to support an educational model in which teachers and learners engage in reframing and repurposing resources (Bruns, 2008; Weller, 2010). Given the recognized importance of production and output, as well as input, in foreign language acquisition (Mora & Leeming, 2013; Swain, 1985; Swain, 1995), the authors argue that OER-based produsage can serve as a vital component in the success of language teaching and learning, given policies and practices supportive of open licensing and resource sharing.

Beginning with a discussion of YouTube as a soft power resource for intercultural communication, the present article considers some implications of produsage for language teaching and learning, with particular attention to participatory media fandom exemplified in particular by the widespread growth of interest in Korean language and culture in the wake of the viral *Gangnam Style* video, and by the phenomenon of fan-produced subtitles (a.k.a. “fansubs”) for Japanese *anime*. These examples are examined in order to highlight the appeal of soft power in engaging language learners to interact with digital resources in ways that exemplify produsage as they support and empower their own and others’ learning. The article then turns to a discussion of the ways in which produsage can model a grassroots method for developing and sustaining “little” OER (Weller, 2010). To inform future policy in support of OER, the article concludes by outlining policies and practices designed to ease challenges and eliminate barriers to little OER.

YouTube: A Soft Power Resource for Intercultural Communication

Through the appeal of soft power, which harnesses shared references from popular culture, authentic videos offer learners opportunities for insights into target languages, vernaculars, and cultural aesthetics. A significant force in popular culture, YouTube is today the largest platform that exists for accessing, uploading, and sharing authentic videos. One year after its launch in 2005, YouTube's impact on popular culture merited the cover of *Time Magazine's* Person of the Year issue, which featured a mirrored panel designed to reflect each reader's face, framed by YouTube's iconic play button and progress bar. In designating each of its readers as person of the year, *Time Magazine* sought to celebrate the cultural influence of user-generated videos on sites such as YouTube (Grossman, 2006).

Now, globally, over six billion hours of video are reportedly watched on YouTube each month. Although estimates suggest that, as of 2014, fewer than 40% of the world's population are Internet users, (Miniwatts Marketing Group, 2014), 80% of YouTube's traffic originates outside of the United States with localized versions of YouTube available in over 60 languages (YouTube, n.d.). Moreover, it is estimated that 60% of any video's viewers come from outside the creator's home country (YouTube, n.d.), which suggests that YouTube is an important conduit for intercultural communication.

In 2010, it was calculated that YouTube had more than double the prime-time audience of the three major U.S. networks combined (Chapman, n.d.). According to user statistics for the site, every minute, hundreds of hours' worth of videos are uploaded. Yet the reception traffic for YouTube videos varies. As reported by Whitelaw (2011), YouTube software engineer James Zern stated in an official blog post that the top 30% of videos on YouTube accounted for 99% of views. As Whitelaw further notes, the remaining 70% of videos bring little or no traffic and therefore produce minimal advertising revenue for the company or its users (Whitelaw, 2011).

Educational videos on YouTube often fall into the category of low traffic. In August 2014, views of YouTube's featured educational videos ranged from around 10,000 to hundreds of thousands, with the exception of a few primary and secondary education videos with views numbering in the low millions. These figures pale in comparison to the "Popular on YouTube" videos, for which the numbers of views reach into the tens of millions. Viral videos frequently far exceed this. For example, "Charlie Bit My Finger," a video of a boy and his baby brother, which was at one point the most-watched video on YouTube, obtained over 750 million views.

The impact of viral videos on viewership has led Northwestern University to introduce an academic course on viral videos (Leopold, 2009). Students enrolled in "YouTube 101" are challenged to make their own videos each week (Leopold, 2009). The most successful videos resulting from this course have spawned parodies and mash-ups, demonstrating the potential value of authentic student-created materials, and therewith reinforcing the importance of transformative produsage in education.

Although produsage through engagement around video materials such as those on YouTube fall outside the parameters of open educational resources (OER) due to their often restrictive use permissions, they exemplify the kinds of digital resource modifications that can serve to benefit language teaching and learning. The following sections explore examples of how LOTE (Language Other Than English) video resources, in particular, have impacted intercultural communication and language learning, through the soft power of participatory media fandom and related produsage. Specifically, the discussion explores the aftermath of the viral Korean language music video *Gangnam Style*, including a French language parody, as well as the phenomenon of fan-produced subtitles ("fansubs") for Japanese *anime*.

Gangnam Style: A Viral LOTE Success

Language plays a key role in determining the audience base and popularity of any media resource. Videos in less commonly understood languages are likely to garner lower numbers of views. However, in spite of language barriers, LOTE videos sometimes go viral outside of their original target language audience, sparking increased interest in language learning. To cite a well-known example, Psy’s *Gangnam Style* music video has, to date, garnered over 2 billion views since its upload in July 2012.¹ *Gangnam Style* has been so successful that the song’s title has become synonymous with mass appeal—as noted in Gallagher and Garrett’s (2013) article on Coursera’s MOOC, “Going Gangnam Style with MOOC Rankings.” The video’s success has also led to increased interest in Korean language. Culture Minister, Choe Kwang-shik, commented in *The Korea Herald*, that *Gangnam Style* “directly introduced not only [Psy’s] famous horse dance but our [Korean] language, life and style to the world” (cited in Chung-un, 2012).

As BBC Radio 1’s Scott Mills remarked, “The thing that interests you in the [*Gangnam Style*] video is the fact that you don’t understand the lyrics” (Cellan-Jones, 2012). Indeed, neither the language barrier nor the uniquely Korean subcultural references appear to have detracted from global fans’ enjoyment of the video (Soutphommasane, 2012). Rogers (2013), in *Inside Higher Ed*, describes “The Psy Impact,” stating that following the viral hit, several universities experienced first-time-ever waiting lists for Korean studies courses. In the article, Charles Armstrong, professor of Korean language studies at Columbia University, was quoted as stating that tremendous growth in Korean courses had occurred at his institution, especially among students with no ties to Korea; traditionally, most enrolments were from heritage learners.

Gangnam Style represents only one example of a rapid rise in international interest in Korean culture, known in English as the “Korean Wave” (Nye & Kim, 2013), and in Japanese as the *hallyu*. In Japan, the popular 2002 Korean drama series *Gyeongseongga* (translated to English as “Winter Sonata”) inspired many people to begin learning Korean globally. This *hallyu*, albeit smaller than that generated by Psy’s *Gangnam Style* in 2012, also demonstrates how learners may be drawn to a foreign language due to exposure to the popular culture of the country or community concerned. In this regard, Chao (2012) cites the 2010 Modern Language Association survey, which showed substantial increases in Korean language enrolments in the U.S. in the 2000s. Enrolments in Korean language courses were up 37.1% between 2002 and 2006, and an additional increase of 19% occurred between 2006 and 2009 (Furman, Goldberg, & Lusin, 2010).

Commenting on the role of soft power in the book *The Korean Wave: Korean Media Go Global* (2013), which features Psy on the cover, Nye and Kim (2013) describe elements of Korean popular culture as “resources,” explaining that globalizing market forces in the digital age have transfigured productions such as *Gangnam Style* into “cool” cultural brands (Nye & Kim, 2013, p. 34). Globally, the alluring soft power of popular cultural brands has manifested increasing interest in not only Korean language, culture, and food, but also cosmetics and medical tourism (Eun, 2013).

Gangnam Style’s impact on language teaching extends beyond the immediate context of Korean language learning. One of many parodies of the video is *Conjugation Style*, which features kids explaining the conjugation of *-er* verbs in French. Although it was created with pedagogical intent, it is very different from, for example, a tailored reading passage with a set of comprehension questions, or an audio exercise designed to exemplify the conjugation of verbs. A creative transformation of a viral video, *Conjugation Style* exemplifies the potential for soft power to drive and support language learning, as well as the value of prodsusage in cultivating educational resources.

¹ For current figures, see the original upload (<https://www.youtube.com/watch?v=9bZkp7q19f0>).

Fansubs: Cultivating Foreign Language Literacy via *Anime*

New services enabling users to subtitle or caption videos offer potential inroads for language learning—for example, through community participation in fan-produced subtitles for Japanese animation, or *anime* (Fukunaga, 2006; Lee, 2011). *Anime* is frequently cited by learners as a key reason for studying Japanese, and the linguistic detail provided in fan-produced subtitles, or “fansubs,” is said to further cultivate foreign language literacy development (Fukunaga, 2006).

Anime scholar Ian Condry (2013) attributes the existence of fansubs partly as a response to delays between the release of a show in Japan and in the rest of the world—which he explains as the “artificial scarcity produced by closed national markets” (p. 183). Demonstrating concern for conveying minute cultural details, fansub translations often extend far beyond the parameters of professionally produced subtitles, which generally adhere to strict guidelines concerning the number of characters shown on screen at one time to enhance readability.² For instance, in an *anime* fansub, additions may be made to explain the ingredients of a Japanese dish, whereas in commercial subtitles, the name of the dish may be changed to something the target audience would understand, or omitted entirely. Frequently, specialist terms from business or martial arts are left untranslated, with fansubbers opting to provide explanations, references and etymologies, several lines or even paragraphs long.

Detailed attention to cultivating Japanese cultural and linguistic literacy may be witnessed in another example, from a corpus of fansubs, wherein the Japanese text on a coffee can depicted in one *anime* film scene was transliterated and translated (Condry, 2013). According to Condry (2013), such elaborately noted subtitles may be considered an effort to achieve accuracy and authenticity. He likens the fansub culture to the free software movement, highlighting commonplace distribution via peer-to-peer file sharing services. In this regard, fansubs exemplify another possible way in which soft power may promote the opportunities for authentic grassroots produsage in language teaching and learning.

In leveraging the appeal of participatory media fandom exemplified in the viral video parody and fansub examples explored above, produsage demonstrates the potential for online social distribution channels to supply language teachers and learners with authentically compelling educational resources while sustaining a lively culture of resource sharing. As the next section elaborates, produsage may be best supported through the flexibility afforded by “little” OER (Weller, 2010).

Processes, Not Products: Produsage and the Role of “Little” OER

The longstanding model of mass marketing, packaging, and distributing educational resources as content, and intellectual property as product, can be said to detract from the conceptualization of education as an ongoing process. In understanding education as a process, teachers and learners alike behave as potential producers and curators of knowledge who actively engage and re-contextualize educational resources.

The active re-contextualization involved in produsage is perhaps best accommodated through little OER. Weller (2010) distinguishes between big and little OER, carving out a place of recognition for the latter, which he characterizes as sharing small scale features such as higher granularity (smaller units) and lower production quality. Weller (2010) further argues that the low production quality and the granularity of little OER invite participation and re-contextualization on

² For example, see the guidelines set for the TED Open Translation Project, http://translations.ted.org/wiki/How_to_Compress_Subtitles#Compressing_and_the_subtitle_language.

the part of the consumer *cum* producer. For example, in language teaching and learning, granular resources (i.e. an image or a recording) may be aggregated or combined to meet the needs of a particular lesson plan or presentation.

As Weller (2010) observes, big OER are housed in repositories, while little OER tend to be found on social distribution channels such as YouTube. Weller’s acknowledgement of YouTube videos as a potential wellspring of little OER accords with the widespread recourse to YouTube among language teachers seeking authentic resources to engage students. While a vast majority of YouTube videos do not fall into the category of little OER, Weller explains that this fact is due to cultural habits whereby authors typically spend a great deal of time creating non-shareable resources (Weller, 2010). As Weller (2010) suggests, the shift to “open” is often a matter of changing traditional proprietary habits to create shareable, reusable resources. Indeed, minimal effort is required to shift from copyright to “copyleft” (Stallman, 2010)--that is, to make YouTube videos that are openly licensed. According to Weller (2010), the formation of this habit is the “key to sustainability for little OER” (p. 5).

Due to its grassroots origins in popular behaviors such as produsage, little OER offers teachers and learners a small-scale, low-cost, dynamic model of resource sharing. While language teachers and learners are likely not yet in a position to claim the “frictionless” sharing described in Weller’s expanded vision of little OER (2011, p. 101), a new cultural ethic of open sharing is required to support repurposing and remixing of learning resources toward the development of multilingualism. An ethic of open sharing relies upon a central notion of reciprocity, exemplified within the community known as the Modern Foreign Language (MFL) Twitterati (#mfltwitterati) in the UK. This informal Twitter-based network engages large numbers of primary and secondary level language teachers in providing mutual support and sharing educational resources through a dropbox account. Convened for mutual support, these and similar successful teacher communities, such as the primary level community #globalclassroom which facilitates learning projects, model an ethic of sharing.

The widespread uptake of collaborative learning and co-creation at the grassroots level suggests that, given the freedom to connect and innovate, teachers can and do create inspirational resources and opportunities for learners and each other. Nevertheless, the need for institutional policy shifts and user supports to remove barriers and cultivate open education practices, so that sustainable habits for resource sharing and use may emerge, remains central.

Addressing Key Barriers to OER Produsage: IP and IT-Related Restrictions

Downes (2009) argues that OER uptake necessitates less emphasis on providing resources, and more on removing barriers and restrictions. In regard to OER produsage, the removal of barriers necessitates the basic recognition that licensing controls the use of resources. The following sections examine barriers related to intellectual property (IP) and information technology (IT), prior to discussing open licensing policies and practices that can provide support for little OER.

IP-Related Barriers

Copyright restrictions on intellectual property (IP) threaten to compromise the richness of media available in language teaching and learning, especially when less-commonly taught languages fall short of authentic, accessible online examples. For instance, “geo-blocking” may inhibit the flow of media internationally. Geo-blocking can prevent users in certain countries from accessing materials, or cause users to be charged a different price for use of the materials, depending on the geographical location determined by the Internet Protocol address assigned to each device (i.e. computer, printer, *etc.*). While geoblocking in regard to online videos and games has become a topic

of contention among consumer advocates such as CHOICE in recent years (Dalley, 2012), regional restrictions on physical media are well established. In some cases, these restrictions resulted historically from a lack of standardization in the broadcasting industry. In others, regional restrictions have been engineered to fragment the market, ensuring that media can be re-priced, re-classified, or made unavailable, in various international zones or individual countries. Examples include region-locked DVDs, or video game cartridges printed “For sale and use only in Japan.”

Fair dealing, understood in U.K. copyright law as the replication of copyrighted material for limited, non-commercial, educational or transformative purposes, such as commentary, criticism, or parody, does not extend to international media (*cf.* fair use in the U.S.). In these cases, regulations protecting intellectual property may prevent sharing or the creation of derivative works from authentic language learning content on platforms such as YouTube. Discrepancies in interpretation of fair dealing is illustrated by the outcome of a recent authoring tool, Mozilla Popcorn, intended for remixing, editing and enhancing existing video content. Claimed by Mozilla to demonstrate fair dealing with online materials, use of the tool in France resulted in the removal of content when tested with French YouTube recordings, demonstrating differences of interpretation of fair dealing between nations, as well as a growing need internationally for online educational resource policies supportive of produsage.

In the U.K. and Australia, fair dealing licensing loopholes for educational purposes generally underwrite the sharing of educational resources in academic environments. In recent years, higher education institutions have adopted learning management systems (LMS) environments, such as Moodle and Blackboard, which allow for the delivery of digital educational resources. However, while LMS may offer limited fair dealing resource sharing within courses, due to the matriculated and siloed structure of most academic courses and departments, many resources residing in an institutional LMS currently cannot be accessed by many learners. For example, students may be routinely prevented from using the materials associated with courses they are not enrolled in, or from using materials that they have used in previous years, but are not currently registered to access. Of course, material stored on internal servers can be rapidly copied and disseminated without approval. Since unauthorized uses of copyrighted material may result in litigation, institutions must heed the risks involved in digital distribution.

Institutional IP policies can also pose further barriers to OER uptake, as many institutions enforce policy stating that all outputs created by faculty members are owned by the institution. Although this sort of statement may not be upheld when challenged, lack of clarity regarding intellectual property can disempower the educational community from engaging new models of technology enhanced learning, and may effectively stifle the potential for transformative learning through produsage. Moreover, in asserting ownership of any works produced by faculty during the course of their tenure, institutions may inhibit the ability of faculty to comply with the requirements of OER uptake and use—including repurposing, sharing, creating their own, freely available OER. The complexity of this area often leaves potential producers (*i.e.*, faculty members) unsure about their rights and responsibilities, especially if their institution has no explicit policy on open educational resources.

IT-Related Barriers

When establishing rights that enable the modification of educational materials, institutional policymakers need to consider the ways in which intellectual property regulations intermingle with academic information technology (IT) practices.

Internal IT policies play a largely overlooked role in determining the extent to which OER implementation becomes a practical reality. For instance, even when original use permissions allow

for the modification and reuse of materials, actually making modifications requires the use of software. Institutional IT policies may pose inadvertent barriers to OER uptake through the restriction of access to institutional software and computer networks. Software is typically administered by IT personnel according to institutional policies shaped by security concerns, and the desire to maintain a standard user environment across networked desktop computers in order to facilitate support. Password restrictions limit access to institutionally licensed audio, image, or video editing software, necessary in order to making target language learning resources suitable for use in a language learning class. Without an administrative password, installation and use of software is typically impossible. One outcome of such a policy is that, for example, faculty or academic staff may be prevented from installing necessary editing software at the point of need.

Although some software is designed to be able to run from a USB memory stick, this is not usually appropriate for intensive activities such as video editing. Instead, academic staff unable to obtain permission from their local administration to install and run their chosen software may opt to bring their own device, or use a home computer, and use freely available software in order to extract the content they wish to use for teaching. Internationally, the use of personally owned devices in professional and academic contexts is recognized as a growing phenomenon.³ While universities and other employers may save money by pushing the costs of electronic equipment and even software onto the employee (some do, however, provide a stipend), it is recommended that savings be directed to improving Wi-Fi and power outlet infrastructure around campuses, and that universities employ IT staff appropriately to cope with increasing demands.

Toward Open Licensing

As the foregoing discussion demonstrates, while OER have the potential to eliminate some of the institutional risk involved in IP restrictions by affording teachers and learners the right to adopt and adapt digital resources for educational purposes, the issue of “rights” in relation to modification is often more complex in practice. Given the institutional risk of litigation involved in digital sharing, and the inconveniences involved in administrative password restrictions, greater efficiencies may be derived from strengthening institutional support for little OER, and by embedding open licensing into institutional practices—for example, via curated library collections of open resources, and relationships with existing open repositories and authoring platforms.

Higher education institutions and their funders can support OER, and enable open access to educational resources, through policies that promote the use of open licenses (comparable to free and open source software licenses). Creative Commons (CC) provides open licenses, free of charge, which can be used by creators to ensure that works remain available for producers to share and build upon. Although frequently contrasted with copyright restrictions whereby all rights are reserved, CC licenses articulate variations on copyright, offering a range of options for reserved rights, as well as protocols for the integration of metadata regarding ownership and traceability.

Aside from the CC “0” license, which is comparable to public domain and frees content globally without restrictions, the CC Attribution license (CC-BY) is the most open of the available Creative Commons licenses, because it allows complete modification and reuse, provided the original author is acknowledged.⁴ Other licensing options are more restrictive, such as the CC

³ Numerous infographics (e.g. <http://www.makeuseof.com/tag/infographic-byod-bring-device/>), depict growing numbers of educational institutions, school districts and large companies that support BYOD initiatives.

⁴ An overview (in multiple languages) of each of the six licenses available through Creative Commons may be found on the website: <http://resources.creativecommons.org/six-licenses-for-sharing-your-work/>

Attribution-Share Alike license (CC-BY-SA), which does allow producers to remix and build upon an existing work, with the condition that the producer must not only credit the original author, but also license derivative creations under the identical terms. Under more restrictive licenses, such as the CC Attribution-Noncommercial-No Derivatives (CC-BY-NC-ND) license, even resources that are provided in a technically open format (such as a raw files, useful for the manipulation of subtitles) may be less supportive of produsage, insofar as the license disallows modification and sharing of any works containing portions of the original work beyond what is considered fair dealing for educational purposes according to some national copyright laws.

In addition to institutional support for OER through the promotion and adoption of open licensing policies and open educational practices, foundations and government-level funders can also support produsage by encouraging or leading investment in robust authoring tools with multimedia editing capacity. Recently developed authoring software (Wimba) Create, for example, was well suited to the creation and repurposing of OER for language learning because it facilitated the combination of multimedia content and learning activities through wizard-based creation of SCORM packages in XML. However, shortly after its acquisition by Blackberry the tool was no longer supported. Incentives and direct funding initiatives that favor investment in these kinds of authoring tools may help to stimulate and maintain their availability for pedagogically vital produsage.

Conclusions

This article has proposed a model of grassroots produsage in the context of language education, as a way of addressing a pragmatic discrepancy, between the widespread availability of authentic digital resources, and their modifiability through produsage-based language teaching and learning. Examples of LOTE video resource produsage—from parody to fansubbing—demonstrated some of the ways in which soft power may engage language teachers and learners around developing authentic, compelling educational resources. Given open licensing and the cultivation of a cultural ethic of knowledge sharing in higher education, these resources can potentially exhibit characteristics of little OER, allowing access and sharing, as well as the possibility of modification for reframing and repurposing the original sources. With the goal of easing challenges and eliminating barriers to little OER, the authors proposed a number of policy-oriented considerations, at international and institutional levels.

Many avenues exist for higher education institutions to leverage the power of little OER via appropriate policies. What are conventionally thought of as weaknesses of digital media, such as the ease of copying, can also be considered an important and unprecedented opportunity for reaching geographically distributed learners, and for teaching languages whose speakers are remote to learners. In order to ensure access to authentic resources for language teaching and learning, as well as meaningful “real world” engagement in learning processes involving not only learners and teachers, but also learners and peers, learners and languages, learners and global audiences and collaborators, it is important to expand recognition of the benefits of little OER. Particularly in a world where language and intercultural skills are vital to supporting mutual understanding, discussions of public policy need to consider how best to support little OER in its capacity to empower teachers and learners to engage in produsage rightfully and legally.

References

- Allen, I. E., & Seaman, J. (2014). *Opening the curriculum: Open educational resources in US higher education*. Babson Survey Research Group. Retrieved from <http://www.onlinelearningsurvey.com/oer.html>
- Attwell, G. (2007). Personal learning environments—the future of eLearning? *eLearning Papers*, 2(1), 1-8.
- Attwell, G. (2008). Social software, personal learning environments and the future of teaching and learning. *Actas do encontro sobre Web*, 2, 24-38.
- Attwell, G., & Costa, C. (2009). Integrating personal learning and working environments. Retrieved 14 September 2015, from <http://www.beyondcurrenthorizons.org.uk/integrating-personal-learning-and-working-environments/>
- Bradley, L., & Vigmo, S. (2014). *Open educational resources (OER) in less used languages: A state of the art report*. Retrieved from http://langoer.eun.org/c/document_library/get_file?uuid=1d1f23d3-d38d-4298-b8d1-c7422c1c205d&groupId=395028
- Brett, P. (1997). Do-it-yourself multimedia. *ReCALL*, 9(01), 34-42
doi:10.1017/S0958344000004602
- Boyd, D. (2008). Open-access is the future: Boycott locked-down academic journals. Retrieved from http://www.zephoria.org/thoughts/archives/2008/02/06/openaccess_is_t.html
- Bruns, A. (2008). *Blogs, Wikipedia, Second Life, and beyond: From production to produsage* (Vol. 45). New York: Peter Lang.
- Cellan Jones, R. (2012, December 21). *Gangnam Style hits one billion views on YouTube*. Retrieved 15 September 2015 from <http://www.webcitation.org/6MjXqzO00>
- Chao, T. (2012, December 5). K-Pop has American fans learning Korean. *City University of New York: COLLIDE*. Retrieved from <http://culturecollision.journalism.cuny.edu/2012/12/05/k-pop-has-american-fans-learning-korean/>
- Chapman, G. (n.d.). YouTube serving up two billion videos daily. *AFP* [Dead link, quotation archived on <http://en.wikipedia.org/wiki/YouTube>]
- Chung-un, C. (2012, September 17). Hallyu can help spread Korean: minister. *The Korea Herald*. Retrieved from <http://www.koreaherald.com/view.php?ud=20120917001083>
- Condry, I. (2013). *The soul of anime: Collaborative creativity and Japan's media success story*. Durham: Duke University Press.
- Creative Commons. (n.d.). Six licenses for sharing your work. Retrieved from <https://wiki.creativecommons.org/images/6/6d/6licenses-flat.pdf>
- Dalley, E. Bypassing geo-blocked sites. [consumer advice article for CHOICE] Retrieved from <http://www.choice.com.au/media-and-news/consumer-news/news/choice-takes-aim-at-online-geoblocking.aspx>
- Downes, S. (2009). Downes-Wiley: A Conversation on open educational resources. Canada: National Research Centre. Retrieved from <http://www.downes.ca/me/mybooks.htm>
- Eun, S. C. (2013). Brilliant Hallyu and plastic surgery. *Journal of Korean Medical Science*, 28(11), 1561-1562. Retrieved from <http://synapse.koreamed.org/DOIx.php?id=10.3346/jkms.2013.28.11.1561>
- Figueira, C. (2015) Persuasion and power in the modern world. *Cultural Trends*, 24(2), 178-182, DOI: 10.1080/09548963.2015.1031484

- Free Software Foundation. (2014). Various licenses and comments about them. Retrieved from <http://www.gnu.org/licenses/license-list.html>
- Fukunaga, N. (2006). "Those anime students": Foreign language literacy development through Japanese popular culture. *Journal of Adolescent & Adult Literacy*, 50(3), 206-222.
- Furman, N., Goldberg, D., & Lusin, N. (2010, December). Enrollments in languages other than English in United States institutions of higher education. *Modern Language Association*. Retrieved from http://www.mla.org/pdf/2009_enrollment_survey.pdf
- Gallagher, S., & Garrett, G. (2013, May 22). Going Gangnam Style with MOOC rankings. *The Australian, Higher Education*. Retrieved from <http://newsroom.unsw.edu.au/news/business/going-gangnam-style-mooc-rankings>
- Grossman, L. (2006, Dec 25). You—yes, you—are Time's Person of the Year. *Time*. Retrieved from <http://content.time.com/time/magazine/article/0,9171,1570810,00.html>
- Hanna, A., & Wood, D. (2011). Bridging the gap between OER initiative objectives and OER user needs in higher education. In *ASCILITE*. Retrieved from <http://www.ascilite.org.au/conferences/hobart11/downloads/papers/Hanna-full.pdf>
- Mora, M. D. I., & Leeming, D. E. (2013). A case study into learner engagement in the production of OERs within an online language environment. In Beaven, A., Comas-Quinn, A. & Sawhill, B. (Eds.) *Case studies of openness in the language classroom* (pp. 149-161). Retrieved from <http://research-publishing.net/publications/2013-beaven-comas-quinn-sawhill/>
- Itakura, H., & Nakajima, S. (2001). Teaching Japanese education for the era of IT: Research findings from an e-mail project between Hong-Kong and Kagoshima. *Current report on Japanese-Language Education Around the Globe*, 6, 227-240.
- Lee, H. K. (2011). Participatory media fandom: A case study of anime fansubbing. *Media, Culture & Society*, 33(8), 1131-1147.
- Leopold, W. (2009, March 19). YouTube 101: Northwestern offers course on viral videos. Retrieved from <http://www.northwestern.edu/newscenter/stories/2009/03/viralvideo.html>
- Lobato, R. (2012). *Shadow economies of cinema: Mapping informal film distribution*. London: Palgrave Macmillan.
- Macaro, E., Handley, Z., & Walter, C. (2012). A systematic review of CALL in English as a second language: Focus on primary and secondary education. *Language Teaching*, 45(01), 1-43.
- Miniwatts Marketing Group. (2014). World internet users statistics. Retrieved from <http://www.internetworldstats.com/stats.htm>
- Nagata, Y., & Sullivan, K. (2005). Hegemonic gender in Japanese as a foreign language education: Australian perspectives. In M. McLelland, & R. Dasgupta, *Genders and Sexualities in Japan* (pp. 15-32). Hoboken: Routledge.
- Nye, J. S. (2004). *Soft power: The means to success in world politics*. New York: PublicAffairs.
- Nye, J., & Kim, Y. (2013). Soft power and the Korean wave. In Kim, Y. (ed). *The Korean Wave: Korean Media Go Global* (pp. 31-42). London and New York: Routledge.
- Pasfield-Neofitou, S. E. (2012). Online communication in a second language: Social interaction, language use, and learning Japanese (Vol. 66). *Multilingual Matters*.
- Richard, J. C., & Schmidt, R. (2002). *Dictionary of language teaching & applied linguistics*. Essex: Longman.
- Rocheleau, M. (2013, October 13). Rapper Psy credited for heavy interest in Brandeis' first Korean language class. Retrieved from

- http://www.boston.com/yourcampus/news/brandeis/2013/10/psy_credited_for_heavy_interest_in_brandeis_first-ever_korean_language_class.html
- Rogers, M. (2013, November 11). The Psy impact. *Inside Higher Ed*. Retrieved from <https://www.insidehighered.com/news/2013/11/11/psy-draws-crowd-classroom>
- Soutphommasane, T. (2012). Gangnam points to our future. [Originally published in *The Age* and *The National Times*]. Retrieved from <http://www.monash.edu.au/news/show/gangnam-points-to-our-future>
- Stallman, R. (2003). Why schools should exclusively use free software. Retrieved from <http://www.gnu.org/education/edu-schools.html>
- Stallman, R. (2010). *Free software, free society: Selected essays of Richard M. Stallman* (2nd ed.). Boston: Free Software Foundation. Retrieved from <http://www.gnu.org/doc/fsfs-ii-2.pdf>
- Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. *Input in second language acquisition*, 15, 165-179.
- Swain, M. (1995). Three functions of output in second language learning. *Principle and practice in applied linguistics: Studies in honour of HG Widdowson*, 2(3), 125-144.
- Weller, Martin (2010). Big and little OER. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. Retrieved from <http://hdl.handle.net/10609/4851>
- Weller, M. (2011). *The digital scholar: How technology is transforming scholarly practice*. London: Bloomsbury Academic. Retrieved from <http://dx.doi.org/10.5040/978184966627>
- Whitelaw, B. (2011, April 20). Almost all YouTube views come from just 30% of films. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/technology/news/8464418/Almost-all-YouTube-views-come-from-just-30-of-films.html>
- WikiEducator. (n.d.). The essential freedoms. Retrieved from http://wikieducator.org/The_right_license/The_essential_freedoms
- Wikipedia (n.d.). Educational community license. Retrieved from https://en.wikipedia.org/wiki/Educational_Community_License
- Zern, J. (2011). Mmm mmm good—YouTube videos now served in WebM. [Web log] Retrieved from <http://youtube-global.blogspot.com.au/2011/04/mmm-mmm-good-youtube-videos-now-served.html>

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