

The Ad Hoc Committee on MITx Online – Report and Recommendations

Our committee (charge attached as Appendix 1) focused on MIT's strategy with respect to the production and distribution of *open online educational material* (henceforth: OOEM). We understood this to mean material that is

Educational in nature.

Of enduring interest. (Relatively timeless material. Material that will be as relevant next year as this year. Not, e.g., news.)

On topics that are researched and taught at MIT.

Accessible to people who are not enrolled in residential programs at MIT.

For the past ten years, two units within the Office of Digital Learning (henceforth: ODL) have produced much of MIT's OOEM. *OpenCourseWare* has mostly focused on collecting together material that was originally designed and built for MIT residential education (e.g. syllabi, handouts, videos of residential lectures etc.) *MITx* has mostly focused on producing material that is designed and built for online education.

This division of labor makes sense, and we expect it to continue into the medium term future. The major open questions are: What sorts of OOEM do we want the ODL production unit (for reasons that will become clear, we expect that this unit will no longer be called 'MITx') to produce, and how? How do we want to organize MIT's OOEM, and present it to the world? How will we finance these efforts? How will we staff these efforts?

In the Fall of 2021 representatives of our committee met multiple times with 30 academic units at MIT, and with the Deans of MIT's six schools. We asked a standard set of questions (attached as Appendix 2) and got a great deal of helpful and detailed feedback. We also met multiple times with different units within the ODL. In light of all this, and internal discussions, we have recommendations.

What Sorts Of OOEM do We Want MITx to Produce, and How?

Up to now the ODL production unit has (mostly) worked with faculty to produce courses of a size and scope similar to single-semester MIT residential courses. Building on past work on modularity and 'atomic' content,^{1,2,3} we recommend that the ODL production unit continue to do that, and also

¹ "Concept Vignettes," SUTD, Accessed February 6, 2022. <https://www.sutd.edu.sg/Education/Resources/Concept-Vignettes>

² "Institute-wide Task Force on the Future of Education at MIT," MIT, Accessed February 6, 2022. https://web.mit.edu/future-report/TaskForceFinal_July28.pdf

³ Miller, Haynes, Karen Willcox, and Luwen Huang. "Crosslinks: Improving course connectivity using online open educational resources." (2016)

work with faculty to produce units of a smaller size and scope. For neatness, we recommend that units be classed as *small*, *medium* or *large*, where

A small unit covers material / demands time roughly equivalent to the material covered / time demanded by one week of an MIT residential class.

A medium unit covers material / demands time roughly equivalent to the material covered / time demanded by a month or two of an MIT residential class.

A large unit covers material / demands time roughly equivalent to the material covered / time demanded by a single semester MIT residential class.

We should be somewhat flexible in our application of these categories. Faculty want to create smaller units for many different reasons, for many different sorts of audiences. Faculty may also want to create coherent sequences of OEM that are larger than a large unit as defined above. We should allow for some variation and experimentation.

We should be less flexible about associating credentials (understood broadly to mean earned records of achievement) with MIT OEM. Up to now the credentials we have offered have mostly been course-certificates and MicroMasters certificates. We recommend that the MITx Faculty Advisory Committee (henceforth: the FAC) work with ODL on an ongoing basis to

Periodically review the kinds of credentials we offer, ask whether these kinds of credentials serve our purposes, and, if necessary, recommend potential changes.

Ensure consistency in the credentials we offer – by reviewing particular courses, and the type of work that earns credentials in those courses.

Ensure clear messaging concerning the credentials, both inside and outside of MIT.

Finally, we recommend that the ODL production unit work with OpenEdx programmers on the question of how to foster a sense of *community* among learners in our courses. People enroll in residential courses at universities and community colleges for a variety of reasons. Prominent among those reasons is wanting to form relationships with other students, and wanting to relate to the material by way of their relationships with other students. The consensus is that thus far online education (it would be unfair to single out edX here) has done a poor job of enabling and encouraging such relationships.

Our Digital Learning Lab fellows have many sensible suggestions about how to improve things (e.g. setting up discussion forums so users get notified when someone replies to their comments, allowing users to set up groups, creating course-independent Discord servers so users can relate to one another outside of the confines of a particular course). Rather than recommending any specific improvements here, we will just recommend that improvements be a priority.

How Do We Want to Organize MIT's OEM, and Present it to the World?

We recommend that MIT create a new portal (by which we mean a website, plus an organizational structure).

In our view the most promising name for the portal is 'The MIT Infinite Corridor'. We recommend that ODL work with an expert to assess this name, and take suggestions.

We recommend that the portal have these basic goals and governing principles:

The portal will be entirely *learner-focused*. Its first purpose is to help people learn about the topics we research and teach. All distinctions, names, or pieces of organizational structure we introduce must serve that purpose. (To be clear: The purpose of the portal is not to give outsiders or insiders a way to find out about the institutional structure of MIT. That's what mit.edu is for.)

The portal will aspire to direct learners towards all MIT-produced OEM, with links to outside sites (e.g. edX) if necessary.

All materials on the portal will be produced at MIT.

The portal will aspire to represent a broad cross section of the best of MIT.

We recommend that ODL work with, and take advice from, the FAC on an ongoing basis on how best to achieve these goals.

We recommend that the portal have a primary organizational structure (more on this below) and an internal search engine. We recommend that materials on the portal be maximally accessible to external search engines. We recommend that the place of the materials within the primary organizational structure be explicit within their content. That way learners who get to material by way of an external search engine can easily find their way to other relevant materials.

We recommend that the primary organizational structure be *field* based. (Fields would include Physics, Economics, Philosophy, Literature, Chemistry, Materials Science... etc.)

We recommend that there be a field for each MIT academic unit (if the unit wants it – no obligation). If faculty across units want to set up a cross unit field (e.g. *Energy*, or *Climate*), or if faculty in a large unit want to set up more than one field, they are free to make a proposal to the FAC do so.

We recommend that for each field there be group of MIT faculty who work in that field (not necessarily in one academic unit) and take responsibility for organizing materials in that field on a field page. Call this group the *Field Steering Committee*. They decide what goes in, and how it is organized and presented to learners. ODL and the FAC will work with Field Steering Committees to ensure an appropriate degree of consistency in the organization and presentation of materials across fields.

Field Steering Committees should be aware that the goal of field organization is not merely to help learners find exactly what they are looking for. Many learners do not know exactly what they are

looking for. They will learn about the field by way of seeing how the field materials are organized and presented to them.

The field page and field organization will need to be updated on an ongoing basis. The page will need to say which instructor-paced courses will be offered when. New materials will need to fit within the organizational structure. Old materials will become obsolete. We recommend that there be one person, ideally with a PhD in the field (some of the present Digital Learning Lab fellows would be well suited to these roles), with responsibility for keeping the field page and field organization up to date. Call this person the *Field Supervisor*. The Field Supervisor will work closely with the Field Steering Committee. The default expectation is that they will be part of Field Steering Committee Meetings.

We recommend there be a clear distinction on each field page between materials with which credentials are associated and materials with which credentials are not associated. And we recommend that materials be clearly marked as free-to-reuse or not (so, for example, teachers in other institutions will know whether they can assign materials in their classes.)

We recommend that, in addition to small, medium and large units produced by the ODL production unit, there be a category of material labelled 'courseware'. This could include materials gathered by MIT OpenCourseWare and hosted on the MIT OpenCourseWare website. If Steering Committees wish to select such materials and organize and reuse them within the primary organizational structure of the portal then they are encouraged to do so.

Finally, we recommend that there be enough technical flexibility in the portal for Steering Committees to make reasonable decisions about how to organize their units. So, for example, if a Steering Committee wants to create self-standing assessment units (eg. a unit consisting only of an online exam to test whether a certain credential has been earned), it will be technically possible to do that. If a Steering Committee wants to offer multiple routes towards an aggregative credential (eg. a MicroMasters with electives), it will be technically possible to do that.

How Will We Finance These New Efforts?

On financing, our first recommendation is that MIT's administration regard the production and distribution of OEM as an unavoidably subsidized activity. Pressure towards 'sustainability', understood as a state where overall revenue from course fees covers overall OEM production and distribution costs, will have a very unhelpful effect.

A useful analogy here may be with MIT undergraduate residential education. Overall undergraduate tuition revenue does not come anywhere close to covering the costs of undergraduate education to MIT, on any reasonable way of counting those costs. We make up the difference from the endowment. But, supposing we could shut down our undergraduate programs and redirect the endowment funds that are presently earmarked to support them, would it make sense to do so? No, for two reasons. First, undergraduate education is part of the core of our mission as a university. Our commitment, as an educational institution, is to offer every student the opportunity to acquire skills, knowledge and moral acuity that will contribute to human flourishing. We cannot abandon that commitment without forgoing MIT's purpose and legitimacy, even when tuition cannot meet the costs. Second, from a financial, rather than mission-driven perspective, undergraduate

residential education brings many indirect, long-term financial benefits to MIT that enable us to fulfil all aspects of our mission.

So it may be with OEM. We recommend that MIT regard providing high quality, accessible, low cost educational opportunities to people around the world as part of our mission, an important part of what we do. In consultation with academic units across the Institute we were struck by the strong enthusiasm for online offerings, and a near unanimous belief that these offerings can further our educational mission. (Those of us who have been around MIT for a while can attest to a marked contrast between faculty skepticism towards online education a dozen years ago and faculty enthusiasm today.)

And we recommend that MIT remain aware that, although the long-term financial implications of investing in online education are hard to pin down, they may well be positive. Millions of people all around the world taking our courses at low or no cost is unlikely to be a bad thing for the Institute, from a long term financial point of view. It may open fundraising opportunities. (We heard a story about a potential donor saying that she would be willing to donate money to MIT if she could be shown that MIT provided benefits to the people of her state. A subsidized educational portal could provide demonstrable benefit.) It may build a large and grateful constituency of learners. It may defuse unfair criticism of MIT along the lines of 'You have just announced a massive return on your endowment, but what are you going to do with it, beyond enrich yourselves?'. It may contrast helpfully with the efforts of other universities that are more focused on creating expensive online Masters degrees.

Still, for any given level of annual subsidy, the Office of Digital Learning should obviously work to use its resources as effectively as possible. Up to now the FAC has exercised a great deal of de facto control over how resources are invested in course production, but no influence on how resources are invested in ongoing course support. We recommend that that change. We recommend that the FAC meet once a semester to review, and give advice on, ongoing course support. We recommend that the FAC work to develop metrics by which success in online education can be judged.

How Will we Staff these New Efforts?

The good news from our past efforts: For every ODL funding cycle, we have had more faculty proposals to create OEM than we can fund (typically twice as many). Many faculty are excited to create OEM.

The bad news from our past efforts: Proposals have not come in evenly from academic units throughout the Institute. And faculty from many academic units have complained that they do not have time to develop a coherent online educational strategy for their unit.

There are structural reasons for this. The organizational infrastructure that supports both research and pedagogical activities is unevenly distributed across the Institute. It tends to be easier for faculty to create OEM if there is a Digital Learning Fellow associated with their academic unit, but some academic units do not have Digital Learning Fellows associated with them. It tends to be easier for faculty to find time for optional pedagogical projects if they are part of an academic unit with fewer undergraduate and graduate teaching and advising demands on its faculty (fewer required courses per faculty member, fewer overall students per faculty member), but some academic units have massive undergraduate and graduate teaching and advising demands on their faculty. And a general

problem in the background, brewing for years at MIT, is that a more or less fixed population of faculty are being expected to do ever more teaching, administrative, and research work.

We don't have a solution to the general problem here, but we have recommendations that may lessen the severity of the problem in this particular case.

First, we recommend that expansion of the Digital Learning Lab Fellows program be an investment priority. At present we have around 20 fellows, with PhDs from around 12 MIT academic units. We recommend that both numbers, and particularly the second number, go up. We need Digital Learning Lab Fellows with PhDs in more fields to help produce OOEM in those fields, and to serve as Field Supervisors. This will relieve the burden on faculty.

Second, we recommend that ODL work with academic units on the question of how and when to grant residential teaching relief for some faculty who create OOEM. Decisions about when to grant residential teaching relief have always been made by chairs of academic units. That will not, and should not, change. Still, it will help everybody if there are clear precedents on the kind of OOEM-creation work that renders a faculty member eligible for residential teaching relief. And it will help everybody if chairs who wish to grant residential teaching relief have funds available to do so.

Third, we recommend that ODL encourage academic units to record and reward online teaching.

We sincerely appreciate having been given the opportunity to participate in planning this important aspect of MIT's future. We would be happy to answer any questions about this report and the recommendations in it.

Respectfully submitted,

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APPENDIX 1

Charge for the Ad Hoc Committee on MITx and MITx Online

(From Lily Tsai, Chair of the Faculty, and Sanjay Sarma, Vice President of Open Learning)

Context: The action requested in the charge below is driven by two separate streams of work.

- In July 2021, MIT announced that it would create a new online portal, tentatively called MITx Online. This creates opportunities for MIT to rethink the ways in which it shares its undergraduate and graduate courses online, and how it shares knowledge with the world.
- In June 2021, [MIT's Task Force 2021 and Beyond](#) concluded its deliberations. Among its many recommendations, one is that MIT carefully examine the landscape of credentials that it could offer in the future beyond the current MicroMasters.

In this context, an ad hoc committee on online education and educational resources is charged with making recommendations for how the online education opportunities offered by MITx and MITx Online should contribute to MIT's mission and for how the new portal for online education and educational resources at MIT should be structured to enable these contributions.

Specifically, the committee should:

- Develop and implement an Institute-wide process for consulting with faculty and departmental units about the objectives for online education produced at MIT and for familiarizing them with the resources currently provided by MITx.

Such a process should solicit input and advice broadly on how online education should contribute to MIT's mission of education and research, including on the following questions:

- o What online educational resources should MIT offer? Are there resources that MIT should offer beyond online courses or sequences of online courses?
 - o Which learners beyond MIT undergraduate and graduate students should MIT online educational offerings of different types and levels serve, and how and why? Should online offerings draw learners beyond MIT into MIT degree programs, and why?
 - o What types of credentials should MIT provide to learners beyond MIT students?
 - o Should MIT online educational offerings generate revenue? If so, how can they best do so?
 - o What online educational offerings can be used for both MIT students and learners beyond MIT, and how?
- Make recommendations for the design, scope, and structure of a new MITx Online portal

that provides an online website to access MIT online educational offerings;

- Make recommendations for the types of credentials MIT should offer to learners beyond MIT through the new MIT Online portal and through other portals that enable learners to access online courses produced at MIT, as recommended in Stream 1 of the recommendations by Refinement and Implementation Committee 11 of the Task Force for 2021 and Beyond. The committee's recommendations should answer the following questions:
 - o How should different types of MIT credentials contribute to access and affordability for learners beyond MIT seeking to advance their education and careers?
 - o How should standards for credentials be determined, and by whom?
 - o How should any new credentials fit into the existing portfolio of credentials and certifications awarded by various actors at MIT (including the MicroMasters credential)?
 - o How should MIT ensure that these credentials have enduring and publicly recognized value?
- Recommend whether, for the purposes of ensuring consistency and rigor in the online credentials we offer, a standing committee of the faculty should be created with authority over some or all parts of online education produced at MIT

The committee will work in coordination with the Working Group on the Online Education Nonprofit Entity. Several members of this committee will participate in the Working Group on the Online Education Nonprofit Entity to facilitate communication and ensure coordination in their work.

The Committee is asked to provide an update to the MIT Faculty, the Chair of the Faculty, and the Vice-President of Open Learning by December 15, 2021. The committee's final product is a report with findings and recommendations to the Vice-President of Open Learning and the Chair of the Faculty by January 20, 2022.

Committee Membership

Caspar Hare (*chair*), Professor, Linguistics & Philosophy

Bill Aulet, Professor of the Practice, Management

Tania Baker, Professor, Biology

Martin Bazant, Professor, Chemical Engineering

Chris Caplice, Senior Research Scientist & Executive Director, Center for Transportation & Logistics

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From the Ad Hoc Committee on MITx and MITx Online

Questions for Departments

Recent events have given us an opportunity to create a new online portal, presently named *MITx Online*. MITx Online will host materials that are:

Built for online teaching. (Not, e.g., just syllabi or lecture videos from residential classes at MIT).

Educational in nature.

Of enduring interest – Materials that will be as relevant next year as this year. (Not, e.g., news.)

On topics that are researched and taught at MIT.

The materials will be built using the Open Edx Software Platform, and will be accessed by way of a new website, the *MITx Online Website*. We know the website will aim to be:

Topic coherent. – The materials will be presented in way that reflects the natural structure of the topics we cover.

User-focused. – Paths through the material will be set clearly out with different users in mind. Any credentials we offer will be carefully presented and explained.

MIT-comprehensive. – We will aim to offer access to all MIT instructor produced online educational materials (if necessary by linking to materials produced by MIT instructors that are hosted by, e.g., edX/2U).

MIT-exclusive. – It will not be an aggregation site, linking to materials produced by non-MIT instructors.

But the details of the design, focus and business structure of the portal are at this point open. This is a chance for units across the Institute to reflect on our past ten years of online educational experimentation, to form a strategy for the next ten years, and to help build something extraordinary, something of which we can all be proud.

So we have some questions for your department. The first is quite general. The follow-ups get into important matters of detail.

1. Broad Past and Future Strategy

What has been your department's broad strategy with respect to offering online educational materials? Has the infrastructure that has been in place for the past ten-ish years worked for you? Why or why not?

And what broad strategy do you want to adopt moving forward? What infrastructure would help?

We hope that, when it comes to articulating a broad strategy for the future, you will start with a blank sheet of mental paper – informed but not constrained by your past efforts and the past efforts of MIT as a whole.

2. Users

What sorts of people do you want to produce online educational material for? Why? How will they benefit from the educational material you will produce?

To stimulate ideas, here are some examples of people you might want to target:

Students enrolled in residential programs at MIT.

High school students.

High school teachers looking for teaching materials.

College professors looking for teaching materials.

People with no good access to traditional undergraduate education.

Undergraduate students enrolled at institutions other than MIT.

People with undergraduate degrees, who you want to draw into residential graduate programs at MIT.

People with undergraduate degrees, who want an online program that approximates an MIT residential graduate program.

Individuals or businesses who are looking for narrower, career-enhancing skills.

Beginning graduate students in your field.

Older, 'life learners'.

Professional researchers in your field, who wish to be introduced to your research projects.

But please don't take this list to exhaust the possibilities.

3. Materials

For each kind of user you have identified above, what sorts of materials would you want to provide to users of that kind, and how would you want those materials to be packaged?

To stimulate ideas: Up to now, the online educational materials we have offered on edX have mostly been packaged as courses, and modelled after MIT residential courses. But that need not be so in the future.

Maybe, for bachelors students enrolled at other institutions, you want to offer modules that can be used by non-MIT instructors in their teaching.

Maybe you want to create interactive, online versions of textbooks.

Maybe, for professional researchers in your field, you want to produce short introductions to your research programs (e.g. Our lab just won a 5-year grant to study topic x. Here is a pedagogical module introducing topic x.)

Maybe, for 'life learners', you want to offer encyclopedia-style resources.

But again, please don't take these suggestions to exhaust the possibilities.

4. Credentials

MIT may offer online-accessible credentials (official records of user achievement in exclusively online work) by way of the MITx Online portal. What sorts of online-accessible credentials would you like MIT to offer? How would offering the credentials help you to target the users you want to target? What value do you want the credentials to have to those users? What steps would we need to take to ensure that the credentials have the value you want them to have, and to ensure that their value is recognized by the wider world?

Here are some of the online-accessible credentials that we have offered through edX:

Course certificates. Students get a certificate for passing an online course to an adequate standard. In practice, both standards of adequacy and methods of assessment have varied greatly from course to course. Some of our courses have assessed students by way of computer graded questions, answered at home. Some of our courses have assessed students by way of proctored exams. Some of our courses have assessed students by way of manually graded papers.

Prizes. Students get a prize for exceptional achievement in an online course – the prize being a photograph and bio on an MIT department website. (These are particularly valued by high school students applying to college.)

X-Series Credentials. Students get an X-series credential for earning certificates in a group of online courses centered around a topic or skill.

Micromasters Credentials. Students get a micromasters credential for earning certificates in a sequence of courses in a topic. Assessment in these courses is rigorous – based on proctored exams. Each micromasters credential is associated with a ‘blended masters’ program at MIT. Some students with the micromasters credential are admitted to the blended masters program. The micromasters gives those students credit towards a masters degree. They complete their masters degree by spending a semester in residence at MIT.

You may want MIT to offer new online-accessible credentials, credentials that will better serve you and your targeted students. To stimulate ideas:

Maybe you want MIT to offer online-accessible course certificates, or larger credentials that are interestingly different from micromasters credentials, with carefully defined and monitored standards.

Maybe you want MIT to offer online-accessible masters degrees.

We want to know what credentials will help your department further its educational goals.