

This chapter sets out guidance about the costs of developing and running Massive Open Online Courses (MOOCs). Some of the early MOOC developers, such as the University of Edinburgh and FutureLearn, have shared their estimates for the costs of creating MOOCs. These are between £30,000 and £50,000 per MOOC.

These estimates are helpful but are ballpark figures that may vary widely depending upon a whole range of factors, including the subject area, the pedagogic model for the course upon which the MOOC is based, the starting state of the materials that are being used and the level of experience of the development team. Each MOOC will have a different context and will therefore require its own planning and costings.

The analysis uses the MOOC model that was examined earlier as a way to break down and analyze the cost lines for MOOC development. It analyses costs for each of the four categories in turn: interactive learning environment; learner background and intentions; technology infrastructure; evidence-based improvement. It also looks at the costs that will be incurred when creating more than one MOOC.

1. Interactive learning environment (content, instruction (or pedagogy) assessment and community)

The main costs incurred in the interactive learning environment are for:

- creation of content, or adaptation of existing resources so that they are suitable for a MOOC environment—which may be distinctly different from the use to which the content has been put previously. The costs of creating video can be particularly high. Content creation costs need to include the salary costs for the MOOC creation team;
- instruction costs—this may include the costs of academic experts plus other support staff, such as teaching assistants. You may also need to include specialist support, such as learning technologists, and administrative support, for organizing assignments etc.
- quality assurance—this may include the cost of testing.

Content creation

It is difficult to accurately estimate the costs of creating MOOC content, without doing some analysis of the local situation and the starting point for the MOOC development. This is also the case generally when creating multimedia material and Web sites, because in both cases there are factors involved which make the costs difficult to predict accurately.

In the case studies, it was clear that cost for the creation of MOOC content was frequently difficult to predict accurately. At this early stage of MOOC development,

universities tend to set aside a budget for MOOCs, and work within that budget, rather than trying to estimate costs precisely. A particular stumbling block is that it can be slow and complex to redesign or adapt materials, even where some or all of the materials are in a digital format. Quality is clearly an important issue when designing learning and teaching materials; for example, recent research shows that it is more effective for learners where you create digital video from scratch than if you reuse digital videos that were created for another purpose (Guo et al., 2014).

The university may already have costing models for developing multimedia materials, and for the creation and editing of digital video, in particular. This provides a useful starting point as it is likely to be one of the major content creation costs, if you are adopting a standard MOOC model.

Added to this, the highest costs here are likely to be the costs of staff time to create, test, and quality assure the other learning content, such as learning assessments, and to construct discussion areas and provide the overview materials for the course. This will require input from different role-holders. In the case studies, there were various approaches taken as to how the MOOC content was developed, sometimes taking a team-based approach, or having an academic lead who designed the course and other specialists also contributing to the course. The approach that you take will probably be guided by your local learning technology experts and may work with their usual resource models, or you may set up a dedicated team.

Copyright clearance and legal advice

Copyright is a particular issue in the creation and adaptation of new MOOCs—and a cost centre that is often overlooked or underestimated when predicting costs. In several of the interviews that were carried out, copyright emerged as a barrier to progress and in some cases, it delayed the planned launch date for the MOOC.

Before a MOOC is approved for development, it is recommended that an analysis of the copyright status of the materials is carried out, in order to get a clear picture of the likely status of key materials. Given the public and open nature of MOOCs, it is likely that the university legal team will not sign off a MOOC for launch unless all copyright arrangements are resolved. So a picture of possible copyright issues should be developed as early as possible in order to build in sufficient time to sort out any issues. Copyright clearance can be a very slow process and may affect overall timescales, or even prevent the launch of the MOOC if it has not been satisfactorily resolved.

Provision for expert advice on copyright needs to be included in the MOOC plan and costed properly, as it can be expensive to source, and it is easy to underestimate how much time will be needed, particularly to clear copyright for multimedia materials.

Some particularly unexpected issues with copyright that emerged in the institutions that were interviewed for this book were:

- the complexity of trying to use licensed materials: where licensing arrangements were in place for the same materials to be made available to registered students at the university,

it proved difficult or impossible within the timescales to extend the licenses to MOOC students;

- it was assumed that for video materials that had been created by the institutions themselves, copyright issues would be straightforward. However, advice from the local legal team in one case was that the university could not include any branded items (such as products bearing logos) in the film clip. This meant that some videos had to be refilmed, adding weeks to the development time as well as additional, and unplanned, costs;
- teachers had developed their online learning materials with the assumption that all students would have access to a particular text book. The pedagogic model for the MOOC was that this assumption was not reasonable. The whole course had to be redesigned to draw upon different, openly available resources rather than relying on published textbooks. This added several months of delay and the MOOC had to be launched at a later date than planned.

Costs for legal advice and copyright clearance

In terms of the costs of copyright clearance and the associated costs of legal advice, not all universities have at this stage identified these costs separately, usually because they are carried out by university personnel who are already in place. Key staff are legal experts and library staff, the latter often having specialist expertise in understanding copyright and copyright clearance. For one institution, where copyright was particularly complex, the estimated costs of assuring copyright for three MOOCs, which included a lot of specialist legal advice, were about £40,000 (US\$67,000); this is an extreme case, but it gives some indication of possible costs.

Another important copyright issue that does not relate directly to cost but is worthy of highlighting here is that of ownership or intellectual property rights. It is crucial that the institution agrees a formal policy for ownership of the MOOC content. This is discussed in detail in the Educause publication, *Copyright Challenges in a MOOC environment* (Cheverie, 2013).

Learner background and intentions—understanding the market

The main costs here are:

- those that relate to understanding the target audience for the MOOCs;
- the costs of designing the MOOC in order to best meet student needs.

Understanding your target audience

The institutions that were interviewed for the case studies had not invested significantly in market research specifically for the MOOC development. In many cases, they drew upon existing knowledge within the institution about the likely profile of the target student population. In other cases, no market research was done for their first MOOC experiments; their approach being to “get some MOOCs out there” and to discover from practical experience what kind of student population was attracted to the MOOC. In other cases, they left it to the MOOC platform to carry out market

research and attempt to target particular populations. This seems to be more or less effective, but generally not very satisfactory.

We suggest that institutions should seriously consider investing in activities that help them to understand the target audience for the MOOCs. Costs do not need to be substantial: they may be able to tie this into other market research activities that are underway in the institution, and they will certainly be able to draw upon the data that they are collecting about their current student populations to inform their thinking. It is more a case of ensuring that resources are available and that someone is responsible for progressing this issue, than committing cash flow. However, if the institution wishes to invest highly strategically in MOOCs, for example, by picking one or two areas for MOOCs where they are likely to attract fee-paying students to related courses, then we suggest that it is worth considering making an investment of at least £10,000 (US\$17,000) in this area and buying in specialist expertise if it is needed.

Designing the MOOC to meet student needs

As referred to earlier, thought needs to be given to the learning design that is appropriate for the target audience for the MOOC, depending upon their aptitudes, attitudes, and preferences. The detail of this is discussed elsewhere; but it is worth mentioning here that in terms of cost, there may be additional requirements for expenditure, depending upon the specific learning design for the MOOC. For example, you may decide that the target audience for a scientific MOOC will find it easier to understand some key concepts if they are provided with multimedia animations of sequencing DNA. If there is no appropriate open educational resource (OER) available that meets your needs, you may be required to commission or purchase a specific multimedia resource which will place an additional call on your budget, beyond that which is allocated to the “average” MOOC. So the specifics of the learning design will affect the cost of each individual MOOC, and you may wish to provide guidance to the MOOC team about what you consider to be reasonable costs, and also build some consideration of whether the MOOC will require extra resources for its development when you are selecting the MOOCs for creation.

2. Technology infrastructure

Costs for technology infrastructure will vary widely, depending upon whether the MOOC is to be hosted by a MOOC platform, another third-party or managed locally. If planning to host locally, it is helpful to consider these costs for the whole MOOC project, rather than for each individual MOOC. So please refer to the following section where we look at additional costs.

3. Evidence-based improvement

These costs will appear both for individual MOOCs and at a meta level, for the MOOC program as a whole. The costs are discussed in detail below.

4. Project or program level costs

Management, governance, publicity, costs of participation in partnerships

5. Additional costs for the MOOC project

There is a range of other activities that need to be undertaken in order to support the MOOC project at a meta level, i.e. for all the MOOCs together, rather than for each individual MOOC, including management, governance, publicity, quality assurance processes, and partnership costs.

The costs will of course vary depending upon whether the MOOC is being wholly hosted, marketed, and managed locally, or whether some or all of the processes are being carried out by a partner or third party. We have provided an analysis of all the potential costs that would apply in most cases, and then separately indicated possible cost lines, depending upon whether the MOOC is being run in-house or not.

The three main areas of resource that are required for the higher level MOOC project or program are project management, quality assurance, and evidence-based improvement (which includes evaluation, review, and reporting).

Project management

Costs here will depend upon a number of factors. Firstly and obviously, the scale of the operation that is being set up and the target number of MOOCs to be developed. Secondly, whether there is an existing team in place that already has experience of a similar project or program. If the team is able to either be diverted to work on the MOOC project or can be scaled up, perhaps through backfilling posts as well as some recruitment, this may add value in terms of speed of start-up and existing institutional knowledge. If there is no possibility of doing this, you will need to build in recruitment costs and related time delays. It may also be possible to outsource some of the MOOC activity, such as video production, but it is unlikely that you would find it easy to outsource many activities as they relate so closely to key institutional functions like course development.

The exact makeup of the MOOC production team will vary but from the experience of those institutions that we interviewed, the most common roles required are

- project manager
- academic lead(s) for content production (these may or may not be the same individuals who teach on the MOOC)
- learning technologist
- educational developer (where this role is not covered by the learning technologists)
- multimedia expert including video production
- copyright clearance expert (may possibly be located in the library)
- legal advice.

It should be noted also that the project management will be more complex and potentially more costly as the MOOC project matures, as more MOOCs are developed, and also if MOOCs are run jointly with partners.

Quality assurance

Quality assurance costs will vary widely, depending upon the QA model that is put in place. In the institutions that we interviewed, QA processes varied in complexity, depth, and completeness. The level of resource that you invest in QA will of course depend upon the strategic importance of the MOOC to your institution. If you consider the MOOC to be an experiment, with perhaps one or two MOOCs created, and no plan to scale up within 2 years' time, you may be able to manage QA for the MOOC within the existing institutional QA frameworks.

However, if you are already committed to a long-term MOOC project, or are perhaps seeing MOOCs as one part of an overall strategic approach to online learning, then you may wish to consider a more robust and comprehensive QA model.

As outlined in one of the case studies above, one possible model for QA might include four steps:

- the proposal of new MOOCs;
- QA monitoring as the MOOC is developed;
- testing and sign off;
- evaluation and reporting.

In this case, QA includes evidence-based improvement (see below).

Evidence-based improvement

This includes evaluation, review, and reporting. We have included these activities at the level of evaluating each individual MOOC, but there will also be a cost borne at a project or program level, in particular if the university wishes to build up a longitudinal picture over time, and if it wishes to engage in continuous improvement of its MOOC offer.

At a minimum level, the MOOC team needs to identify the need to gather data about the MOOCs and the MOOC students; about costs incurred; and to gather feedback from the MOOC students so that it can be analyzed in a meaningful way. A report on the outcomes from each MOOC will be needed to report into the appropriate part of the governance structure. This may be prepared by part of the in-house team as part of the overall plan, or it may be passed to another part of the institution or to an external third party to do this. The MOOC platform may provide some analytic data, for example, about usage and student profile. However, this is likely to need further analysis and setting in context before it can be shared with others and it may require significant levels of work to make it useful and usable.

At a more extensive level, the MOOC team may wish to put in place various functions to support a full evidence-based improvement model. This will include ongoing research activities to monitor, review, and evaluate use of the MOOC and its impact.

Governance

It is important to consider the costs of governance for the MOOC project and ensure that these are included in planning. This needs to include the costs of approval processes and getting buy-in from key stakeholders in the governance arrangements as

well as the obvious costs of setting up and servicing decision-making bodies, such as steering groups. It is easy to put in place short-term governance arrangements that may end up being unwieldy or costly in the long run, so governance should be reviewed periodically to ensure that it remains appropriate.

None of the institutions that we interviewed were able to provide specific figures for the costs of governance; however, many recognized that they needed to review their governance models and to consider costs as part of this.

As with project management, governance will also be more complex and potentially more costly as the MOOC project matures, as more MOOCs are developed, and also if MOOCs are run jointly with partners.

Additional costs that are specific to in-house MOOCs

Platform costs

The CETIS report on MOOCs (Yuan, Powell, & Olivier, 2014) helpfully outlines three possible options for technical infrastructure.

Option 1: open up existing VLE

Option 2: MOOC platforms

Option 3: use an ad hoc platform to support innovation

To this, we might add

Option 4: use an existing external platform (such as an open source product)

The four options can be reordered to represent the balance of external versus internal resource that will be required for each.

Option 1: open up existing VLE (highest level of internal resource required)

Option 2: use an existing external platform

Option 3: use an ad hoc platform to support innovation

Option 4: MOOC platforms (lowest level of internal resource required)

As discussed in the CETIS report, cost is not the only consideration when deciding which of these options to choose.

The comparison of these four options will consider similar factors to any discussion about whether to develop and host internal systems versus the costs of outsourcing. Some of the specific issues that may arise are described below. These relate to the implications of the platform choice more generally and not only to cost, as cost has to be considered within a broader context.

For option 1, there are risks associated with opening up an existing internal platform to an external audience and also questions to ask about how much investment it is sensible to make in a single implementation of a platform, compared with being able to reap the benefits of investment in development by others. However, against this is the added value of being able to retain more control of the platform and to make decisions about its development path.

Option 2 is a good choice for experimentation, when you are not yet sure of your future MOOC strategy and do not yet wish to commit to a particular choice of technologies, nor to invest a lot of resource in choosing and perhaps customizing a set of

ad hoc tools. You need to ensure that it will be possible to move the MOOC to another platform in the future, if this is possible.

Option 3 is a great choice if you are committed to an innovative approach to MOOCs and wish to invest time and effort in choosing a tool or tools and ensuring that they can be used together as part of the course. There are risks associated with using this kind of approach, as their availability and robustness may not be guaranteed, and this could potentially jeopardize the MOOC, particularly if you recruit a lot of students. This option may work best if you are openly and explicitly engaging your student body in a more experimental experience, than for a standard MOOC.

Option 4 may, of course, only be available to some institutions, as membership of platforms is not necessarily open to all. There are many advantages to this option, again not all associated with cost. In particular the associated reach and scale of the marketing activity that goes with membership of one of the large platforms can bring significant advantages to those who join. Also, there are advantages associated with the level of investment that the platform owners are making in developing the MOOC technology. However, balanced against this may be issues related to lack of autonomy and copyright ownership. Also, membership of a platform brings its own costs; these are discussed below.

Publicity and marketing

There are likely to be additional costs incurred from the promotion and marketing of the MOOC or MOOCs. As with many of these cost items, there will be a cost for each MOOC that is produced and an additional cost for promoting the University's provision of MOOCs as a new or ongoing activity.

It may be possible to meet the costs for publicity and marketing from within existing institutional budgets, but it is important to work with the communications and marketing team to ascertain whether this is the case, and if not, to be able to estimate the appropriate level of activity that may be needed and what level of cost would be associated with it. Depending upon the scale of operation, you may need to consider recruiting new staff, or outsourcing the work, or negotiating with local experts to provide the support that is needed.

The costs will vary depending on whether you are hosting your MOOC(s) yourself or are working through an existing MOOC platform or provider—or whether you are using both approaches. If you are working with a MOOC platform which will market your MOOCs through their promotional channels, you should also consider developing your own communications and marketing strategy for the MOOC(s), as you may want to target audiences who will not receive publicity through the platform's promotional channels, such as specific groups of postgraduate students or your alumni.

The strategy may draw heavily upon your usual strategies for promoting new courses to potential students and their families, but you should consider that your audience is potentially much larger and diverse. It is very early days to really

understand the potential audience for MOOCs but it is clear that we should not make any assumptions about who may be interested in a particular MOOC. Potential students may not be interested in formal qualifications nor fit a particular age, gender, or educational profile. As noted above, it is worthwhile to use some resource to carry out a thorough audience analysis as part of the market research, and you should still be prepared to be surprised by who may sign up for which MOOC.

Additional costs from working with an external MOOC platform

Although working with an external MOOC platform can bring real benefits in terms of limiting costs, there will be some specific, additional costs incurred by working through one of the established MOOC platforms such as Coursera or edX, as the platforms usually charge a fee to host the MOOC on their platform. They may also charge for additional services such as quality assurance. Information about the costs associated with particular platforms varies and is always subject to discussion and individual negotiation with the platform provider. Information about the financial models for the main platforms is given in the next chapter (Table 13.1).

Table 13.1 Checklist: budget items to include when estimating costs

Budget item	Estimated cost per MOOC (\$, euro, or £)
<ol style="list-style-type: none"> 1. Market research—understanding your target audience 2. MOOC design 3. Content creation 4. Copyright assurance and clearance 5. Legal advice 6. Technical infrastructure 7. Management costs—project management 8. Quality assurance 9. Evidence-based improvement (evaluation etc.) 10. Governance 11. (a) Additional costs that are specific to in-house MOOCs (platform costs etc.) <li style="padding-left: 20px;">Or 11. (b) Additional costs that are incurred by working with partner platforms 12. Publicity and marketing 13. Other costs incurred Total: 	

References

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