BlueMentor

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Innovative Quality Mentoring program for development of a Blue Competence Framework in fin-fish production

Output 4 - Fin-Fish work based pilot delivery testing

D4.1 and 4.2: Icelandic aquaculture work-based learning pilot

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Blue Mentor Project Pilot – Icelandic College of Fisheries

Company: Arnarlax, Arcticfish

Number of participants: Between 2019-2022 -

1. Summary of pilot

The Blue Mentor project ran from 2019-2023, during this time a learning pilot was implemented for the 3rd year of the College educational program as part of the aquaculture curriculum. In Iceland, the aquaculture industry is dominated by the production of salmonids, primarily Atlantic salmon (~45,000tonnes), and smaller-scale species culture such as Rainbow trout and Arctic charr. At the start of the Blue Mentor program, the majority of the existing aquaculture of Atlantic salmon had the post-smolt production stage in sea cages, however, within the duration of the Blue Mentor project, production plans for both the pre-smolt and post-smolt phase have develop onshore. This change was reflected in the content developed during the course of Blue Mentor. Furthermore, during the time period of the Blue Mentor project, COVID-19 had an impact across both the education and aquaculture sectors in Iceland, restricting in-person operations and travel for education courses. This was particularly relevant for the Icelandic College of Fisheries third year aquaculture program since the students are often already employed in the aquaculture industry and located in more remote areas due to the locality of farming operations.

The team saw this as an opportunity to develop the learning pilot as a hybrid pilot, that planned in the flexibility to teach both in-person and remotely online simultaneously to mixed location groups. While this was driven initially by COVID-19, the need for hybrid education that is more accessible to remotely located students, common in the Icelandic aquaculture sector is an ongoing need in the aftermath of the pandemic too, despite travel and classroom rules returning to pre-pandemic rules. In 2022, following both the work from this project as well as other ongoing education projects including Ask for Best Practice (funded by) and Bridges (Erasmus Funding) which all contributed to the development of the aquaculture curriculum in Iceland and facilitated knowledge transfer between key salmon aquaculture production countries, Norway, Scotland, Finland, Sweden and Iceland. A national curriculum for aquaculture was certified for the Iceland College of Fisheries aquaculture education program. This national curriculum certification is a major step in the quality, reputation and standardisation of the Icelandic aquaculture sector education and is submitted as part of the Blue Mentor project outcomes.

2. Implementation of pilot.

A planning and implementation infographic in **Figure 1** demonstrates the key steps taken to launch and run the learning pilot as part of the Blue Mentor project.

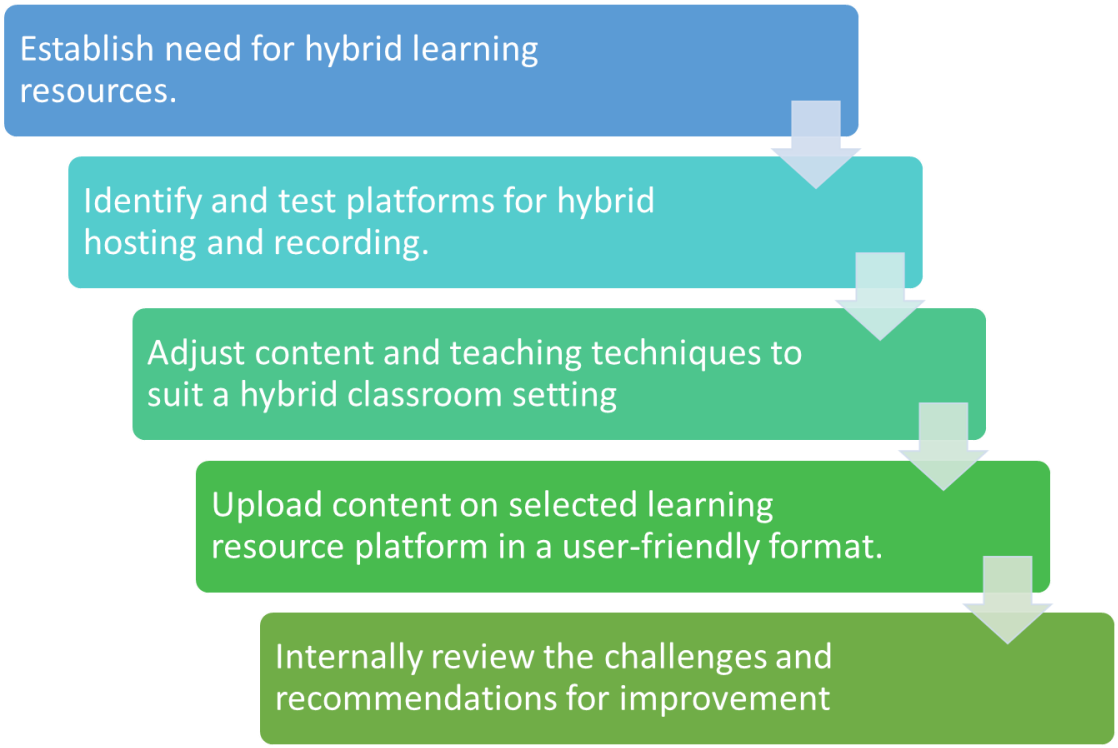

Figure 1. Planning and Implementation steps for ICF Blue mentor hybrid pilot.

As a hybrid model, classes were taught be teachers onsite in the classroom, but were also simultaneously taught live online over a streaming platform. A number of platforms were tested in order to established which would work best for the hybrid pilot (GoToMeeting, Microsoft Teams, Zoom). The platform chosen for this was GoToMeeting as this software allows easy sharing of content, is not very demanding on data bandwidth (suitable for remote location access), the meet link can be easily shared, the software allows for conversion and compression into different video file formats that teachers found user friendly, and finally, recording is easily paused during breaks in teaching yet provides a single output file per class making the process of sharing material hassle free. It should be noted that teachers often use embedded videos as part of the learning resources, so it is necessary in the GoToMeeting settings to select share for the sound content. The graphical user interface for GoToMeeting with sound selection options are shown in **Figure 2**.

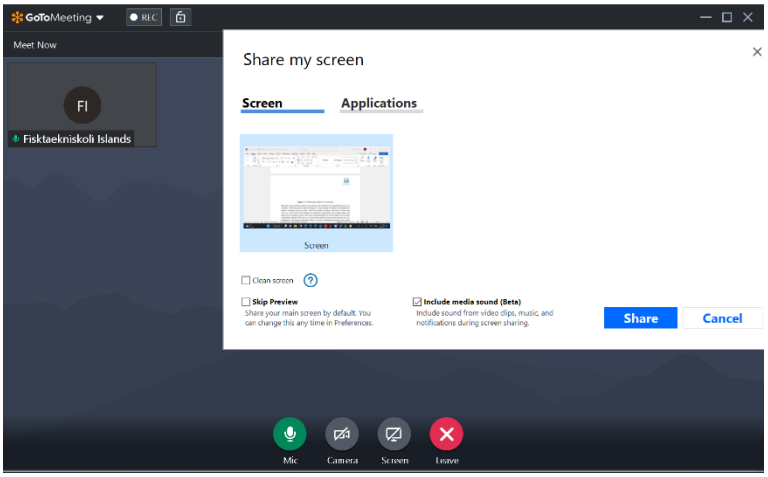

Figure 2. GoToMeeting Graphical User Interface

During the class, both the shared screen and the video from the live streamed classroom was recorded. Following classes, these recordings in a user-friendly file format were uploaded as digital e-learning resources so they could be accessible to students after the live lesson time was over. Since many of the students are employed in aquaculture and working shifts, such hybrid and e-learning resources offer much needed flexibility for when students were not able to attend the entirety of the class, or in cases where internet in more remote locations was cut. Furthermore, in Icelandic aquaculture, there is a diverse international employee pool, which means classes which are available to be taught in English and Iceland (and Polish if specifically requested), often students are not taking the class in their native language, making recorded e-learning resources which can be paused and replayed particularly useful for the Icelandic context. The e-learning resources, along with the slides from the class, video links, homework and additional learning resources are uploaded onto an online platform that students are given access to on a course be course basis dependent on which courses they are enrolled in and for the duration of their enrolment. The online platform used by ICF is called Moodle. A screenshot of the Moodle homepage is shown in **Figure 3**. The online hosting platform was already in use for sharing learning resources between teachers and students at ICF. Toward the end of the Blue Mentor project, and as part of ongoing aquaculture education develop, new online sharing platforms are being considered that might be more suitable to the future development and growth of this educational program.

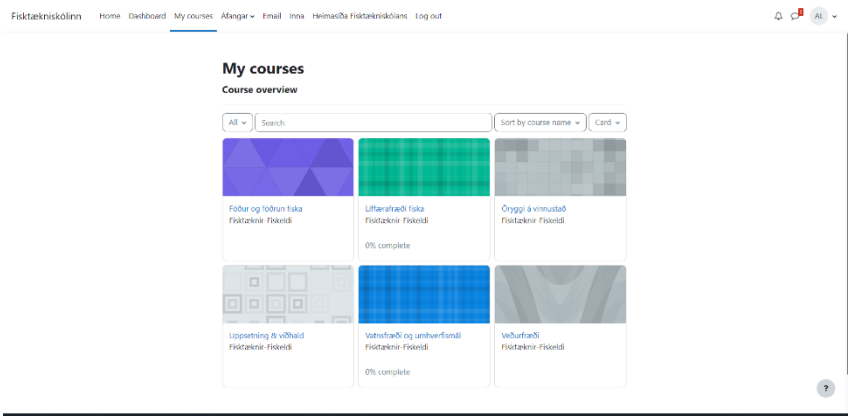

Figure 3. Graphical User Interface of Moodle used for online hosting of learning resources.

The modules taught in this new hybrid pilot program were as shown in **Figure 4** and classes were most often taught in the evenings between 18:00 and 22:00 to fit best around shift time and to use time efficiently if teachers were travelling to remote locations for partial in-person teaching. Their accompanying recorded e-learning resource is submitted as part of this Blue Mentor project. Hybrid teaching required adjustment to the educational techniques and content in order to make the lesson more interactive with a remote audience. There was also a period of adjustment as new students and teachers alike familiarised themselves with digital sharing and recording of content and interacting in a new setting. Such adjustments include, raising awareness of raised hands and questions from both in person and remote students, opening discussions that could include those online and in person, by allowing time for each student to contribute to discussion, normally notifying them one by one and by name. Addressing questions both to the group but also to each individual student in-person and online to ensure no-one was being left behind in the progress of the lesson.

This new flexible remote learning familiarity also allowed us to offer additional support to the students where either the student or the teacher felt this was necessary. For example, a homework session could be added, where students could join the teacher remotely for a question-and-answer session to address challenges or misunderstandings regarding the set homework and go over content when requested by the student.

Figure 4. Modules developed and converted for hybrid learning in Blue Mentor.

3. Challenges and future recommendations based on the hybrid pilot.

Engaging students in remote settings proved more challenging that engaging students in live classroom settings. This was particularly the case in the second half of the four hour classes where it was more challenging for students in remote settings to maintain focus and interest in the course without direct interaction with the teacher. Recommendations for the future development of such a hybrid course would be to use additional tools that are developed for e-learning and online interaction such as Menti meter and Miro. These tools are fun, and also for live interaction to keep students online engaged and help the teacher monitor the level of understanding and participation of students online. For some tools (Miro-whiteboard), this does mean however that each student, both in the classroom and online must all have an individual computer and be fairly comfortable with basic computer operation. To address these challenges, it is recommended to have an orientation session for each of the tools used, with short re-caps at the start of each class with fun exercises to familiarise students with using these options, and to favour mobile friendly platforms (Menti-meter) where not all students have an individual computer.

Lack of cameras can be draining for teachers when all students are remote, which during COVID-19 became the norm. Recommendations to address this, was to where possible and appropriate to encourage all students to maintain their cameras on while the lesson progressed. A further recommendation would be to have a greater number of shorter classes.

It will be important to gather further feedback from students regarding methods thar can support more engaging remote learning and to understand what the preference is for in-person, hybrid or remote education for the future improvement of these tools.

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