Experiences from Maritime Logistics Distance Learning Course

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Abstract. For the purposes of project, “Taltech in the Caspian Sea Region”, was in the end of 2019 initiated distance learning course. Topic was maritime logistics and lectures were recorded as well as edited either at the site of Taltech (lecturing room) or at office. Lectures combined interactive parts with students (examples and assignments were part of lecturing module). Purpose of distance course was to deliver it in prompt fashion and with high quality for distant student audience. We report this as a qualitative case study. Research illustrates what kind of tools and approaches were felt best suited to deliver course. It is essential that both technical tools of distance courses as well as teachers and materials are ready and serving demanding digital lecturing task. Collaboration between members of project group is also important, and the professional level as well as experience of all actors. Giving distance education in short notice, it is required that organization is having basic readiness. Technical issues are always something, which require attention (software and purchased hardware become old, while new options arise). Given course had implications on in-service program development, which is also described in here.

Keywords: Distance learning · Implementation · Technology · Case study

1 Introduction

Distance education has been coming increasingly more mainstream in the past decades, and Covid-19 pandemic brought it eventually to masses, and this at all levels of education. Although, changes in 2020 were rather disruptive, the development of “distance education”, or more largely “open learning” has been at the development agenda and implementation since 1990’s [1]. In the beginning “open learning” was seen as flexible way of bringing education and courses for students, and it was thought to be centralized, with “learning centers” or “open learning offices” supporting all the activities [1, 2]. As early analyses showed, with this sort of structures, distance education was seldom “cheap” option as compared to traditional courses as also preparation of courses, recording lectures and checking exercises, seminar works and exams required a lot of time and resources [2]. This is still considered as one Achilles heel [3], however, keen desire to centralize learning has changed as people are more familiar of using distributed
and networked learning devices and software [4–7] – we do not need any longer coordinators and “centers” in between lecturers and students, and it is rather direct contact between parties. Together with positive development in technology and its adaption as well as use, another issue is also providing long-term support for distance learning, and that is lower carbon emissions. It is amazing how much lower emissions distance and online learning can bring – based on studies it is more than 80% lower CO₂ emitted as compared to traditional teaching courses [8–10]. Travel (domestic and international), housing and campus site operations produce quite substantial emissions. It is of course so that information and communications technology (ICT) will consume more energy in distance/online mode, however, its increase is very limited in CO₂ as compared what is actually saved in others. Although, there exist a number of positive issues and drivers of distance learning, it needs push to bring it to main-stream and masses. Due to Covid-19 outbreak, and fear of public health, distance learning has exploded. Early experiences highlight that it is important to use instructors/lecturers voice in different levels and forms that gestures and maneuvers of on-site and classroom teaching could be replaced in learning experience [11]. It is also very important to control that students do work with subjects outside of classes as online participation of courses is more difficult to control. It is known from earlier experiences that adding student interaction e.g. through quizzes, increases the likelihood of providing successful distance learning course [12]. We as well have experiences out of distance/online courses [5] and digital (mobile) platforms [13] used in more traditional and older population tasks, and they have been reported to work rather well.

In this research work we report results of project “Taltech in the Caspian Sea Region” concerning its distance learning course. This course was given in the early parts of 2020 for Kazakh audience, and lectures as well as overall distance learning package was managed by Tallinn University of Technology and Estonian Maritime Academy. Lecturers and instructors of the course came from this institution as well. Target audience of this distance learning course was project affiliated Kazakh people, dealing somehow with international trade and logistics. Participants were from business and public sector. Partner in Kazakhstan helped to promote course for local residents. Production of lectures and online material started in the late 2019 (November), and was announced and put online (available for students) in February 2020. This research reports our experiments and experiences of producing this distance education course, and how we were able to have it available in limited amount of time. Research is a case study, and it is qualitative [14, 15]. Research problem could be stated in form of question as follows: “How to produce distance education course in short amount of time within higher education?”.

This research is structured as follows: In the following Sect. 2 we introduce process of producing distance education course, and also highlight what kind of software and hardware configurations were used. In Sect. 3 distance education course is introduced through used Internet platform, and content of lectures. As given distance education course had influence and implications on the development of one year in-service program of “Smart Ports & Global Logistics”, its plans and actions are described in Sect. 4. Research is concluded in Sect. 5, where we also propose further avenues for the studies in this area.
2 Process of Producing Distance Education Course Content

Idea of producing distance education package for project “TalTech in the Caspian Sea Region” arose from the needs of the project to provide information for Kazakh audience from the contemporary maritime logistics themes, which would contain possibly novel Information Technology (IT) applications. This israther typical information dissemination task of any scientific project from one country to another. Participation in the task was on voluntary basis, and was not specifically paid. Lecturers based their contribution on current lecturing materials, and recent acquisitions of material to university (like simulators, books, reports, computers and software). Without voluntary and charity based lectures, it would have been difficult to reach tight schedule deadlines of this course implementation.

Project started with informal queries from teaching and research staff about the interest to participate. In the beginning of course pool of potential lecturers was much larger than what was the end result (those who actually contributed to this task). After getting idea of interested people, were meetings arranged about the production of teaching material. It was known that some years ago at Taltech and Estonian Maritime Academy, there was investment made to one teaching class, where distance lectures could be recorded. This was at first needed to be checked. However, it was learnt that distance lecturing class was a bit of out of date, and proper recording of lectures with it was difficult task. It is simply so, that software changes so rapidly and licenses expire (at larger university level – leaving some older software abandoned), which eventually leads to malfunctioning of the entire distance education recording class. Of course this issue was tackled by using another class in other location, but it gave good reminder about checking functionality of systems (and how distance education had declined before Covid-19 crisis – it was pretty much popular decade earlier). Together with class based recording, one lecture was recorded using MS PowerPoint screen recorder (it had functionality to record entire screen, if needed and could incorporate also use of other programs, [16]) – this recording was completed in smaller parts, and after editing with free and open source editor program called Shotcut [17], it was incorporated to be part of delivered package. In the end all teaching videos were checked and edited by competent people of Multimedia Center of Taltech.

3 Distance Education Course in Used Platform

As all lectures were properly edited as viable teaching units, they were all combined together in platform called Easygenerator [18], where there was opening page, which simply accessed to five lectures (Fig. 1). Lectures were uploaded to Youtube, however, they were not (and still are not) publicly searchable and only visible via link. These lectures were linked to Easygenerator course platform page. Duration of lectures varied quite much, starting from few minutes, and in the other end being more than one hour long. Two lectures were given in English (Palu & Hilmola), while three remaining were in turn given in Russian (however, many slides were still in English). This simply to serve the target audience as Russian is well spread in old Soviet bloc countries still. Specifics of lecturers, topics, and duration are as follows:
- Riina Palu (duration: 2:20): Smart Ports and Global Logistics (introduction to in-service training program)
- Dan Heering (duration: 17:27): Cybersecurity for seafarers
- Inga Zaitseva-Pärmaste (duration: 11:04): The basics of spatial data analysis for smart cities
- Yrjo Saarinen (duration: 39:50): New INCOTERMS® 2020 Rules
- Olli-Pekka Hilmola (duration: 1:12:18): Using Linear Integer Programming to Solve Physical Distribution Problems
In general, these lectures were acting as an introduction to their specific topics, and did not contain that many exercises or student interaction. Typically, lectures contained lecturer’s upper body part, and then edited items from slides (or documents; see Fig. 2). This of course required recording lectures at site of Taltech, and also video editing was needed. Some news of topic were also incorporated in the lectures, if they were relevant (like from cybersecurity and using specific laboratory and simulation of sea vessel operations at Taltech). Only in the last lecture on the list had one online exercise and interactive task being offered for the students (Fig. 3). This required working with distance matrix and spreadsheet optimization package using evolutionary algorithm (Fig. 4).

Fig. 3. Lectures page of maritime logistics course at course platform.

Fig. 4. Lectures page of maritime logistics course at course platform.
Due to Covid-19 pandemic, we were not able to achieve high enough interaction with Kazakh partner of the project, and student interaction (intended questions and answers of lecturers from students in live mode) as well as student feedback are still not completed (at the time of writing this research). However, these are still at the agenda during autumn of 2020, and are possibly to be completed in one form or another. Interest so far from Kazakh audience on this course has been moderate. Somewhat above 20 persons have watched uploaded videos.

4 Implications on Further Development of In-Service Training Program

During this distance course completion time authors of this research were also involved with the internal development of in-service training program, called “Smart Ports & Global Logistics”. This program is intended to be a fruitful addition to the students of other subjects and also to the field professionals as in-service program of one year under “open university” (further education center) of Taltech. From this distance learning course execution reasons as well as due to Covid-19 situation throughout the world, it was decided that program shall be put online and within distance education mode entirely. Development has been changed to such that program will be more networked style, having experts giving lectures from Estonia as well as Northern Europe and possibly also from Kazakhstan. Main weight is on high quality video material provided, and having good lecturers within program. Following topics and lectures are planned on the program (this is preliminary planned list):

- Hinterland container transport and the relevance of information exchange; optimizing the planning and control of container logistics processes; developing customized ICT solutions for hinterland transportation
- Global supply chains
- Financing of global infrastructure development: risks and opportunities
- Special planning in water environments
- Effects of (Chinese) e-commerce on global, regional and local logistics
- Maritime cyber security
- Smart Ports case study of Port of Tallinn
- Maritime law
- Global politics
- Business development in new era
- Global financial systems
- Innovative solutions for global logistics

Due to the reason that in-service program is now going to be completely online/distance learning mode, and this will last for two semesters, we have completed different kinds of actions and plans. We have spotted new application called “Mastery Team” [19], and this is one good alternative to be used in toolbox for program execution. This application has been developed in collaboration of one of the leading YouTubers of Estonia. Key idea of in-service program is that it is based on “easy learning” (from student perspective), however, this in other side means that it is very...
demanding for lecturers as well as on used technology. However, due to the reason that
students of this in-service program are intended to be arising also from Central Asia
besides Estonians, program development in current world environment leaves very
limited amount of options in other regards. This in-service package is in the future also
be offered for M.Sc. Program students as an option of specialization of M.Sc. Degree.
In the new mode it should fit well in working life being students. Table 1 provides
preliminary details of program structure.

| Subjects | EAP | I semester EAP | II semester EAP |
|----------|-----|----------------|-----------------|
| General subjects | 16 | 7 | 9 |
| Transmission of (business) messages in digital era | 3 | 3 | 0 |
| Writing of scientific texts | 3 | 0 | 3 |
| International and Maritime Law | 4 | 4 | 0 |
| Practical research methods | 6 | 0 | 6 |
| Global logistics | 20 | 12 | 8 |
| Management and financing of global logistics and infrastructure development projects | 6 | 6 | 0 |
| Global supply chains and international strategy | 4 | 0 | 4 |
| Global politics, economics and finance | 6 | 6 | 0 |
| Practical research | 4 | 0 | 4 |
| Smart ports | 14 | 6 | 8 |
| Smart Ports case study of Port of Tallinn and Port of Helsinki | 4 | 0 | 4 |
| New technologies and innovative solutions in logistics | 6 | 6 | 0 |
| Port community systems/e-Governance | 4 | 0 | 4 |

Making in-service program successful, it is not only required to have technology
and lecturers there. Program will have some sort of learning center (advising students,
if they have problems), but this in limited form. Institutional partners from Estonia,
other universities and branch companies are also required together with Program
Council. Funding for program development and initial execution is also one area to be
solved, and in there we have as alternatives different European Union funding tools
(like Erasmus+, Horizon, Green Deal etc.) as well as local state funds together with
other country-level funds.

5 Conclusions

Due to numerous reason, and lately driven mostly by Covid-19 epidemic, distance and
online courses and education has been brought high at agenda of different schools,
institutes and universities [11]. Distance learning has its roots deep in the early days of
ICT and Internet development – it was firstly seen as an opportunity in the late 1990’s
and early 2000s [1, 2, 4]. In that time distance learning courses using video format and
some interaction were introduced. However, as it was introduced to the old structures and world did have back then distributed solutions of IT (like mobile and fast Internet, tablets, Internet capable mobiles and applications), it was most often regarded as costly exercise and having higher price tag than conventional teaching of courses. Cost is of course only one factor in decision-making of shifting more on distance education. We have used so much on traditional form of courses at site that this habit is difficult to overcome. Now due to virus epidemic, and also in parts due to environmental reasons, world and institutions have “push” for new forms of teaching. It is of course not problem free or easy task to transform from traditional courses to distance courses. Most often this increases the work-load and stress of lecturers, and in turn creates difficulties to control whether students actually learn something and do things [3, 7, 12].

Providing maritime logistics course for Kazakh students using distance learning format was one awakening event for Taltech and Estonian Maritime Academy to consider other programs developed for future students. As institute learnt that producing distance learning material is not that difficult, and staff is even at voluntary base willing to contribute in the development of it, this should be workable format in later on. Therefore, as reported earlier in this research that one in-service program lasting for one year is intended to be given in distance learning format. It was also learnt during the process that new software applications are needed and IT applications to aid in one year program, and these have been searched further. As bigger changes always come outside of bigger institutions and structures, it would be good to suggest that universities take some learning points from YouTubers as well. It is worthwhile to think about their approach for videos (often providing instructions or learning material) – typically these videos are short, they contain interaction (comments or live-streaming chat), are made with very limited resources and are from contemporary topics. In the end YouTubers nowadays (best ones) attract audiences larger than national or international TV networks (having millions of subscribers and individual video views). We feel that in here there is a learning point for even university distance education courses and programs. Rigid use of technology as well as low and direct structures are way to go forward.

As a further research in the topic area, we would be interested to continue with student interaction and also gathering modes of student feedback. In many research works interaction is seen as vital in distance learning courses, and even in there tone of voice of lecturer is seen as vital. These should be researched further in order to understand how successful distance learning courses and programs are built in the future.

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