

The Future of Work requires a Future of Professional Learning: From stand-alone, academic MOOCs to Programmes that are relevant for Professionals

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Abstract. The fast-changing labour market requires flexible and modular reskilling and upskilling of the workforce. MOOCs and MOOC-based programmes can play an important role, provided that several hurdles are taken: recognition of the credentials by employers; industry and government collaborating with academia to develop these courses and programmes; and implementing lifelong learning as a regular activity throughout everyone's career. Universities need to recognize the provision of lifelong learning as one of their responsibilities and value the development of these courses as part of an academic career. Developing engaging courses for professionals and meeting the needs of lifelong learners will improve campus teaching by improving engagement and bringing industrial relevance and case studies. Our objective of adding value for learners while developing a sustainable business model is discussed by looking at the case of the Professional Certificate Programme on Electric Cars.

Keywords: MOOCs; Business Models; Professional Learning; Lifelong Learning; Institutional Change

1 Future Learning Needs

1.1 The Jobs of the Future

The World Economic Forum sketches in its 2018 report “The Future of Jobs” the developments in the labour market and the learning needs that these require. The reports is based on the trends expected in the 2018-2022 period in 20 economies and 12 industry sectors [1].

Automation, robotization and digitization will cause many jobs to be replaced by others: 75 million current job roles are expected to disappear in these four years, while at the same time 133 new job roles may emerge. Along with new entrants to the labour market, this will require the reskilling and upskilling of the current workforce. The skills that employees need to acquire by 2022 are not limited to analytical thinking and active learning, and proficiency in new technologies. They also include creativity, originality and initiative, critical thinking, persuasion and negotiation, and

attention to detail, resilience, flexibility and complex problem-solving. Emotional intelligence, leadership and social influence as well as service orientation will also gain in demand [2]. This means that by 2022, workers need 101 days of training to replace 42% of their skills.

Organisations may prefer to do this reskilling and upskilling in-house, but this requires a huge investment. Governments can facilitate, as is happening in Denmark, where the government recognizes the importance of world-class lifelong learning and see that good opportunities must exist for upgrading one's skills and qualifications for the jobs of the future [3]. In Singapore, the government provides an amount to every employee to upskill, and thus promotes lifelong learning. The Minister for Education said, "... (the upskilling program) is not just about the Credit. Neither is it just about getting IHLs to deliver training programmes for adults. It requires a transformation of the education system as we know it; it requires our young to uncover their interests and passions and commit to learning their whole life; it requires employers, private training providers, and IHLs to all do their part for lifelong learning; and it requires society to celebrate and recognise a broad range of success." [4].

To maximize efficiency, governments, educators and industry need to collaborate, but the risk is that they will wait for each other to take the first initiative. What universities can do is to help make the skills visible and create a Taxonomy of Skills, in collaboration with industry [5].

1.2 The 60-year curriculum

The role of the academia is further detailed by Hunt Lambert, dean of the Division of Continuing Education and University Extension at Harvard University, in an interview on EdSurge [6]. He focuses on the role of the *format* of education by emphasizing the importance of designing education to fit into people's lives. The "60-year curriculum" is introduced: Harvard can help students that ever touched the university to always be ready for their next civic, social or professional opportunity. And he gives arguments why employers should accept Harvard Extension School degrees: they represent Harvard rigor and learners obtained the degree while combining study with work and family life.

1.3 Investing in Europe's future

The European Investment Bank also recognizes the value of a coherent and forward looking strategy for human capital and skills, as this can help to tackle most of the challenges Europe is facing: enhance the innovation capacity of its economy, react to (and potentially lead) the global technological race, leverage on the right pool of skills, avoid lost generations and social losses, while enhancing equality of opportunities, as well as synergies and spill-overs between capital accumulation, productivity and potential growth. It is furthermore recognized that these challenges cannot be overcome on a local or national level, because of the free mobility of workers within Europe. The need is addressed for the recognition of skills gained through informal learning, the importance of "learning to learn" and enhancing and

upgrading skills throughout working lives. These will help to limit the growth of skill shortages [7].

Massive and Online as part of the solution.

Online and/or massive courses and programmes provide efficient and flexible learning to help fill the emerging skills gap. In the next chapter we sketch the experience, challenges and results of creating a portfolio of online courses and programmes at the Delft University of Technology.

2 Providing Professional Learning

2.1 Implementing professional learning in an institution traditionally focused on initial learners

In addition to its activities to perform top-class research and deliver excellent BSc and MSc programmes for initial learners, the TU Delft included in its strategic framework 2018-2024 to educate lifelong learners and use online as a significant means of delivery [8]. The alignment with the workforce's learning needs, crucial to play a relevant role in this field, has meant a shift in focus: it entails that at several levels in the institution the “outside-in” thinking needs to be implemented.

Meeting the needs of lifelong learners

Determine which courses and programmes to develop

In the six years TU Delft has offered MOOCs, the process to select which courses to develop has changed with the demand and competition of the outside world: while in 2013 the MOOC space was wide open and the university could focus on Educating the World and Improving campus education [9,10], the changed 2019 learning landscape necessitates a focus on adding value for the learner. To attract significant audiences in the current “red ocean” of online courses, and to justify the huge effort required to develop these courses and programmes, they need to stand out in the market. At the same time the organisation is aiming for a sustainable business model for its open and online courses. These developments have imposed more detailed requirements for successful projects proposals for online learning. In our new call for proposals we have put more emphasis on among others a market scan, involvement of industry, programmes of shorter courses and applicable skills as learning outcomes.

Relevant course and programme focus and format

The focus and format for a course or short programme for professionals differ from those for degree-programmes for initial students: these short (4-6 weeks of 4-6 hours/weeks) courses focus on practical relevance, and applicable skills. Case studies from practice help in achieving these goals. We require industry involvement in each new programme that we develop. Industry provides input in course design, contributes case studies or lectures, and helps promotion by endorsing the course,

using their network or sending their employees. In addition, a market analysis needs to be included in the proposal: a scan for existing courses to make a contribution to the present learning landscape. The choice for the mode of delivery needs to be rationalized: offering the courses in a self-paced mode makes it more flexible for the learners, but the instructor-paced may be better suited to create a more engaging learning experience.

Learning outcomes and credentials

The learning outcomes or the skills learners gain through the courses need to be clearly defined, and easily sharable and recognizable. The definition of the learning outcomes for prospective learners happens in the course announcement and communication. The translation of these in the course design, production and delivery is clearly outlined in our online learning hub [11]. Making the skills gained easily sharable for learners and recognizable for employers means implementing some kind of credentialing. For MOOCs we have used, in addition to badges, Professional Certificates, that have no relationship with campus education, and the MicroMaster, that can be converted to campus credit once the learner is accepted in a corresponding Master programme on campus. The ID verification and exam conditions are obviously more rigorous for MicroMaster summative assessment compared to Professional Certificates Programmes. Since the MicroMaster credential can be converted to campus credit, the exam committees of the programmes need to accept the assessment method. Since this is a novelty, exam committees need to familiarize themselves with the specifics and gain experience before they can accept this conversion to campus credit.

With our focus on programmes, the thinking in learning outcomes is not limited to the individual courses: we need to consider the coherence of the programme while maintaining the value of the stand-alone courses.

Finding your audience and convert free enrolments to paying learners

To be able to continue to provide these offerings, the institution needs a sustainable business model, which requires obtaining and implementing insights in which factors influence the willingness to pay. In MOOC-based programmes, learners can choose to pay at the moment they enrol, or after they have enrolled. Both happen in a significant extent to put effort into both motivating learners to select the verified (paid) track upon enrolment and converting learners to the verified track after they have started the course. We can influence the first by fine-tuning the information in the course announcement, and promoting the course through various channels, from social media and presentations for professionals in the field to paid advertisement and relations with industries. Factors we cannot immediately influence are e.g. university ranking or reputation of the instructor. The in-course upgrading is influenced by keeping the learners engaged in the course, by reminding them to upgrade (in-course messaging and emails) and proving information on what the benefits of a verified track are: in addition to the certificate, learners have access to the summative assessment and in selected courses, there is additional learning behind the paywall. This way we add value to the verified track.

Case: Professional Certificate Programme Electric Cars.

The Professional Certificate Programme Electric Cars [12] started in February 2018, consists of four courses which each have ran twice, the third run is ongoing.

Results

The results of the two finished runs are in Table 1, where IP = instructor-paced, SP = self-paced and VTR = verified take rate.

Table 1. Professional Certificate Programme Electric Cars

Course	Pace	VTR	Certificates issued	Programme certificates issued
eCARs1, run 1	IP	3.8%	197	
eCARs1, run 2	SP	3.2%	467	
eCARs2, run 1	IP	4.4%	222	
eCARs2, run 2	SP	3.3%	185	
eCARs3, run 1	IP	6.2%	172	169
eCARs3, run 2	SP	4.2%	92	
eCARs4, run 1	IP	8.0%	163	
eCARs4, run 2	SP	4.8%	56	

The instructor-paced first runs have a higher verified take rate and % finishers compared to the second, self-paced runs. We see learners do not only aim to take the complete programme, they select all combinations of 2 or 3 courses and take them in different orders.

Competition

The only competing programme is on edX: the MicroMaster programme Emerging Automotive Technologies. The price, level, programme duration and learning outcomes make it address a different target audience [13]. Another competing course is Electric Vehicles and Mobility on Coursera: shorter, not part of a programme and the videos are in French [14].

Evaluation

We are working to improve the performance of our Electric Cars programme. At the same time we already consider this a success and identify the following causes: this is an in-demand skill, the programme was developed in collaboration with external partners - institutions as well as industry, the programme has a flexible set-up and consists of short courses that are valuable in themselves. In addition, the TU Delft has a reputation, and was a first mover in this area: we were able to claim a section of the field.

3 The Future of Professional Learning

We are learning progressively how to create relevant courses and programmes for professionals, how to add value, how to generate revenue and how to lower the costs, while maintaining our focus on open, educating the world and improving campus education. We see the benefits of this scalable approach to educating tomorrow's workforce, offering flexible means to reskill and upskill professionals. We are lowering the costs by making the course selection, production, marketing and administration processes more efficient. We work more and more data-driven to better meet learning needs and improve our offerings.

So far most of the costs have been shouldered by the universities. A sustainable business model will help to be able to continue to offer these courses – free for all, with a paid track with additional features. Potential is in further developing the collaborative effort with government and industry to meet this huge demand, while at the same time fine-tuning the programmes with the societal learning needs. Learners need to become lifelong learners in their initial education: continuous online education needs to be included in their curriculum. The recognition of skills acquired online, in a European or better, a global context, will help to implement online learning as a solution to the emerging skill shortage.

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