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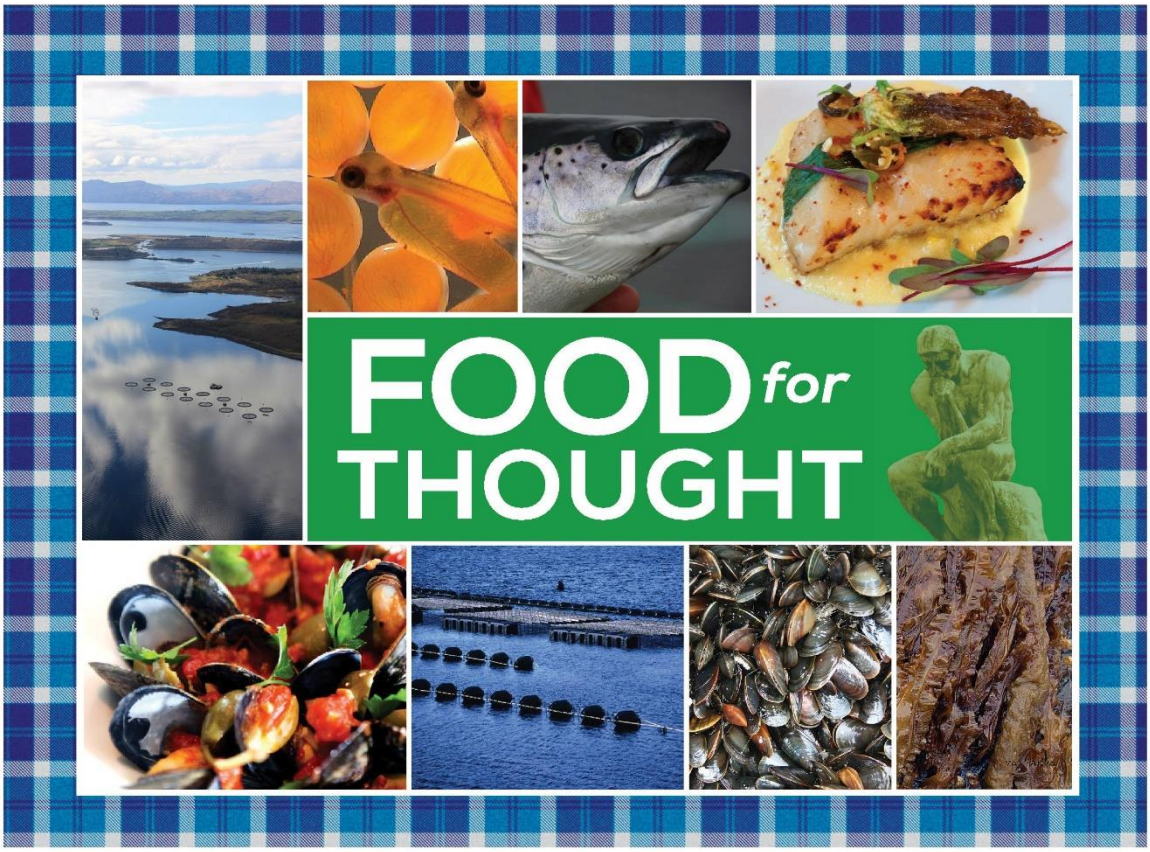

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Digital Tools in aquatic sciences education

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Introduction:

The use of digital tools provides many benefits for both the learner and the teacher, including the promotion of shared working spaces and resources, better access to information, the promotion of collaborative learning and a general move towards greater learner autonomy.

Considering the Internet, there are now numerous options available, how to use digital information and communication tools (ICTs) in teaching and learning. However, there are still few teachers who have a comprehensive knowledge of the wide range of ICTs and can make use of digital tools with complete confidence. Aqua-tnet, the European Thematic Network in the field of aquaculture, fisheries and aquatic resources management has recognized these deficiencies and has introduced a working group into the Network agenda from 2006 to 2014 about "Innovative Lifelong Learning" which was dedicated to identify opportunities and help realise coherent pathways for lifelong learning in the aquatic sector in response to the challenges now facing education, developing innovative ICT tools and guidelines to enable greater transparency in assessment criteria and definitions of competence. By 2005, Aqua-tnet had become the largest multidisciplinary European Education Network in the field of aquaculture, fisheries and aquatic resources management.

The network has promoted the use of digital means in teaching and learning, has organized hands-on workshops and developed online repositories and a template for an online course on aquaculture.

Scope of the presentation

The presentation will address the subject of digital tools in aquatic science education in general, such as some reflections on the relationships between digital technologies and learning, how digital technologies have changed, and will change the "landscape" in teaching and learning and how to develop more confidence in the use of digital tools in teaching.

Furthermore, in order to illustrate the options, some examples of digital tools will be briefly introduced, which are specifically developed to promote teaching and learning in aquaculture. Among these is the AquaCase web resource (Figure 1) and a template for a 5 ECTS-online course on aquaculture ("Open the door to European Aqaculture") which were both developed from the Aqua-tnet network.

Conclusions:

Digital tools, beyond some presentation programs such as MS PowerPoint, have not yet arrived within the daily routine in (classroom) teaching. However, learning today needs new pedagogical and technological approaches to using digital ICTs. Teachers have the responsibility to prepare students for the requirements of an ever-changing world by facilitating learning in a technology-rich environment where students and teachers don't just learn about technology, they use it to achieve powerful learning and teaching, and improve student learning outcomes (Greener 2012, a, b, Prestridge 2012).

Studies have shown that whilst students hold an expectation of digital transformation, in practice there is still much to do in supporting this change from a teaching perspective. (Greener & Wakefield, 2015). There is still a strong mismatch between student expectations and staff capabilities and motives (Bennett 2014). The pedagogical reasoning and methodology for the use of digital technology is still unclear for some teaching staff, and this barrier prevents the utilisation of digital learning.

This presentation aims to encourage the use of digital tools in teaching and represents the experience and opinion of people active in aquaculture education.

References

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Fig. 1: The AQUACASE website is an example for a digital tool in teaching and learning about Aquaculture and has been under development throughout the AQUA-TNET3 project. It is a free online portal facilitating Problem-Based-Learning in aquaculture. It provides a set of well-illustrated aquaculture business case studies that can be used for a wide variety of aquaculture teaching and many more resources.