

## **Pedagogic Orientations of MOOC Platforms: Influence on Course Delivery**

**Billy Tak Ming Wong\***

The Open University of Hong Kong, China

### **Abstract**

This paper reports on an exploratory study of the influence of the pedagogic orientations of MOOC platforms on their courses. Four MOOC platforms — namely Coursera, edX, FutureLearn and OpenLearning — which illustrate their pedagogy on their websites were selected for this research. The pedagogic features of 32 courses on these platforms were examined. The results show course differences in terms of their duration, learning activities, assessment, social interaction and instructors' participation. For example, while the courses on Coursera and edX used videos more extensively in general, FutureLearn and OpenLearning had more active social interaction. The findings confirm that the pedagogic features highlighted in each platform were realized in their courses. The implications lie in the flexibility of course developers in delivering MOOCs on the platforms, and the choices of platforms for MOOC learners.

**Keywords:** massive open online courses, MOOC platform, pedagogy, Coursera, FutureLearn, edX, OpenLearning

### **Introduction**

With the rise of massive open online courses (MOOCs), in just a few years a rapidly growing number of MOOC platforms have been launched, offering a wide range of courses. Li, Wong, Chok and Lee (2014) reported that there were more than 60 MOOC platforms

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\* Corresponding author. Email: [tamiwong@ouhk.edu.hk](mailto:tamiwong@ouhk.edu.hk)



worldwide in 2014. The MOOC platforms have provided more than 2,400 courses in partnership with more than 400 universities (Shah, 2014). For example, in the United States, by the end of 2014 the number of MOOC-offering institutions tripled compared with 2012, i.e. from 2.6% to 8% (Allen & Seaman, 2015). The large number of MOOC platforms raises a question about their differences for potential MOOC learners and MOOC-offering institutions.

MOOCs are conventionally categorized into xMOOCs and cMOOCs based on their pedagogy. Rodriguez (2012) described xMOOC as being driven by cognitive-behaviourist principles, using a tutor-centred model to develop one-to-many relationships and reach a massive number of students. cMOOC is based on connectivism, highlighting the importance of peer-to-peer learning, social network diversity, openness, emergent knowledge and interactivity (Perifanou & Economides, 2014). It is worth noting that most MOOC platforms have generally been categorized as xMOOC-oriented (Yáñez, Nigmonova & Panichpathom, 2014).

However, the pedagogy of MOOCs is more complicated than the dichotomy between xMOOC and cMOOC. Bayne and Ross (2014b) noted that such oversimplistic categorization misrepresents what goes on in different kinds of MOOCs. MOOC platforms usually highlight on their websites their pedagogic principles, suggesting how the platforms may have been optimized for those principles, and how each platform is different from the others. An institution planning the provision of MOOCs on these platforms needs to consider two issues:

- How do the pedagogic principles behind the platforms influence the delivery of MOOCs?
- To what extent are the course providers given flexibility to deliver MOOCs following their own pedagogy?

This paper reports on an exploratory study of the potential influence of the pedagogic orientations of the major MOOC platforms on their courses. It profiles a representative sample of MOOCs on different platforms and categorizes their characteristics; and it shows the patterns of course delivery on each platform which may result from the pedagogic orientation of the platform.

## Pedagogic Orientations of MOOC Platforms

Four MOOC platforms — Coursera,<sup>3</sup> edX,<sup>4</sup> FutureLearn<sup>5</sup> and OpenLearning<sup>6</sup> — were chosen to examine their pedagogic orientations. Coursera and edX were both launched in 2012 in the USA and are two of the largest MOOC platforms nowadays, with partnering institutions and companies worldwide. FutureLearn was founded in 2012 by the UK Open University with university partners mainly from the UK; and OpenLearning started in Australia in 2013 with partners primarily from Australia and Malaysia.

These four platforms have been generally categorized as xMOOC platforms (Littlejohn, 2013). Common components can be found in their courses, such as short videos, online forums, and quizzes and assignments which are computer-graded or peer-assessed. As reviewed by Glance, Forsey and Riley (2013), each of them has its own pedagogical foundation. For example, watching short videos followed by doing multiple-choice quizzes provides students with an opportunity for retrieval learning (Agarwal, Bain & Chamberlain, 2012; Karpicke & Roediger, 2007).

Beyond these similarities, these platforms illustrate their pedagogic features on their websites, highlighting the different emphases of pedagogic orientations that drove the platform design. The key features of each platform are outlined below.

### *Coursera*

On its website, Coursera highlights the features of *mastery learning*, *peer assessments* and *blended learning* (Coursera, n.d.). Mastery learning was initially proposed by Bloom (1968) as an instructional strategy to help learners fully understand a topic before moving forward to a more advanced one. Courses on Coursera ‘give immediate feedback on a concept a learner did not understand’, and ‘provide randomized versions of the assignment so that a learner can re-study and re-attempt until they master it’ (n.d.). For peer

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<sup>3</sup> <https://www.coursera.org/>

<sup>4</sup> <https://www.edx.org/>

<sup>5</sup> <http://futurelearn.com/>

<sup>6</sup> <https://openlearning.com/>

assessments, learners can gain accurate feedback for their work assessed by their peers, and also valuable learning experience through grading others' work. Coursera also stresses the effectiveness of blended learning by using its online courses to provide on-campus students with an enhanced learning experience for its partnering institutions.

### ***edX***

edX explains its pedagogy mainly through a presentation available on its website (Mitros, 2014). It was based on the successful implementation of interactive engagement pedagogies in MIT and Harvard. The design of the platform was based on the pedagogic foundations such as *active learning*, *constructive learning* and *self-regulated learning*. Its courses provide well-integrated sequences of materials, such as texts, videos and questions to make learning constructive; means of remediation to facilitate students' understanding; and fine-grained navigation to help them self-regulate.

### ***FutureLearn***

FutureLearn describes its course design through *storytelling*, *discussion*, *visible learning* and *community support* (FutureLearn, n.d.). It features courses in which each 'tells a story, step by step, with challenges and helpful tips along the way, to test and build your understanding' (n.d.). The platform also provides learners with a 'to-do-list' to make the learning process visible, giving an overview of the course and past and future activities. It encourages sharing and debating ideas with other learners through the concepts of 'discussion in context' and 'following' implemented in the platform. Learners can add their comments alongside the content, and follow the comments made by particular learners. With such features, FutureLearn characterizes itself as a massive-scale social learning platform.

### ***OpenLearning***

The pedagogic foundations of OpenLearning include the features of *student empowerment*, *authentic* and *active learning experiences*, and *community* and *connectedness* (OpenLearning, n.d.). Students are empowered through motivational mechanisms built into the platform,

which are linked to students' learning experiences, that stimulate their intrinsic motivation and promote deep learning. Students are encouraged to take part in their learning process through interaction with the community of classmates and teachers, such as sharing their understanding and teaching others via the platform. OpenLearning thus describes itself as a 'social platform' facilitating the formation of learning communities, and offering user experiences similar to that of social media platforms.

The self-descriptions of the MOOC platforms show some common pedagogic features, such as ways to enhance students' understanding. FutureLearn and OpenLearning tend to place more emphasis on social constructivist learning where the role of the learner community is highlighted. Although these MOOC platforms are oriented to particular pedagogies, they also emphasize their flexibility, enabling a wide range of pedagogies for course providers (e.g. Mitros, 2014).

## **Methodology**

This study aims to investigate how the pedagogic orientations of the MOOC platforms influence their courses. It profiled the four MOOC platforms discussed above which highlight different pedagogic features. Initially, the four platforms were scanned to check the subject areas they had in common and the number of ongoing courses in each subject area. A sample of eight courses was selected from each platform, four in the area of education and four in mathematics and sciences, i.e. a total of 32 courses (see Appendix). All the courses selected were free and open for enrolment, taught in English, and with all the teaching materials available on the platforms.

The profiling was conducted in August 2015. Each of the courses was registered in order to log in to their course pages to gather relevant information. The following information about each course was collected:

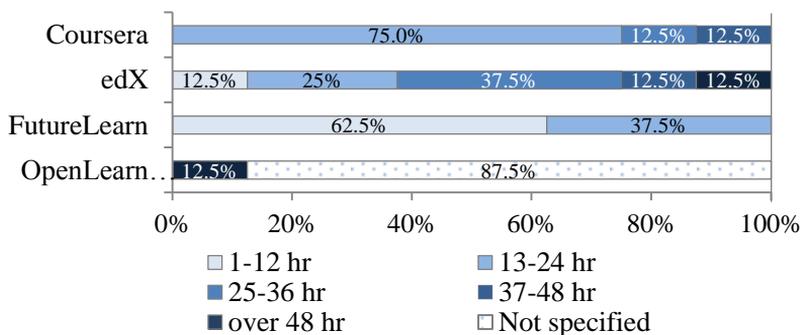
- Duration
- Teaching components
- Types of assessment
- Lesson flow
- Types of social interaction
- Instructors' participation in online discussion.

## Results

### *Course duration*

Figure 1 presents the duration of the courses on the four platforms in terms of the total number of hours expected to complete the courses. The information was obtained from the course description webpages. For courses that provided hours per week in a range, the mean values were taken (e.g. 4 hours for a range of 3–5 hours). However, many courses in OpenLearning did not provide clear information about course duration (i.e. did not specify or provided only the number of weeks).<sup>7</sup>

The results show that the courses on Coursera and edX were relatively longer than that on FutureLearn. In the sample, there were courses of 25–36 hours or even longer on Coursera and edX, while more than half of the courses on FutureLearn took learners only up to 12 hours to study.



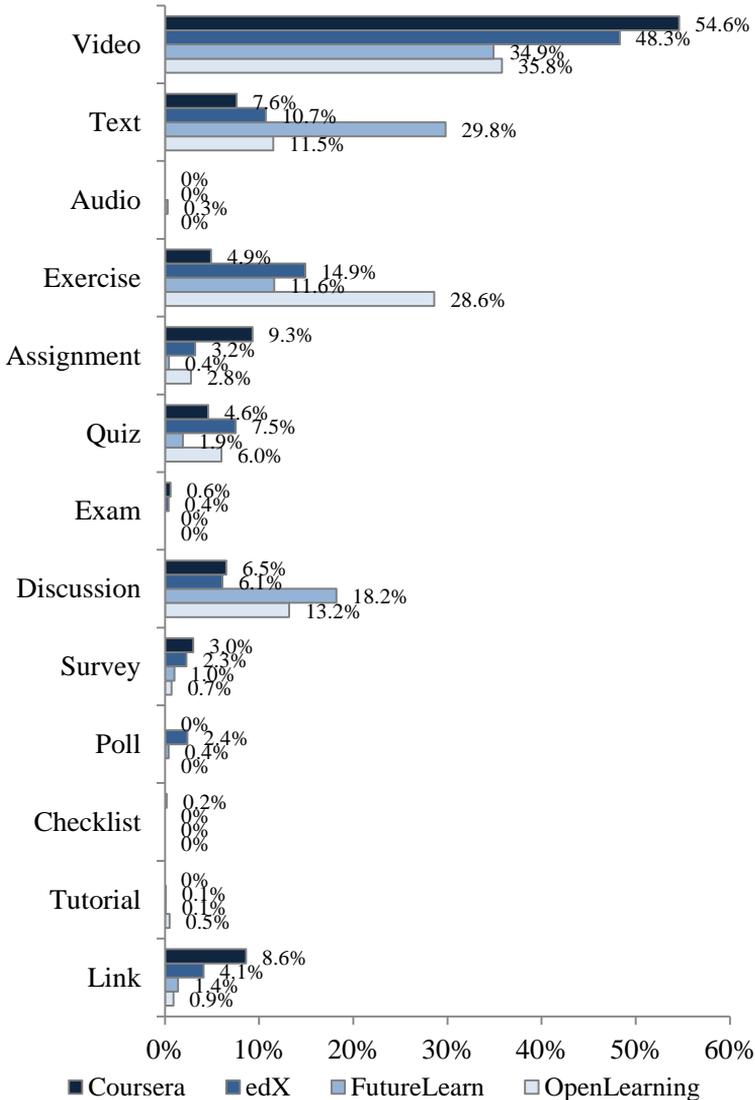
**Figure 1** Number of hours expected to complete the courses

### *Teaching components*

Figure 2 illustrates the proportion of teaching components used in the courses of the platforms. All the platforms provided similar types of components, such as videos, text materials and discussion, but the

<sup>7</sup> Within the eight courses in the sample for OpenLearning, only one provided clear information about course duration. Four provided the number of weeks, i.e. 4, 4, 7 and 21 weeks, respectively. Three were categorized as ‘self-paced’ and had no relevant information.

proportions varied from platform to platform. Coursera and edX had a higher proportion of videos; FutureLearn used text materials more commonly; and OpenLearning provided more exercises.

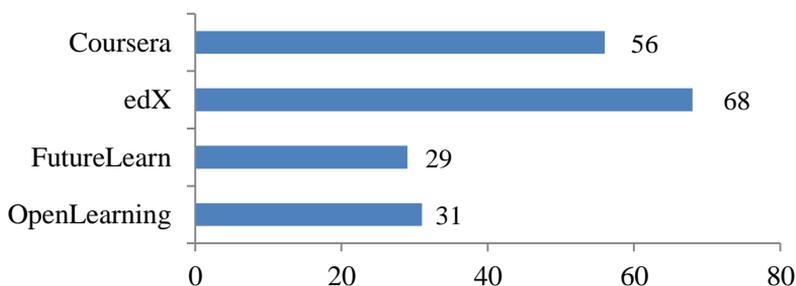


**Figure 2** Proportion of teaching components used in the courses

FutureLearn and OpenLearning also had a much higher proportion of discussion in their courses as part of learning activities. Although this does not mean that the other two platforms did not have discussion in their courses, it was not part of their planned learning activities.

Figure 3 presents the average video length per study week for the courses on different platforms. Only the videos embedded in the courses were considered and those provided via external links were excluded.

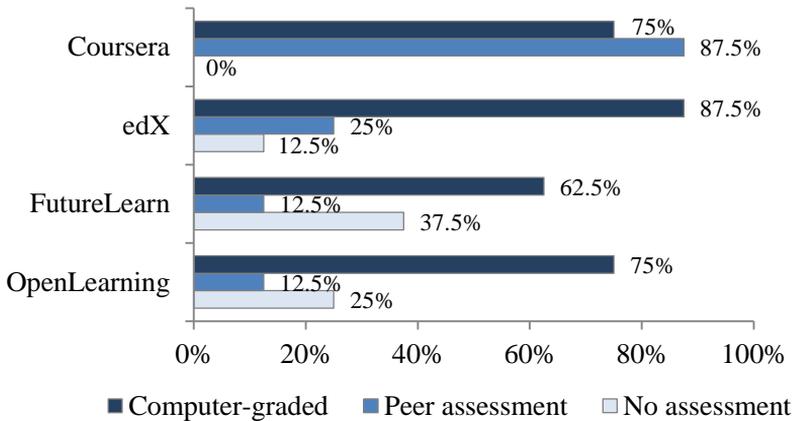
The results illustrate a clear pattern that videos were used more extensively in the courses on Coursera and edX than on FutureLearn and OpenLearning. On average, videos of about an hour were shown to learners each week for the former two platforms, with only about half an hour for the latter two.



**Figure 3** Average video length per study week (minutes)

### *Assessment*

Figure 4 shows the types of assessment used in the courses on different platforms. It includes computer-graded work (e.g. multiple-choice quizzes or short answers), peer-assessed assignments, and courses that were not found to provide any sort of assessment. Coursera provided assessment in any form in all the courses, and, as highlighted in its self-description, utilized peer assessment in most of them. edX used more computer-graded work, but peer assessment was not widely seen. FutureLearn and OpenLearning had relatively more courses without assessment.



**Figure 4** Types of assessment

### *Learning activities*

The learning activities of the courses were compared among the platforms. Despite the individual variation in the courses, some patterns were found in each platform. The Appendix provides a full record of the learning activities of the courses.

For Coursera, the learning activities were presented in a more structured way. In the sample, several courses delivered the activities in each lesson in a more or less similar sequence — a series of short videos or text materials followed by assignments, exercises and/or quizzes. It is also notable that, in Coursera, half of the courses in the sample did not include discussion as a planned activity.

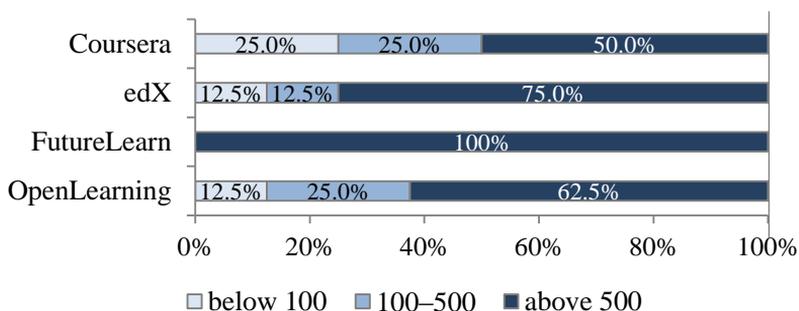
edX was the only platform that incorporated short quizzes within a video lecture. It was common to find courses with exercises or quizzes throughout a lesson, rather than putting them at the end as observed in Coursera's courses.

FutureLearn provided a consistent layout (named as a 'storyboard') for its courses which allowed learners to conveniently trace their progress and, in particular, the discussion for different topics. Discussion was widely included in all of its courses as part of learning activities.

OpenLearning also featured the tight integration of discussion in its courses, which were made use of by the instructors to encourage sharing in the discussion areas. It provided the social interaction feature for learners to directly contact the instructor or other learners.

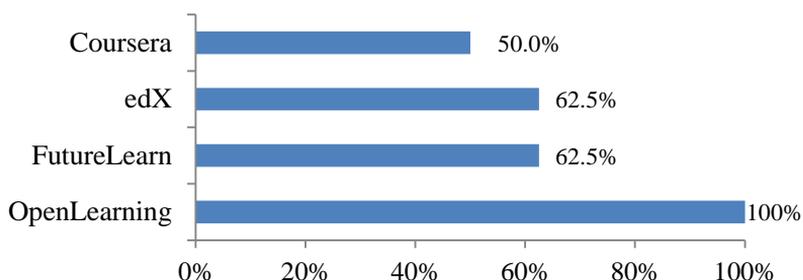
### *Social interaction*

Figure 5 presents the number of posts in the discussion areas of the courses. For Coursera and edX, each course had a centralized discussion board; while for FutureLearn and OpenLearning, discussion was conducted in the comment areas alongside the course materials. The results show that the courses on FutureLearn had more active discussion, with all of them having more than 500 posts. Comparatively, the courses on Coursera had fewer posts.



**Figure 5** Number of discussion posts

Figure 6 shows the proportion of courses with the presence of instructors in the discussion areas. This represents whether the course instructors ever participated in the discussion. For some courses, there were mentors or teaching staff to facilitate and answer students' questions. OpenLearning was shown to be the most 'instructor-active', with instructors present in all the courses for discussion. Coursera had only half of the courses with the presence of instructors.



**Figure 6** Proportion of courses with presence of instructors in discussion areas

## Discussion

The results of the comparisons show how the platforms may influence their course design. In particular, there are some patterns that can be identified in the courses on each platform. For example, the courses on Coursera and edX tend to use more videos than FutureLearn and OpenLearning; while the latter two feature more active social interaction in their courses. It can be observed that, to a certain extent, the pedagogic highlights of each platform were realized in their courses. For example, while Coursera emphasized the use of peer assessments (Coursera, n.d.), most of their courses were provided with such a feature. FutureLearn, which stresses its characteristic ‘discussion in context’ (FutureLearn, n.d.), has active discussion in its courses. These findings confirm the observation made in Bayne and Ross (2014a), that ‘platform designers work to a set of established pedagogical principles..., and there is no doubt that platform design informs the way in which MOOC pedagogy is made material and then played out’ (p. 40).

The differences of pedagogic orientations among MOOC platforms have been viewed in some studies as the distinctive features between platforms based on different continents (Bayne & Ross, 2014b; Kerr, Houston, Marks & Richford, 2015). Bayne and Ross (2014b, p. 52) described the teaching of Coursera and edX as starting from ‘a US instructivist approach’ by having ‘star lecturers who want to communicate their understanding to individual learners’ while ‘the notion of large scale social learning isn’t underpinning the entire design of those platforms’. FutureLearn, on the other hand, embeds

the pedagogic intent which is ‘a kind of UK/European pedagogy around social constructivist learning’ (p. 52). In this sense, the categorization is driven back to a dichotomy similar to that dividing courses into xMOOC and cMOOC.

The finding that the pedagogy of MOOCs may be influenced by its platform has implications for the flexibility of teachers and course developers in designing MOOCs. As the institutional partners of the platforms, they are provided with teaching tools to deliver courses on the platforms, where the tools can be flexibly used as stated in some platforms (OpenLearning, n.a.). They can also make use of external resources to enrich the course features. It turns out that course providers actively made use of the features of the platforms for developing MOOCs. For example, Robinson and Ash (2014) shared how they designed a course on FutureLearn following its pedagogic features. This shows that being a partner of a platform means to a certain extent agreeing with, and being willing to follow, the pedagogic approaches of the platform. This would be one of the considerations in choosing a platform for providing MOOCs.

## **Conclusion**

This paper has shown how the pedagogic orientations of MOOC platforms influence their courses provided by institution partners. The courses were found to be following the pedagogic features of their platforms. Given these findings, the implications for institutions lie in the efforts and resources involved in developing a course, taking into consideration the pedagogic features of the platform — and for potential learners, the ways of studying they can expect when choosing a course on a particular platform. It should be pointed out, however, that there is no evidence that the different pedagogic features lead to difference in teaching and learning effectiveness (Glance et al., 2013).

The pedagogy of MOOCs is determined by a diverse range of factors, far more than the pedagogic orientations of a platform. Bayne and Ross (2014a, p. 25) noted that ‘each MOOC is profoundly shaped by its designers, teachers, platforms and participants’. There is certainly more work to be done to sort out the dynamics among the factors for effective delivery of MOOCs.

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## Appendix

### Learning activities of the courses on different platforms<sup>1</sup>

Platform	Course name	Learning activities <sup>2-3</sup>
Coursera	Creativity, Innovation, and Change	VVVV   VVVVVVVVVAA   VVVVVVVVVAAAA   VVVVVVVAA   VVVVVVVAA   VVVVVVVAA   VVVVVVVAA
	Introductory Human Physiology	VTTTTTIDVVVVEVVELQS   VVTVVVEQS   VVVVVELQS   VVEVVELQS   VVVVVELQS   VVVVVVVVELQS   VVVVEVVELQS   VVVVELQS   VVVVVELQS   VVVVVVEQSS
	Human-Centered Design: An Introduction	VVVVVVTTTT   VVVVTA   VVVVA   VVVTAQ
	Data Visualization	TTSEED   VVVLVVVLVVVVVVVVVDQCI   VVVVVVVVVLVLA   VVVVVLVVLVLA   VVVLVVVVVQA
	Inspiring Leadership through Emotional Intelligence	VLDAVDVDQ   VDVLDVDQ   VLLDAVDAQ   VDAVLDQ   VLDVLDVLLDAAVAA   VDVLDVLDV   VDVLLDVDAVLLDQ   VDVLDV Ex Ex V
	What Future for Education?	TTTVTVVVVVLDEA   TVVVVLDEA   TVVVVVVLDEA   TVVVLDEA   TVVVVVVLDEA   TVLDEA
	Foundations of Teaching for Learning 1: Introduction	TTTTVVVVQ   TVVVVQA   TVVVVQ   TVVVVQA
	Teaching Character and Creating Positive Classrooms	VTVSTVVEEA   VTVVVVVVA   VVVVVVVVVVA   VVVVVVVVA Ex   VVLVTVAS
edX	Human Anatomy	TSVTTPD   TVVVVVEEPD   TVVVEEPPD   TVVQVVQVVQPD   TVVQVVQPPDVVQVVQVVVVQPD
	The Violent Universe	VEVEVEVEVEVEVEVEVTEEDAE   VEVEVEVEVEVEVTEDEAE   VEVEVEVEVEVEVEVEVLTVEAE   VEVEVEVEVEVEVEVTEAE   VEVEVEVEVEVEVTEAE   VEVEVEVEVEVEVEVTEAE   VEVEVEVEVEVEVEVEVTEAE   VEVEVEVEVEVEVEVTEAE   VEVEVEVEVEVEVEVEVTEAE Ex   VDT
	The Science of Everyday Thinking	VSSVDLV   VEVEVVVVVVVVQVDV   EVVEVVVVEQVDLV   VEVVVEVEVVVQVDV   EVVVVVVVVQVDV   VVVVVEVVVVQVDV   VVVVTVVVVQVDV   VVVVVVTVVVQVDV   VVVVEVVVVQVDV   VVVVVVVVQVDV   EVVVVVVVVDV   VQV Ex SVV   VDE
	Effects of Radiation: An Introduction to Radiation and Radioactivity	TTTTTS   T TVVEVEVEV TVVEVQV VVQVVQV TVVQVQVQV   T TVVEVQVEVEVEV TVVQVQVQVQV   T TVVQVQVQVQVQVQV TVVQVEVEVQV VVQVQVEVQV Ex   T TVVEVEVEVEVEV VVQVQVQVQV TVVQVQVQV Ex S
	Enhancing Teacher Education through OER	TTTS   TTETETETDETEQP   TTETETETDEP   TETDTAEERP   TETETEPP   TQTETETAEP   TTDTETEQP   EPS
	Leaders of Learning	VDSVVVVVES   VVVVTEAV VTTTQL VTLTQL VTLTVQL VTLTVQ LVVQV   VEVV VTLTVQL VTLTVQL VTLTVQL VTLTVQLVV DVVQDV   VTEV VTLTVQL

		VTLTVQL VTLTVQL VTLTVQLVVV VVQDD   VTVVVVVS VTLVVVVQL VTLVVVVQL VTLVVVVQL VTLVVQL VVTTADVVD   VTEAV VVVVVV VVD
	Big Data in Education	STtL   VSDVVEVEVVEAAD   SVVEVVVVAAD   SVVVVEVAAD   SVVVVVAAD   SVVEVVEAAD   SVVVVVAAD   SVVVVVVVAAD   SVVVVVAAD   S
	Critical Issues in Urban Education	STD VDVVVVQ   TPVV PVVDVVVVVDVQ PVVDVVVVVDVQ PVVDVVVVVDVQ VV P DA   TPV VVVVVDVQ PVVVVDVQ PVVVVDVQ VV P DA   TPV VVVVDVVVQ PVVVVDVQ PVVVVDVQ VV P DAAS
FutureLearn	Cancer in the 21st Century: the Genomic Revolution	VVTDTVT VVDT VET VTV VT QDV   VTT VTTT VV VT D VTV   VT VD VE VTVD VD VVTT VQV   VTT V TTVVTV VTT TTTT VTD VQV   VT TT VTET VVTT VTT TVTT VD QV   VTT VTV VVE TVAAAD VT TVD QDV
	The Science of Nuclear Energy	VTTTET TVTETVD TTETTVET   VTEVTVTD TTVTD VTTVDTVTVET   VVTVDT TTVVTVTT AuTVTVVDET   VTTDVTAuD VTTVTEVV VQDT
	Dysphagia: Swallowing Difficulties and Medicines	VTVVVVVVTVDQDTT   VVVTDVVDVTVQDT   VVVVVVTDQDT   VTVVVDQDT   VVDTDQDT   VVTVTVQDVT
	The Science of Medicines	VTTT VED VD VTDV VEDVED VETDT   VED VED VTVED VED VD VEED   VED VED VTVED VED VED VEDT   VED VED VTVED VED VED VEDT   VED VED VTVED VD VETD   VED VED VTVED VE VD QTDT
	Academic Integrity: Values, Skills, Action	VDTDTVEVTD   VTTEETETTEVDTTEV   VDTTTTTEVTEVTEVD   VVVVDDEVTTTVETDVTVT
	Preparing for University	TVTVDVVDVTVDVTTVST   VVDTTDVTVDVST   VDVTEEEVTEEST   VVDVTTDVVVVTVTTTEEEEEEST   VDTDDDDDDTVDDDTTVST   VDVDDVTVDTTVDTSTVTTL
	Get Started with Online Learning	VEETTTTDTTDTVDDT   VTTTDTVDVTTVTTTPT
	Professional Practices for English Language Teaching	VEVVVTVDVTVLETVT   VVDPVTVVTDVTTDELV   VVLVTPDDVVVELV   VDVTVVTTDVEVDVEDELV   VEVDVVDVEEVVLELV   VTDVLTVTVVTVTLEST
OpenLearning	Math Terminology for Incoming Uni Students	VDQEEDEV   VEQEDV   VQEEDEEEV   VEDQEV   VEQQQ   QEEQE   VEEEEQ   VQEDDEDVDT
	Biosciences: Journey into the Cell	TS   TVVVEDEDE   TVVDQD   TVVVTE   TVDQE   VV 
	UNSW Computing 1 – The Art of Programming	VVVDEEEEE   VVVEETeAEEEE   VVVEEAQEE   VVVVEAEEQEEQ   VVEEAE   VVEEA   VVVEEAEEE   VVVVVEEAE   VVVEAE   VVEEEA
	Mobile Game Development with Gamesalad	T   VVDEV   VVDETTL   VVVVDELL   TE
	How to Teach an Awesome Course on OpenLearning	VTTEDD   VVVTEE   VVEE   VVTTE   VTTTVVVVEDEQDE   VTTVTTTEE   VDDD   EET
	Into the Future with MOOCs	E   VVDE   VVATQE   TD   TEDE   TVAAEQ   S   T
	Copyright for Educators	TVV   TV   SVVDQ   TVETLVVVVEEDQL   TVVVVDQ TV   T   VVVQT   VVVVEE   TVE   TVVV
	Rethinking Teaching; Redesigning Learning	TVVVVDDDDD   TVVVVDDDDD   TVVVDDDDDED   TVVVVDDDDDEE   TVVVDDDDDE   TVVVVDEED   TVVVVE   TVVVVEE   TVVVVEE   VVVVVVEE   VVEE   VVEE

V: Video	T: Text	Au: Audio
D: Discussion	E: Exercise / Reflection	A: Assignment
Q: Quiz	Ex: Examination	L: Links
S: Questionnaire / Survey	P: Poll	Tt: Tutorial
Cl: Checklist/ Project Milestone		

*Notes:*

1. The data were collected in August 2015.
2. For the learning activities of a course, each block ( | ... | ) represents a lesson of the course, which was named in different ways in the platforms, such as *unit*, *section*, *module* and *week*. The symbols in the block represent the sequence of activities. For example, the block | VVDE | refers to the sequence: video → video → discussion → exercise.
3. V (video) refers to a video embedded in the course page. Videos that were provided via external links are shown as L (links) instead.