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## **Online Learning: from Blended Learning to Connected Learning with Content Curation**

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### **Abstract**

Information and digital literacy is still poor in undergraduate students in France and elsewhere, although emphasized by UNESCO, OCDE and European Society 2020 as major competence for workers in the near future. Blended learning combines traditional teaching and self-learning using internet resources, leading to develop autonomy of trainees. Content curation is still a recent concept with applications in marketing but less in use for teaching and learning in colleges and universities.

Methods : Implementation of content curation tools (Scoop.it preferred because of potential) for blended learning and information literacy training during 5 years of #400 french (and chinese in the context of Nancy-Wuhan medical training program) students in two knowledge domains: immunology in medical university, geography in "classes préparatoires littéraires".

Results: Teachers opened and maintained one or more general topics related to the discipline as well as topics focusing on annual examinations programs. Students opened and maintained during various periods of time (from months to years) topics of their choice in related areas. They were evaluated on number of posts, regularity of posting, commentaries and tagging, pictures, sharing on social networks and impact of their topic.

Discussion: Content curation allowed teachers to select relevant resources in rapidly evolving topics and share them with students. Using curation, researchers followed scientific knowledge evolution, detected new topics, build interest networks and became thought leaders.

Content curation allowed students to (1) acquire and develop information, media and digital literacy learning by practicing focused information research, (2) discover usage of diverse resources (primary documents, secondary information, databases, press releases...), (3) develop critical minds about sources and contents. Content curation stimulated reading, analyzing and mastering digital information, helping create scientific watching competencies. Reading, tagging, commenting information in foreign languages helps students improve reading and writing fluency. Students were able to build information portfolios, create their digital identity, useful for recruiting interviews.

Content curation should be used in teaching in the context of blended learning programs to train students and trainees for multimodal literacy as well as future work capacities, research competencies and life-long learning.

Keywords: Content curation, immunology, geography, blended learning, connected learning, scoop.it,

## **Introduction**

In education, teaching is the concerted sharing of knowledge and experience, usually organized within a discipline and, more generally, the provision of stimulus to the psychological and intellectual growth of a person by another person or artifact.

Traditional classroom methods focuses on teacher centered education. Thanks to technical progresses, e-learning is more and more available for initial training, continuous education and professional development.

Blended learning is a new way of learning and teaching combining classrooms tuition and open online learning using information and resources available on the internet (Garrison et Kanuka, 2004 ; Güzer et Caner, 2014). It integrates digital tools and techniques, materials, activities in faceto face class and independent studies. In parallel; the amount, diversity and evolutivity of information in numerous disciplines is now impossible to acquire during traditional classes and should push to train learner to enlarge their digital literacy in order to become autonomous for his life-long learning. Connected learning has been proposed as a new approach based on social connectivity and inquired-based learning associating exploration, discovery, driven by real world problems, young people interests and identities (Ito et al, 2013)

UNESCO and OCDE insist on needs in information literacy, including now media analysis allowing evaluation, interpretation and use of technical, scientific and societal contents. Objectives of European Society 2020 are very similar focusing on multi-competent individuals able think critically, to raise and solve problems and become lifelong learners (OCDE-OECD, 2018; UNESCO, 2018). (Europa, 2010) This knowledge management approach is becoming crucial because of so-called infobesity context (Sauvajol-Rialland, 2014), covering information published in journals as well as accessible through the internet via blogs, social networks... Paradoxically information and digital literacy of students end-users is still rather poor, often limited to usage of a few search engines and social networks.

Content curation is still a recent concept although the number of tools exploded during the past years. It covers actions of collection of relevant information through aggregation, selection, editorialization, tagging and sharing. » (Dale, 2014 ; Deschaine et Sharma, 2015 ; Flintoff, Mellow et Clark, 2014 ; Gadot et Levin, 2012). Pinterest (Hansen, Nowlan et Winter, 2012) Usages are focusing more on marketing applications while teaching and learning

developments are still wide open. A few teachers invested themselves in training students in digital curation as a core competency for learning and literacy particularly in higher education (Ungerer, 2016)

We will report on experiences during almost 5 years of content curation in two areas of learning: geography in undergraduate training (literary “hypokhâgne/khagne”), and immunology in medical university at master level. We will detail methods used by teachers and learners, contents and audiences, participation of teachers and students, evaluation and assessment, advantages and opportunities, limits and difficulties.

### **Geography :**

Geography is a knowledge area where online numeric resources (GIS, cartography, géomatic...) increased considerably in the context of spatial dynamics of territories (Healey, Pawson et Solem, 2013).

### *Methods*

« Hypokhâgne » class of 50 students and “khâgne” classes of 40 students benefited of an original pedagogic action aiming to use various content curation tools, web resources and social networks during more than 5 years, ie more than 200 students. The teacher builded content hubs focused on topics of the official program offering students selected resources. Students were invited to practice content curation on focused topics during first year of training. During second year, individually and collectively, they were stimulated in building content hubs on actuality of topics required by the examination. Various tools were used such as Paper.li, Pearltrees, Pinterest, Scoop.it, Storify and rediffusion on social networks mainly Twitter, LinkedIn

### *Actions*

The teacher curated on Scoop.it a general geography topic from 2012 to 2018 Géographie : les dernières nouvelles de la toile, (Geography, last news from the web) (Arnal, 2018) gathering more than 1000 posts and attracting more than 33k views as well as topics curated on Pearltrees, Pinterest, Paper\_li. Every year, he also opened and maintained webpages related to current's year programme for recruitment at Lyons Ecole Normale Supérieure : Frontières et espaces frontaliers dans le monde (Frontiers and border areas in the world), L'afrique australe (Austral africa), la Planète financière : espaces et territoires à l'ère de l'économie globalisée (Financial world : spaces and territories in era of globalized world economy) 2015, Population et inégalités dans le monde (inequaliries between populations in the world), Le Brésil, La Chine : sociétés, territoires, environnements (Brazil,

China: societies, territories, environments) with 150 to 450 posts relevant and commented, viewed from 5 to 24 K times.

Students, alone or in couple opened topics of their choice, more or less related to subjects covered by training, allowing them to enlarge and deepen their knowledge and interests and sharing their discoveries. Material collected varied from student to student from 50 to hundreds of posts.

Audience of some topics reached thousands of views up to 15K pour le sujet suivant : La fonte des glaces à l'heure des changements climatiques. Quel impact occasionne le dérèglement climatique sur la fonte des glaces? (Melting of ice in this time of climatic changes. Impact of climate change on ice melting) active between november 2016 and april 2018, gathering 400 posts and a community of around 300 followers (Vignat, 2018).

Some topics were detected by Scoop.it algorithm and gained a Gold badge, such as Identités de l'empire du milieu : La chine vue par la géographie (Identities of the Middle kingdom: China viewed through geography) ; Russie et géographie (Russia and geography) or a Silver badge for Géographie et imaginaire (Geography and fantasy) (200 posts et 7K views) and for Quand l'art s'invite en ville (Art in the city) avec 14K views de 75 posts Other topics were selected under the theme Geography by Scoop.it, such as Le tourisme des series Comment les lieux de tournages deviennent-ils des destinations touristiques? (Television series and tourism: how filming locations become holiday destinations) (50 posts 3.5 K vues). Many topics collected more than 1000 views : Envolée migratoire (migratory surges), Industrie textile et environnement (Textile industry and environment), Rock et géographie (Rock music and geopgraphy), Cercle polaire arctique (Arctic polar circle), Séismes et conséquences (Earthquakes and consequences), Terrorisme islamiste (Islamist terrorism), Ecoquartiers (ecology and neighbourhoods), Les mines d'or dans le monde (Gold mines in the world), Transport aérien (air travel), Question kurde (Kurdish issue), Terre de pèlerinages (Centers of worship and pilgrimages)

Some students pursued their curation activity beyond their initial training program, with some modifying their topic of interest.

Objective and subjective assessment of work of students relied on contents posted (number, relevance of selection to the topic, titles, images, tags, personal comments) and impact (number of views, links on social networks, audience, followers...)

## **Immunology**

Immunology is a transversal biological specialty interested in all medical specialties with a very rapid movement of knowledge fundamental and applied useful for pathophysiology, diagnosis and therapies. Teaching and learning become major challenge for initial training and continuous professional development (Debard, Py, Kraehenbuhl et Fuchs, 2005).

### *Methods*

After having maintained during many years, the website of ASSIM which offered already selected pedagogic contents and links to relevant resources in various areas of medical and fundamental immunology (Faure, 2013) the author invested himself into curation, using mainly scoop.it to select, gather and share information and relevant contents, validated conveying main areas of immunology.

In the context of 7.309 unit (Methodology of clinical research, surgical and medical research) Master students (Medicine, Dental,) and students from the french-chinese training program, around 40 students every year , were incited to invest into scientific watching using curation tools. It was also offered to interns, PhD students, post-docs as well as French, European and international colleagues , particularly in Laboratory medicine section of UEMS

### *Actions*

Teacher in charge opened and maintained with about 20 cocurators 11 topics directly related to fundamental, medical, clinical and biological immunology (Faure, 2018) gathering more than 150K posts: Immunology, from Flow Cytometry to Cytomics, Immunology and Biotherapies, Mucosal Immunity, Autoimmunity, Allergy (and clinical Immunology), Hematology, Rheumatology-Rhumatologie, Neuroimmunology, Laboratory Medicine – Biopathology, History of Immunology. Their audience was more than 250K views, by 145K visitors and 2K followers.

Three topics were opened on cities partners of the sino-french training program to help students and teachers stay in touch, prepare their collaborative talks and help students maintain their foreign language fluency. (Nancy, Lorraine (5.6K scoops, 19.5 views, 7.6 K visitors); Wuhan, Hubei (3.8K posts, >14K views, >5K visitors); Kunming-Yunnan( >1K posts, >2K views, 600 visitors)

Topics opened by master students and Chinese students of the Sino-french training program are diverse, but much less focused than students in Geography. They are related to medical disciplines they are studying (Hematology, Obstetrics, Genetics..) or to wide biology subjects (Science, Nucleus) and sometimes more focused (clinical research and oncology, stem cells and immunology)

Medical and biology interns opened topics on Medical biology, allergy and autoimmunity. PhD students and post-docs as well as French, European and American colleagues were

interested in joining curation of running topics or opened specific topics according to their research interest (PNH Research Today, Immune-monitoring, type I diabetes, ENT articles). European colleagues from UEMS section preferred act as cocurators of topics focusing on CME/CPD and Laboratory Medicine.

Students pursued curation activity during time of the module. Some PhD students, researchers and teachers pursued during months and/or years but most argue that lack of time does not allow to maintain this watching and sharing activity.

Bonus points, according to number of posts, relevance of selection and quality of tags and comments are stimulators.

## **Discussion**

Most students and teachers preferring scoop.it as curation tool for serious information, its usage will be mainly discussed. Indeed, web crawling can be parametered, posting with pictures and images is attractive, comments and tagging are easy and sharing on another social networks is convivial. It is possible to post when browsing with an applet and reposting posts from other curators is useful. The internal search engine is a major asset enabling to find again previously curated information using tags or free text. Thus teachers and students can build web-magazines and content hubs focusing of any kind of topic and share them through their networks and communities. Other tools such as Spotify, Paper.li and Pinterest, focusing more on images curations were also used mainly by the teacher as well as Pearltrees in geography to organize and structure curated collected information. However, on the long run, Scoop.it was chosen by most students.

## *Advantages*

The main advantage of content curation for students was summarized somehow provocatively as “apprendre à lire et à écrire” ie learning to read and write (Faure & Arnal, 2018).

Learning how to read: is (1) discover information in its amount, richness and diversity , so-called infobesity nowadays impossible to master by individuals (2) discover diversity of resources (primary documents, secondary or tertiary documents, reviews, grey literature, press releases, web and internet pages... (3) discover tools enabling information access (databases Pubmed, Google Scholar, Scopus, Web of science..., dedicated search engines, scientific social networks...

Tagging posts is similar to key words definition, and pushes to analyze major messages of the information. Content curation of sensitive subjects an health-related concerns such as allergies, vaccinations...allows to manage fake news and develop criticism. Sharing results of curation on Twitter, Facebook, LinkedIn, and Google+ social networks allow to build personal learning networks and facilitate informal contacts in relevant interest domains.

Content curation by teachers and students is typical of blended learning and rely on “learning by doing” methods. It offers an initiation to science watching and strategic intelligence which is not usual in classical studies. In master and PhD research, it helps following the major topic, but should help discovering other interest subjects through serendipity. More widely, it might awaken curiosity so much constrained in classical unidirectional training.

Learning how to write is writing summaries and personal comments which helps students be trained in analysis of texts, summary writing, important keywords tagging and message transmitting. In the context of medical french-chinese training programs, posting and sharing medical and non-medical resources in french help maintaining fluency levels acquired during initial training and might enlarge vocabulary useful for further medical activities. In collaboration with foreign language teachers content curation favours reading and writing in foreign languages.

### *Limits*

The first problem for teachers and students is the perennity of open access to curation tools. Most for economic models, have to change their initial free policies to more expensive solutions. The major problem is the tenacity and persistence of teacher-curators who most argue of limited time to accomplish this task regularly. It might seem surprising in that their mission is to stay informed and to share their knowledge with students, but teachers are still not recognized for this new activity

## **Conclusions**

### *Content curation*

Content curation allows teachers and lecturers to follow scientific knowledge in rapidly changing areas, offering to their students selected and commented information. Teachers involved in research in universities on top of keeping abreast of information can build interest networks and become though leaders in their area of interest. Through serendipity, they can also detect easily potential new research projects.

Content curation helps students and learners developing their digital and information literacies (Antonio et Tuffey, 2015 ;Kortelainen, 2016 ; Ungerer, 2016 ). They acquire a culture of information research, and criticism spirit useful in their future personal and professional lives. Cross fertilization of students and teachers allows to decompartmentalise access to knowledge.



Practicing Content Curation stimulates information research and reading not only in the topics covered by training and research program, but also in adjacent themes, particularly in case of societal aspects of a subject. In training based on practicing research, such as master and PhD studies, students will be able to build content hubs of information searchable months or year later.

Reading and analyzing resources in foreign languages help students' master multilingual information. Commenting those resources allows them to practice writing and summarizing, competencies required for learning, teaching and professional life.

Students can build portfolios of information received in their training and encountered when surfing internet, information discovered and refined according to the objectives of their courses and to their interests. It will help them to affirm their digital identity, more than classical personal social networks, focusing on their interests, which might be very useful for further recruiting interviews in their research and professional life. Indeed, some students made a difference in such situations, on their accomplishment using content curation.

#### *From blended learning to connected learning and beyond*

Blended learning has many alternatives names such as, hybrid, mixed, flipped.. It fills the gap between traditional education and virtual classrooms. It helps trainees and future professionals become active and self-learners, without the availability of a facilitator. Exchanges between learners and social networks allow experience online studying communities so useful in future participation in company networks for strategic intelligence.

Information and digital curation indeed allows students to collect, organize, interpret, annotate and share online resources on a topic of interest. Most students engaged in digital curation activities prior and after lectures developed critical analysis skills of the teaching materials they are using.

Teachers and lecturers should become facilitators or mentors, but most curricula are content packed, with very standardized testing. And most teachers report about limited opportunities for such pedagogy due to curriculum and assessment demands, lack of understanding from colleagues and general lack of time (Mirra, 2014) One of the main challenge, limiting usage of content curation and e-learning in curricula, is the nature of evaluation and assessment. More than a one and done process, it should be an ongoing process integrated into every step, through the entire learner experience.

Taking into account the growing importance of smartphones, content curation is a nice way to approach so-called mobile-learning. Most tools available have mobile versions and information can be easily managed not only with computers but also on a smartphone or a tablet. Students, everywhere, in their journeys and free time may look down at their screen

and learn something relevant to their curiosity. Subdivision of knowledge or of recent information into subunits is also particularly appropriate for micro-learning. This is already much in use in follow-up of research through reading scientific research papers, but teachers and lecturers can also design capsules embedding information on a specific point of the training program enabling students to master and/or memorize knowledge. Another new concept, obviously not so new in daily life, of learning is that of active learning, asking student to participate in the building of evaluated and analyzed knowledge, not only absorbing it passively. Content curation can foster creative and critical thinking, implement student centered topics of interest and encourage collaboration. Benefits and positive effects of active learning and content curation towards knowledge gather positive attitudes towards learning, comprehension and memory, creative thinking and curiosity.

Connected Learning may be defined as “socially embedded, interest-driven, and oriented toward educational, economic, or political opportunity”. Connected learning is accomplished when a student is “able to pursue a personal interest or passion with the support of friends and caring adults, and is in turn able to link this learning and interest to academic achievement, career success” (Ito et al, 2013). All those approaches are covered by content curation: the choice of personal topics through interest and or passion help student be involved in searching, support regular reading of information material; collaborating with colleagues and making new virtual friends with similar interests and passions is a key driver of social networks and should be used for training and learning purposes; keeping virtually in touch with teachers and lecturers involved in similar activities can remove barriers between students and teacher; usage of web materials not only validated scientific publications but also press releases and social network material, in conjunction with teachers will open horizons for students to social impacts of their topic and educate students to constructive criticism of information found by chance on the web. All this practice is particularly useful not only for students willing to pursue their professional life in academic context, but also in industry and commerce, all those discipline and activities being more and more entwined and based for strategic intelligence on information searchable and found on the web.

Content curation can be and should be used not only for marketing purposes but also for teaching and learning by teachers at various levels of curricula, by researchers in their projects, by working professionals in their initial training as well as in their life-long learning. Applications are wide to master information literacies, knowledge management and strategic intelligence.

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