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AN OPEN TEXTBOOK SYSTEM TO TACKLE HONG KONG'S TEXTBOOK PROBLEMS

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Abstract

This paper traces the recent development of open educational resources. The Massachusetts Institute of Technology began development of open courseware (OCW) in 2002 as a means 'to advance knowledge and educate students'. The movement to develop OER has since gained momentum as educators have come to realize the potential of OER in enhancing delivery of education. Virtual universities offering online courses using OER have mushroomed recently, granting certifications after assessment, at a low fee. From among the various forms of OER, teachers and education planners have found that open textbooks are a particularly useful form of content delivery, and may serve as a solution to the problem of high textbook prices. This has led to the growth of many open textbooks projects.

Against this background, this paper examines the issues and problems related to textbooks in Hong Kong. It outlines an open textbook initiative which is meant not only to solve Hong Kong's immediate problem of high textbook prices, but also ultimately to achieve effective teaching and learning in the digital era. The various components of the open textbook project, which are designed to address the needs of Hong Kong schools and universities, will be introduced.

Keywords

Open educational resources; open textbooks, open license

Outgrowths of OER

OER Universities

With the abundance of open courseware attracting a high number of learners, a low-cost online education industry is starting to grow. Coursera (<https://www.coursera.org/#>) and Udacity (<http://www.udacity.com/>) are recent for-profit ventures, offering online courses based on open courseware. In late 2011, MIT formed MITx (<http://mitx.mit.edu/>), and in the fall of this year it will launch edX in partnership with Harvard University and UC Berkeley. Both MITx and edX are non-profit projects which offer university-level courses online to a global audience at no charge, by making use of the open courseware these institutions have developed. For a modest fee, anybody, including MIT or Harvard students, can earn certificates for successful completion of the courses, although still no college credit is awarded.

In addition to educational offerings, the participating institutions will use edX to research learning and distance education. Furthermore, the 'learning platform' for delivery of the courses will be developed as open source software and made available to other institutions of higher learning which wish to make similar offerings; there are also plans to allow other schools to offer courses on the edX website (<https://www.edx.org/faq>). A viable business model for the sustainability of edX is currently being worked out.

Open Textbooks

While online open courses cater to the general public, some other open source learning resources have been deliberately developed for specific groups of users. These are 'open textbooks', and they are increasingly seen as a viable solution to an existing problem in education: the high prices of textbooks.

Open textbooks are able to provide a total solution to the problems listed above. They:

- are inexpensive to users (students, teachers and parents);
- allow rapid revision and timely updates;
- allow transparent peer and readers' control of quality;
- allow easy adaptation and school/class-based modifications;
- are digitized for online or mobile learning;
- are readily available for use along with other multi-media, online materials, whether in print or in other digital formats.

These advantages of open textbooks have been evident in the broad range of experiences of overseas institutions.

Problems related to textbooks in Hong Kong

Over the past decade, Hong Kong has been continually confronted with a number of issues related to textbooks, especially the issue of high textbooks prices at the primary and secondary school levels. There are also additional issues which have stalled the development of e-learning at the school level.

- Printed textbook prices have stayed inextricably high in the eyes of students and parents.
- Traditional printed textbooks are not flexible enough to cater for the specific needs of students of individual schools or classes.
- Hong Kong textbooks that are intended to be placed in the Recommended Textbook List of the Education Bureau (EDB) of the government are required to pass an EDB instituted vetting (assessment) process. However, the vetting requirements and the curriculum changes have exerted extra pressure on publishers in meeting deadlines and standards, and extra efforts and resources are needed by publishers to satisfy such needs.
- Textbooks in Hong Kong are still published using the conventional model of heavy upfront investments, highly specialized expert development teams and lengthy production procedures and schedules.
- Some academic staff in universities and teachers in secondary schools have attempted to develop their own teaching and learning materials for students, but they are mostly 'lone rangers' and the scale of their production remains small.

Hence, their efforts are not shared by other colleagues even though they may wish to do so.

- Publishers are reluctant to take much advantage of digital technology and put textbooks online en masse. Therefore students are deprived of the options of online access and mobile learning, which are important elements of teaching and learning today.

The Hong Kong government's solution to textbook problems

In recent years, the Hong Kong government has been promoting the use of e-books and e-resources rather than printed copies. It has taken e-textbooks to be a solution to the problem of constant and rapid rises in the prices of printed textbooks.

A government working group on textbooks and e-learning resources development has recommended measures to assist the development of open e-learning resources (Working Group on Textbooks and E-learning Resources Development, 2009), and these include:

1. Grants should be provided to encourage collaboration between schools and other sectors in developing and promoting the e-learning resources market, and for purchasing e-learning resources.
2. The Hong Kong Education City (HKEdCity), a government portal for the promotion of the use of information technology in education, would set up an e-commerce platform of e-learning resources to assist students and teachers in purchasing such resources from various providers, as well as to facilitate the sharing of free learning resources designed by teachers.
3. Textbooks, teaching materials and learning materials should be debundled for pricing as soon as possible, a move which is intended to reduce textbook prices.

None of these measures halted the increase in textbook prices. The issue of high textbook prices continued to be a hot topic for the media for 2011 and the first few months of 2012. A Task Force to review learning and teaching materials produced yet another report on the subject in December 2011. One important recommendation of the report was 'to provide incentives and assistance to attract new entrants such as relevant organizations and professionals to the market so as to develop quality and reasonably-priced e-textbooks'. An 'e-Textbook Market Development Scheme', or EMADS, in June 2012, which aims to 'facilitate and encourage the participation of potential and aspiring e-textbook developers for the development of a new, healthy, rich and sustainable e-textbook market in Hong Kong'. The plan encourages and actually subsidizes the development of e-textbooks by non-profit making organizations. It is hoped that the move will help promote better learning and teaching in the long term.

Were printed textbook prices reduced when some parts of printed textbooks were replaced by e-learning resources? No textbook price reduction had been observed in the past years, when the HKEdCity offered plenty of e-resources. We are of the view that e-learning resources can supplement printed textbooks in teaching, but they will not completely take the place of them for a long time to come. Judy Baker of the Community College Consortium of Open Educational Resources likens printed textbooks to 'The Hummer of higher education' (quoted by Kamenetz, 2010), and this analogy applies equally well to primary and secondary schools in Hong Kong. Even

when parts of printed textbooks are replaced by e-resources, parents still have to purchase the whole set of textbooks as they cannot be purchased in parts. So while the use of e-learning resources in the classroom is on the rise, and the government's move to promote and invest in e-learning in schools is widely applauded, it has not helped to reduce the high textbook expenditure by parents in Hong Kong.

Will printed textbook prices be reduced because of the EMADS? This is yet to be seen. Since the scheme provides subsidy to non-profit making organizations to produce e-textbooks, the cost of the production can be lowered, so long as the subsidy is still at work. However, there is no guarantee that the cost of e-textbooks will remain low when the subsidy runs out.

There are other costs involved when using e-textbooks. E-books are not like printed books which can be read directly. To read from an e-book, there is a need to have in place the appropriate infrastructure and equipment (including an Internet connection to download the book, individualized access devices, not to mention the server and learning management systems hosting the books) and these will all involve substantial costs.

There is one more hurdle in the government's EMADS scheme – it aims to promote the development of *enhanced* e-textbooks, and not the more common e-textbooks. The difference between these two versions of e-textbooks is that the former contains enhanced features that only the most up-to-date technology can deliver. These are multimedia instructional contents which are very costly to develop. Common e-textbooks, in contrast, are plain and do not provide rich multimedia content like the enhanced ones. They may bring about a 70% or 80% cost reduction over the traditional printed textbooks.

Our solution for the problems in Hong Kong

By taking advantage of information and communication technologies, and new developments in copyright licensing, solutions are emerging to address a combination of issues involving costs, intellectual property rights, access and utilization. This is the open textbooks model.

A group of interested colleagues at the OUHK have come to the conclusion that they can take advantage of new developments in information and communication technologies, and copyright licensing. They note that there are now a vast number of open education resources or free learning resources for higher education worldwide and these innovations are also diffusing to the primary and secondary education levels, notably in North America and Europe.

More specifically, beneficiaries of this proposed project will include students, teachers, parents, and the community.

The open textbook system

The OUHK has proposed the establishment of a sustainable system which provides quality open textbooks for adoption and adaptation at minimal cost for education for

all. The proposal has been approved for funding. This system will serve students and teachers at the primary, secondary and tertiary levels.

The proposal was developed based on the concept and practice of open textbooks. The goal is to develop an Open Textbook system that can establish an online collaborative environment to produce open source textbooks which are free, flexible, current and directly available for use and adaptation by universities and schools.

The deliverables of the project include:

- a) An online open textbook platform
- b) Online textbooks and teaching materials
- c) Quality assurance
- d) Community and capacity building

These will be described in more detail below.

A. An online open textbook platform

A platform will be developed to serve a number of functions. First, it will provide a repository for hosting textbook contents, courseware, teaching materials and resources (such as links to online contents which are available overseas). Teachers can select appropriate textbook contents, teaching materials and resources, and customize them to fit specific teaching needs.

Secondly, this system supports a two-way, interactive and iterative process whereby teachers can browse, download, revise, re-create and upload material to the same site. The built-in architecture would anticipate and accommodate an on-going organic growth of the content driven by the bottom-up involvement of an ever-expanding body of users, stakeholders and volunteers.

Moreover, the platform allows users to download and print out the selected and customized textbooks and courseware. It also allows teachers and students to send online requests to printing houses for mass printing of the textbooks. Besides, electronic versions of the selected customized textbooks and courseware are available to support online and mobile learning. The platform also enables schools and teachers to generate an individual school site to house their customized textbooks and courseware.

B. Online textbooks and teaching materials

Open textbooks and other open educational resources will be placed on the platform. These include:

- Open textbooks at the degree and associate degree levels which are already available elsewhere will be included in the system for possible adoption by teachers and students.

- Electronic versions of the course materials of seven core subjects of the Yi Jin project will be uploaded to this platform for all Yi Jin students to enjoy free access.
- A complete set of open textbooks for the English subject at both secondary and primary school levels, covering the EDB's prescribed syllabi, as well as associated teaching and learning materials, will be developed and provided on the platform. The number of subjects will increase with future development of the project.
- Exemplary courseware at degree level of exemplary course units adapted from the OUHK's existing courses will also be included.

How are the contents of the textbooks developed? Successful open textbook projects have produced very detailed guidelines regarding how the publishing work can be conducted. In our project, the OUHK's course development model will be used to develop the open textbooks for primary and secondary schools.

A textbook development team will be formed for each textbook to be developed. The team will consist of an author, an instructional designer, and co-authors who also take the role of peer reviewers. A combined strategy will be employed to provide the contents and ensure that they can be made available within a reasonably short timescale and that they cost substantially less than traditional publishing and production. The *modus operandi* consists of:

- aggregating and selecting from the Web relevant and usable resource materials. This saves users tremendous time and effort that would be spent on sifting through the massive amount of information online and removes uncertainty as to the relevance to students' teaching and learning.
- borrowing and adopting 'off-the-shelf' open textbooks from abroad offered freely for reuse, revision and redistribution under the Creative Commons Licenses. Many such open textbooks are specifically developed, comprehensive and complete for teaching and learning, albeit for somewhat different curricular and national standards. They can be translated, easily modified and adapted as a fast-track and economical way of content development.
- enlisting the support of experienced practitioners, especially teachers, to cooperate and collectively develop texts and associated material for individual or common needs. According to published information, a substantial number of schools and institutions in Hong Kong are already engaged in creating teaching materials in-house. The opportunity for mutual cooperation offered by this Open Textbook programme will provide extra incentives, and reduce the workload of single-handed development by individuals who are scattered among various educational organizations.
- deploying and recruiting professionals and experts to create original content where necessary.

- fostering partnerships with local and overseas institutions and organizations to jointly develop and exchange textbooks and supplementary materials for mutual use or other targets in respective regions.

C. Quality assurance

To alleviate the worries and scepticism over the quality of free learning resources, a quality assurance mechanism will be set up and overseen by a team of subject experts, editors and technologists to monitor the development process, assess quality, and review each item admitted to the system. These professionals will take on the role of ‘co-authors’ and ‘gate-keepers’ for the quality of the textbooks. The content will be continually reviewed, updated, improved and enriched with reference to the ratings and feedback gathered online and offline. Apart from internal quality procedures, the following recourses will also be in place:

- Peer review – Where appropriate, the developed content will be forwarded to individual peers or groups from professional organizations, either through voluntary or paid service.
- Government review panels – In the case of textbooks for primary and secondary education, the final product will be submitted for assessment by the Review Panels of the Textbook Committee of the EDB in the same way as a commercial textbook, with a view to being placed on the Bureau’s ‘Recommended Textbook List’.
- Open review and rating – The online platform should provide an opportunity for teachers, educators, parents and other users to review and rate the materials publicly. Such transparency helps to identify any shortcomings, ensure the effectiveness of the particular resource and in turn further bolster its quality.
- Systematic evaluation and research – Systematic studies are carried out together to evaluate the service outcomes and assess the level of users and participants’ satisfaction.

D. Community and capacity building

Before development work begins, an investigative study to verify assumptions, identify expertise from the field of educational practitioners and prioritize tasks according to the needs and preferences of the target users will be conducted. In addition to providing the necessary data and precise information to determine the appropriateness of each job item, the research exercise will also serve to raise awareness of the opportunities and potential benefits available to contributors, participants and the general public.

A consortium made up of potential contributors and beneficiary schools and organizations which subscribe to the spirit and principles of open educational resources will be established to share expertise, provide manpower, coordinate efforts, and to spread knowledge in support of the continuous development of open textbooks and resources at the societal level.

At the individual level, interested and qualified authors, editors, teachers from

primary and secondary schools, and professors from tertiary institutions will be invited to join the teams of developers and contributors.

Training will be provided to teachers and professors, mainly on the teaching practices to be used with open textbooks, teaching materials and open learning resources. The training will help them to master the necessary skills to produce open textbooks, teaching materials and other learning resources. It will nurture members' abilities to search, filter and select appropriate and legitimate open learning resources on the Web, and write, edit and digitize materials for content. It will also explain what good instructional design, is how quality is upheld and what tools should be used.

Conclusion

This paper briefly explained the textbook problems confronting Hong Kong and why open textbooks could be a solution to the problems. The OUHK's open textbook project, which aims to establish a versatile online platform to store and support various kinds of open textbooks' production and use, to develop textbooks and learning materials to start up the platform, will include a quality assurance system, and mechanism to build the capacity of potential users in order to maximize the benefits which can be derived from the system.

In the long run, the project will become a public platform primarily for teachers and students to access well organized learning material they may find useful, and for any other users with the enthusiasm to collaboratively contribute to the content of open textbooks, whether by way of writing, editing, enriching, commenting or amending. The expanding community and capacity thus generated will ensure a clear understanding of quality standards and requirements, and provide ample energy, relevant experiences and favourable conditions for the continuous improvement of the programme and achievement of successful outcomes.

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