



A Study on the University Students' Use of Open Educational Resources for Learning Purposes

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Abstract. It is undeniable that open educational resources or OER have been widely used by university students for learning purposes. Over a decade, OER have been gradually evolved in different forms, including open courseware and materials, open online courses and tutorials, open e-books and e-journals, and open-source learning tools. This paper investigates the university students' use of OER for different learning purposes such as supplementing course textbooks, doing assignments and projects, and preparing tests and examinations, based on an online survey conducted to the full-time students of the Open University of Hong Kong in 2016–17, 2017–18 and 2018–19. It is revealed that the majority of students very often or often use OER for learning purposes, and more students consider OER very useful or useful for supplementing course textbooks and doing assignment and projects than for preparing tests and examinations. Among other categories of OER, open courseware, open course materials, open e-books, and online dictionaries are generally considered as to be very useful or useful. On the other hand, from the students' viewpoints, the accuracy and comprehensiveness of OER contents are the major concerns in using OER for learning purposes.

Keywords: Open educational resources · Open courseware · Open online courses · Open e-books · Learning effectiveness

1 Introduction

In the past decade, with the increasing internet penetration, growing popularity of digital materials, and evolving open access culture, vast amount of online resources have been openly available through the internet. According to a recent survey, 2.5 quintillion bytes of data are created in the internet per day [1]. Some of these open access resources are of educational nature, and are called open educational resources or OER. In a variety of forms, such as e-books, courseware, course materials, online courses, online dictionaries, and open source learning tools, OER are openly available through the internet for learning purposes. According to the Organization for Economic Cooperation and Development, OER is defined as the “digitized materials offered freely and openly for educators, students, and self-learners to use and re-use for teaching, learning and research” [2].

It is undeniable that OER have been widely accepted as main sources of learning resources at almost all educational levels, from primary and secondary education to higher education. Like other online resources in the internet, OER contents have been expanding at a compound rate for many reasons. First, with the broad internet penetration, it is very convenient to share and access digital resources through the internet. This enables the openness, public availability and accessibility of OER. Second, the prevalence of digital culture enables the adoption of e-learning as to complement to the traditional learning [3–5]. Teachers and students have become accustomed to the use of digital learning resources in the teaching and learning process. Third, the open-source or open-access culture has been well developed, especially after the establishment of standard open licensing options, such as the Creative Commons [6, 7]. This provides a legitimate means to resolving the licensing and copyright issues, for one to access, share, adapt and adopt OER. Fourth, official policies and guidelines as well as good practices on the adoption of OER have been established at both the government and institution levels [8, 9].

Although OER for primary and secondary education have been well available such as open access textbooks [10, 11], the majority of OER aims for higher education. OER for higher education can be generally categorized as open courseware and course materials, open online courses and tutorials, open e-books and e-journals, and open-source learning tools [12]. Open courseware are the self-contained learning materials, organized and structured for a course of study. They are typically used for self-learning and distance learning, but can also be used in the traditional classroom environment. Examples are OpenCourseWare [13] and OpenLearn [14]. Open online courses are online courses that are openly and freely delivered through the Internet. They include massive open online courses or MOOCs, mini online courses or boutique online courses, and online tutorials, etc. Some online interactions between the teachers and students are allowed. Examples are EdX [15] and Coursera [16]. Open e-books cover open access textbooks and reference books. Some of them are also downloadable for offline usage. Examples are OpenStar CNX [17] and College Open Textbooks Collaborative [18]. Open-source learning tools broadly cover online learning platforms, online dictionaries and tools that support learning. Examples are Wikipedia [19] and Wiktionary [20].

The author conducted a study on the distance-learning students' perception on the usefulness of OER for learning purposes in 2017 [21], and another study to compare the perceived usefulness of OER between full-time and distance-learning students in 2018 [22]. This paper continue to investigate the same topic but only on the full-time students. The aim is to identify the typical use of OER by university students for learning purposes with a focus on the frequency of usage, the perceived usefulness and shortcomings. This study is based on an online survey conducted to the full-time students of the Open University of Hong Kong over the past three academic years, namely, 2016–17, 2017–18 and 2018–19. The collected data are then consolidated and analyzed in order to derive some general findings on the university students' use of OER for learning purposes.

The rest of this paper is organized as follows. Section 2 describes the design of the above-mentioned online survey. Section 3 shows the survey results, and highlights the key findings. Section 4 concludes this paper with some discussion.

2 Survey on the Use of OER for Learning Purposes

In order to study the students' use of OER for learning purposes, since the academic year 2016–17, a regular online survey on the use of OER has been conducted at the Open University of Hong Kong. The Open University of Hong Kong was established by the Hong Kong Government in 1989 to offer undergraduate and postgraduate programmes in two different modes, full-time learning and distance-learning [23]. The programmes cover subjects in various disciplines, including arts, social sciences, business administration, education, nursing, health studies, science and technology. At present, there are about 10,000 and 9,000 students, studying in full-time learning and distance-learning modes respectively. On an annual basis, the online survey has been separately conducted to the full-time and distance-learning students, usually near the end of the first semester (around early December).

Questions in the online survey are structured in three parts. Students are asked on their use of OER for learning purposes whilst the use of internet resources for non-learning purposes is excluded. The first part is more on the general usage and perception of OER for learning purposes. Students are asked on how often of using OER for learning purposes, and how useful of using OER for different learning purposes. The second part focus on the perceived usefulness of OER by the four categories, namely, open courseware and course materials, open online courses and tutorials, open access books and journals, and open source learning software and tools. Students are asked on the usefulness of the OER under each of these four categories. In the third part, students are asked on their concerns about the shortcomings of using OER, such as on accuracy, up-to-date, comprehensiveness, and organization and completeness of the contents.

The scope of study is on the use of OER by the full-time students, regardless of their years of study. Only the valid responses from the full-time students are used for analysis although responses from both full-time and distance-learning students are collected in the survey. For 2016/17 survey conducted in December 2016, a total of 215 responses from full-time students were received. The 2017/18 survey was conducted in December 2017, where a total of 356 responses from full-time students were received. In December 2018, the 2018/19 survey was conducted. A total of 414 valid responses from full-time students were received.

3 Survey Results and Key Findings

This section reports the consolidated survey results, and discuss the key findings from the survey results.

3.1 General Usage and Perception of OER for Learning Purposes

Table 1 shows how often of using OER for learning purposes. Over 80% of the respondents who very often or often access OER.

Table 1. Frequency of using OER for learning purposes.

Frequency	Years*		
	2016–17	2017–18	2018–19
Very often (every day)	39%	31%	37%
Often (more than once per week, but not every day)	43%	52%	50%
Sometimes (once per week)	14%	13%	10%
Seldom (less than once per week)	4%	4%	3%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

Table 2 shows the students' perceived usefulness of OER in supplementing course textbooks and materials, acquiring more knowledge as learning reference, getting resources for doing assignments and projects, and getting resources for preparing tests and examinations.

Table 2. Usefulness of OER for different learning purposes.

Learning purposes	Years*	Very useful	Useful	Neutral	Less useful	Not useful
To supplement course textbooks and materials	2016–17	40%	36%	22%	2%	0%
	2017–18	40%	34%	19%	4%	2%
	2018–19	37%	40%	18%	4%	1%
To acquire more knowledge as learning reference	2016–17	32%	39%	22%	4%	2%
	2017–18	35%	31%	22%	7%	5%
	2018–19	32%	37%	21%	8%	3%
To get resources for doing assignments and projects	2016–17	40%	36%	18%	4%	1%
	2017–18	43%	31%	17%	6%	2%
	2018–19	36%	38%	19%	5%	3%
To get resources for preparing tests and examination	2016–17	25%	26%	25%	15%	8%
	2017–18	29%	26%	26%	11%	7%
	2018–19	25%	33%	26%	10%	5%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

From Table 2, over 70% of respondents consider OER very useful or useful for being used to supplement course textbooks and materials, and to get resources for doing assignment and projects. Relatively less % of respondents consider OER very useful or useful for being used to acquire more knowledge as learning reference, and to get resources for preparing tests and examinations.

3.2 Usefulness of Different Categories of OER for Learning Purposes

The students' perceived usefulness of 4 different categories of OER (namely, open courseware and course materials, open online courses and tutorials, open e-books and e-journals, and open-source learning software and tools) are reported.

Table 3 shows the students' perceived usefulness of open courseware and course materials, where all types of open courseware and course materials are considered as very useful and useful by the majority, i.e. over 70% of respondents. Around 80% of respondents consider the complete sets of course materials, openly shared lecture notes and class notes very useful or useful. Relatively less % of respondents consider the openly shared video clips of lectures and classes, and other online materials very useful or useful.

Table 3. Usefulness of different types of open courseware and course materials.

Type	Years*	Very useful	Useful	Neutral	Less useful	Not useful
Openly shared complete sets of course materials	2016–17	47%	31%	18%	2%	1%
	2017–18	52%	25%	18%	3%	1%
	2018–19	43%	31%	18%	4%	3%
Openly shared lecture notes and class notes	2016–17	50%	32%	14%	2%	2%
	2017–18	52%	27%	17%	2%	3%
	2018–19	43%	36%	15%	4%	2%
Openly shared video clips of lectures and classes	2016–17	40%	24%	21%	2%	2%
	2017–18	48%	24%	21%	3%	3%
	2018–19	40%	30%	18%	7%	4%
Other supplementary online learning materials	2016–17	39%	36%	20%	4%	1%
	2017–18	43%	31%	19%	5%	3%
	2018–19	35%	36%	19%	6%	3%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

Table 4 shows the students' perceived usefulness of open online courses, tutorials and forums. Around 60% of respondents consider open online self-contained courses and online tutorials very useful or useful, whilst around 40% of respondents consider small-scale mobile learning courses, and online interactive help desk and forum very useful or useful.

Table 5 shows the students' perceived usefulness of open access books, journals and other documentation. Over 70% of respondents consider open access textbooks and reference books very useful or useful. Relatively less % of respondents consider open access journals, magazines and periodicals, and other online documentation very useful and useful.

Table 6 shows the students' perceived usefulness of open source learning software and tools. Around 65% to 75% of respondents consider the open online dictionaries, encyclopedia, anti-plagiarism checker and grammar checker very useful or useful. Relatively less respondents (around 60%) consider online learning software, learning platform for self and collaborative learning.

Table 4. Usefulness of different types of open online courses, tutorials and forums.

Type	Years*	Very useful	Useful	Neutral	Less useful	Not useful
Open online courses and self-contained courses	2016–17	27%	34%	30%	7%	3%
	2017–18	32%	27%	28%	9%	5%
	2018–19	31%	29%	26%	10%	4%
Open online tutorials on specific topics	2016–17	20%	36%	33%	7%	4%
	2017–18	28%	30%	31%	8%	3%
	2018–19	25%	31%	30%	10%	5%
Small-scale mobile learning courses and applications	2016–17	16%	21%	42%	16%	6%
	2017–18	18%	21%	40%	12%	9%
	2018–19	18%	23%	36%	14%	9%
Open online interactive help desks, and forums	2016–17	16%	23%	31%	18%	13%
	2017–18	17%	21%	32%	19%	12%
	2018–19	20%	22%	32%	16%	10%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

Table 5. Usefulness of different types of open access books, journals and other documentation.

Type	Years*	Very useful	Useful	Neutral	Less useful	Not useful
Open access e-books (self-contained textbooks)	2016–17	61%	20%	12%	2%	4%
	2017–18	56%	23%	14%	5%	2%
	2018–19	42%	28%	19%	5%	5%
Open access e-books (self-contained reference books)	2016–17	52%	25%	16%	3%	4%
	2017–18	52%	24%	16%	6%	2%
	2018–19	37%	31%	20%	6%	5%
Open access journals, magazines and periodicals	2016–17	35%	25%	26%	10%	4%
	2017–18	36%	20%	24%	13%	4%
	2018–19	28%	25%	30%	10%	8%
Open access reports and other documentation	2016–17	45%	29%	17%	7%	2%
	2017–18	43%	26%	20%	9%	3%
	2018–19	34%	29%	25%	8%	5%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

3.3 Shortcomings or Concerns of OER for Learning Purposes

Despite many advantages, like many open online resources, OER also have their own shortcomings. The quality, accuracy, readability, completeness, comprehensiveness and relevancy of the contents are of some well-known concerns of using OER for learning purposes [24, 25].

Table 6. Usefulness of different types of open source learning software and tools.

Type	Years*	Very useful	Useful	Neutral	Less useful	Not useful
Open online dictionaries and encyclopedia	2016–17	43%	33%	21%	1%	1%
	2017–18	43%	26%	23%	5%	3%
	2018–19	40%	32%	18%	5%	4%
Online anti-plagiarism checker and grammar checker	2016–17	40%	33%	20%	5%	3%
	2017–18	37%	28%	22%	8%	6%
	2018–19	41%	27%	20%	8%	5%
Online learning software (mind-map, slide-builder, etc.)	2016–17	30%	34%	25%	7%	3%
	2017–18	28%	32%	24%	11%	4%
	2018–19	38%	28%	20%	10%	4%
Online learning platform for self and collaborative learning	2016–17	27%	33%	27%	9%	4%
	2017–18	27%	30%	30%	10%	3%
	2018–19	34%	28%	25%	8%	4%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

Table 7 shows the students’ concerns about using OER, such as on the accuracy, up-to-date, and comprehensiveness. Around 60% of respondents strongly agree or agree that OER contents may not be accurate. Around 50% of respondents strongly agree or agree that OER contents may not be comprehensive. Relatively less respondents (less than 50%) strongly agree or agree that OER contents may not be up-to-date nor well organized.

On the other hand, around 15% of respondents strongly disagree or disagree that OER contents may not be accurate nor comprehensive. Relatively more respondents

Table 7. Shortcoming of using OER for learning purposes.

Shortcoming	Years*	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Contents may not be accurate	2016–17	17%	41%	28%	13%	1%
	2017–18	24%	37%	25%	11%	3%
	2018–19	20%	35%	30%	11%	4%
Contents may not be up-to-date	2016–17	9%	36%	31%	21%	3%
	2017–18	17%	29%	33%	15%	7%
	2018–19	11%	29%	36%	17%	6%
Contents may not be comprehensive	2016–17	18%	35%	31%	13%	3%
	2017–18	19%	37%	28%	11%	4%
	2018–19	16%	33%	32%	13%	5%
Contents may not be well organized	2016–17	13%	28%	37%	18%	4%
	2017–18	17%	30%	35%	12%	5%
	2018–19	15%	23%	38%	20%	5%

* $N_{2016-17} = 215$, $N_{2017-18} = 357$, and $N_{2018-19} = 414$.

(17% to 24%) strongly disagree or disagree that OER contents may not be up-to-date nor well organized. There is also an interesting observation that quite a significant portion of respondents (25% to 38%) do not have strong concerns (stated as neutral) on the shortcomings of OER.

3.4 Summary of Key Findings Form the Survey Results

The survey results are summarized, and the key findings are identified as follows.

- In general, OER are very often or often used by the majority of students for various learning purposes.
- OER are generally considered to be very useful or useful for being used to supplement course textbooks and materials, acquire more knowledge as other learning reference, and get resources for doing assignments and projects.
- The majority of students consider open courseware and course materials very useful or useful. Complete and self-contained course materials, lecture notes and class notes are more preferred than video clips of lectures and classes.
- The majority of students consider open online courses and tutorials very useful or useful, whilst less than half consider small-scale mobile learning courses and online interactive help desk and forum very useful or useful.
- Self-contained open textbooks and reference books (but not journals) are considered to be very useful or useful by the majority of students.
- Open online dictionaries, encyclopedia, antiplagiarism and grammar checker are considered to be very useful or useful by the majority of students.
- Students are more concerned about the accuracy and comprehensiveness than the up-to-date and organization of the OER contents.

4 Conclusion

OER have been widely recognized as a major source of learning resources, especially in higher education. For two decades, like many other Internet resources, vast amount of OER have been developed in various forms, ranging from open courseware, open online courses and tutorials to open e-books, e-journal and open learning tools. In order to understand the students' usage and perceived usefulness of OER for learning purposes, in the past 3 years, an annual online survey has been conducted to the full-time students at the Open University of Hong Kong. This paper reports the survey results, and attempts to consolidate the data and conduct analysis. A number of key findings are highlighted.

There are no significant variations on the survey results across the past 3 years, implying that the students' usage patterns and perceived usefulness of OER have become more stable. Based on the commonalities found from the survey results, the typical use of OER by university students can be identified. It is revealed that OER are generally considered useful, especially as being used to supplement course textbooks and to get resources for doing assignments and projects. Among others, open courseware and course materials, online courses, open e-books, and online dictionaries

or encyclopedia are we adopted for learning purposes. The accuracy and comprehensiveness of OER contents are major concerns of the majority of students. It is also observed that there are no significant variations on the data over the past three years. All these findings can help provide some useful reference in the adoption of OER in higher education.

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