575235-EPP-1-2016-1-NO-EPPKA2-SSA-N
Agreement number 2016 – 3452
Erasmus Plus Sector Skills Alliance LOT 1 project
www.blueedu.eu

Fostering Growth in the Blue Economy by developing an action plan for innovative European aquaculture VET and harmonized qualifications

D7.1 BlueEDU Quality Assurance Guideline

WP 7 Quality Assurance

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Version: Final

Date: 30.10.2017

Funded by the Erasmus+ Programme of the European Union

This project has been funded with support from the European Commission. This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.

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Summary

Overview

This BlueEDU Quality Assurance (QA) guideline has been developed with full consideration of the tasks and activities that are integral to the BlueEDU Lot 1 research project, as described within the approved BlueEDU bid and deliverables. During project development, deliverables with an obvious quality assurance requirement were recognized, and appropriate QA mechanisms outlined. Subsequently, during the project preparatory phase, QA mechanisms have been further developed to ensure that the BlueEDU outputs are of a high quality. The most 'mission critical' objectives, such as the collection of reliable information and data on aquaculture VET supply and demand, have been subjected to the most rigorous QA considerations.

A system for monitoring, recording and 'reporting by exception' has been devised for all quality assured activities (See Table 1) to ensure that all non-conformances are quickly recognized and corrective action(s) implemented by the nominated partner responsible. The assigned Work Package (WP) Leader relating to the task being quality assured is assumed to have the QA responsibility. They must ensure that the QA and monitoring processes agreed and defined for that task are implemented. However, other partners with relevant skills can be nominated, with their agreement, to take responsibility, and/or provide practical assistance with any remediation. Some QA activities require monitoring to be undertaken according to a pre-determined schedule. Therefore, the scheduling of QA activities is described for each of the main activities being quality assured:

- Planning and implementation of all work activities relating to the deliverables within each Work Package
- Meetings that support the development of outputs (deliverables) and overall project management.
- Communication content to ensure its suitability for the intended target audience.
- Communication impact and effectiveness following disseminated to stakeholders.
- Quantitative and qualitative surveys to gather information and data on VET demand and supply.

The projects documented QA records will be kept up to date on an on-going basis and will show all non-conformances recognized and remedial actions implemented, throughout the project life cycle. This will include the partner responsible for the remedial action and the post-implementation effect. The QA register will be reviewed as a fixed agenda item within routine monthly Management Board meetings, chaired by the BlueEDU project manager who will maintain an oversight of all 'quality issues' ensuring that appropriate remedial actions are being led and implemented by the appropriate WP leader.

Any necessary modifications to any project objectives, or changes of emphasis within tasks, resulting from the QA processes will be reported to the Brussels Commission within the mandatory interim and final reports.

Quality Assurance Processes

The BlueEDU Quality Assurance system has been devised to monitor progress in all quality assured activities, providing early detection of 'non-conformances' in relation to plans and/or defined quality standards. The QA mechanism varies according to the nature of the activity being quality assured. All activities subjected to QA are specified below with a brief description of the QA mechanism applied.

In every type of activity below, the purpose of the QA mechanism is to provide timely information on non-conformance to enable quality improvement actions to be taken. Through operating 'reporting by exception' and the use of clearly defined reporting mechanisms and responsibilities, the process remains manageable and leads to effective quality control.

Table 1 : Summary of quality assured activities and mechanisms

Activity	QA mechanism	Leader	Information source and location
Project Management **Planning**	PDCA cyle, embeded within project management and formal meetings	Work Package leaders & Project Manager	Work Package Task Gant charts defining activities Held on Stimuli
Project Management **Meetings**	Meetings schedule, Action Minutes and procedures for the escalation of issues and issues logging	WP 1 Leader Project Manager NTNU	Action minutes for all meetings and Issues Log held Held on Stimuli
Communication **Content**	Evaluation of the accuracy, quality and suitability of content for the specified audience	NTNU Lead partner	BlueEDU web site Journal articles Leaflets Power Point presentations
Communication **Effectiveness**	Testing effectiveness of communication and dissemination to stakeholders by partners. Evaluation of BlueEDU social media discussions.	WP 9 leader FEAP	Communication plan (Spreadsheet) Make up a plan for of which partner is

			going to write which articles. And records of feedback by partners Held on Stimuli
Surveys **Quantitiative**	Reputable software Question development format to identify purpose of questions Pre-requisites/conditional questions and routing Defined survey technical development process, Testing and translation, Monitoring returns to detect problem questions for remediation	WP 5 leader WP 6 Leader	Word files on Stimuli (Design stage) BlueEDU web site duirng testing and application phase
Surveys **Qualitative**	Structured interviews of groups of persons, undertaken by VET specialists to facilitate discussion Recording devices or a person to keep note of records Question sets developed to target the appropriate user groups, e.g. QA managers, VET teachers, etc. Collecting main findings in a pre-report, to be sent to NTNU		Records of structures interviews and analysis Held on Stimuli

Chapter 1: Project Management

1.1 Planning

The implementation process for remedial actions is based on the simple and widely deployed, 'PDCA cycle' that underlines planning, change management and quality control systems within many European organisations. The PDCA has been integrated within the BlueEDU project meetings management disciplines, as described below .

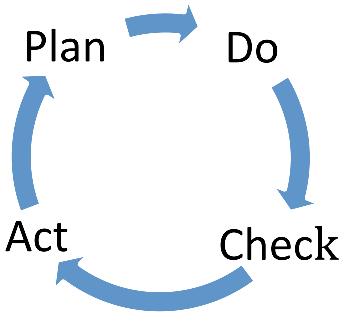

Figure 1. The 'PDCA cycle'

Plan: Tasks are devised to deliver the desired results within each Work Package (WP) as defined by the deliverable and associated tasks, led by the WP leader. The activities, workflow and allocation of responsibilities is confirmed, along side any measurable targets, and any QA mechanism. Planned activities are recorded and shared in a suitable format, including, but not restricted to, Gant charts

Do: Work Package Leaders are responsible for initiating the task implementation and management processes and lead the WP team in undertaking their tasks, as defined in the planning stage. The WP leader confirms the task responsibilities with the WP team and timings. The tasks are then implemented according to the plan and coordinated by the WP Leader.

Check: WP team members are expected to report any non-conformance with agreed plans and/or QA requirements to the WP leader immediately. Periodic checks are made by the WP leader of the partners' progress with task implementation, with reference to any relevant QA monitoring. Non-conformances reported by others, or observed by the WP leader that cannot be resolved, are reported to the Project Manager for recording on the BlueEDU Issues Log. Issues on the Issues Log are raised by the Project Manager for discussion with partners at the Technical Board (TB) meeting, leading to agreed remedial actions and responsibilities documented in the Issues Log.

Act: The WP leader oversees the implementation of remedial actions approved by the TB. The impact of all actions approved by the TB post implementation are reported by the WP leader to the subsequent TB meeting and recorded.

1.2 Meetings

The general 'spirit' of all project meetings is to provide a forum for direct communication among all partners and WP team members to inform each other of their progress with planned tasks, share experiences, provide suggestions, raise concerns, and resolve problems. The meeting schedule also acts to motivate partners and WP team members to meet delivery deadlines by reviewing the status of all tasks and any associated QA requirements.

Meetings fall into one of three categories.

Table 2: Meetings function and schedule

Meeting	Function	Frequency of meeting
Management Board (MB)	The MB will take remedial action whenever necessary regarding underachievement in relation to **Gantt chart** time lines for WP task completion and the implementation of the key milestones. WP leaders report progress and plans to each scheduled biannual meeting.	Biannually
Technical Board (TB)	The TB's role will be to steer operational decision-making, address operational issues and report Work Package progress, informed by routine **Quality Assurance reports.** Operational issues arising during WP meetings that cannot be resolved informally will be raised at the next TB meeting. An **Issues Log** will be maintained, clearly recording each issue and its owner and the date of resolution. Review of the Issues log is a 'fixed agenda' item for every TB meeting. Issues that cannot be resolved by the TB, or remain unresolved for 1 month, will be escalated to the MB triggering an 'extraordinary 'single issue' meeting at the earliest opportunity.	Monthly
Work Package (WP)	The WP leader is responsible for scheduling and chairing these meeting according to the needs of the WP. **Action Minutes** are kept with deadlines and persons responsible and Gant charts can be utilised for complex WPs.	Monthly & ad-hoc as and when required

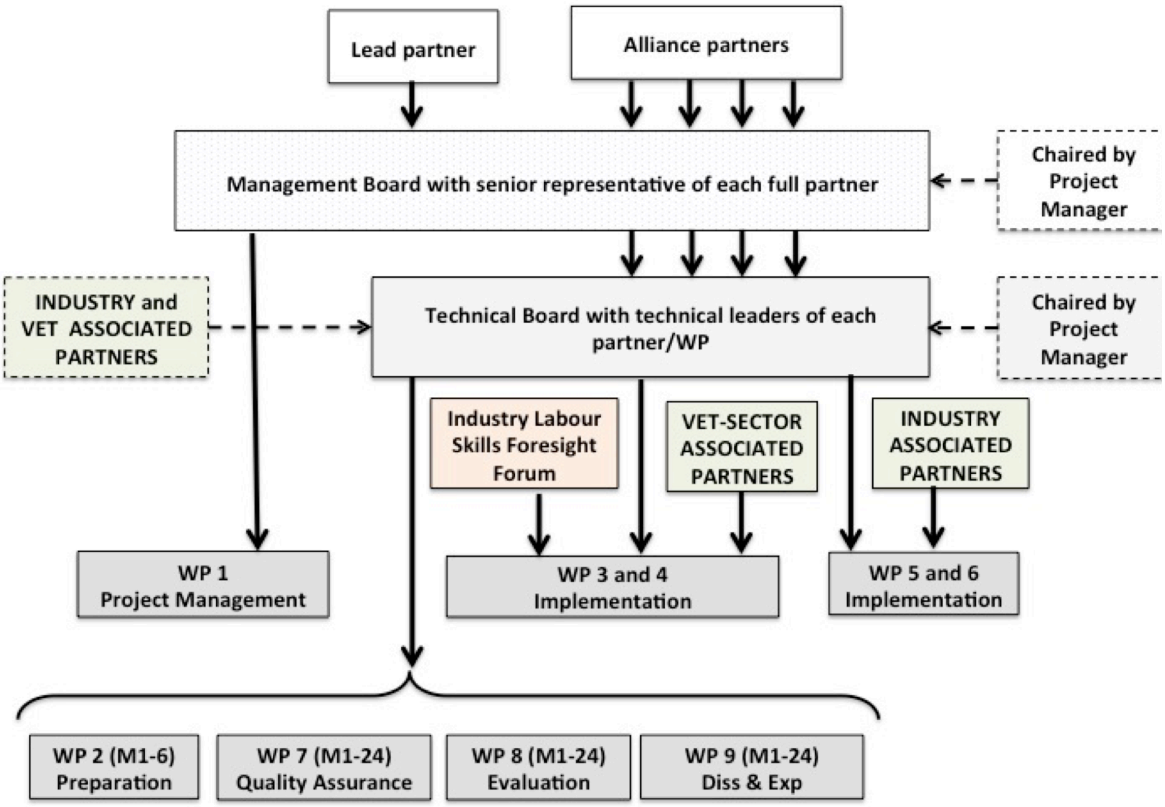

Figure 2. Meetings structure and reporting lines

There are several QA recording and reporting mechanisms to support information capture and routine QA reporting within meetings highlighted in bold font in Table 2 above and elaborated below.

- Action Minutes

All formal meetings (3 categories above) are expected to have an agenda, and attendees are encouraged to contribute agenda items. Action Minutes are kept by the chair and draft minutes circulated for an accuracy check within 5 working days of any meeting. This discipline supports the PDCA principles that are applied consistently and allows QA driven 'action loops' to be closed and recorded.

The meetings structure and hierarchy described below supports escalation of those issues that cannot be resolved by Work Package teams and their leader, when necessary, but ensures that at no stage of the process can an issue get 'lost' or remain unaddressed.

- Issues Log

When a non-conformance or operational difficulty can not be resolved by the WP leader it is escalated to the Project Manager who will resolve the issue with the WP leader, or add it to the Issues Log if they believe a wider discussion is required at the next TB meeting. The out put of that discussion is recorded in the form of actions to be taken and progress with the implementation of those actions is reviewed routinely every month in TM meetings.

- Gant chart

The mandatory time lines for each WP are held by the Project Manager who has the authority to review progress and in exceptional cases, request amendment to completion deadlines with the Brussels Commission. The WP leaders are expected to work to the project time lines, unless agreement for deviation has been gained and authorised by the Project Manage. The WP leaders are encouraged to develop more detailed Gant Charts to present the sequence of activities and any 'critical paths' to WP team members for more complex WPs. This is not a mandatory requirement, but recommended good practice.

- Quality Assurance reports

The protocols and responsibilities for project management (plans and meetings) centres on the adoption of the PDCA cycle. This applies to WP plans and activities, reinforced by the meetings schedule and Action Minutes, as indicated above in Table 2. The minutes of the three categories of meetings specified and the Issues Log will provide a documented record of activities and actions.

The nature of each QA report for the other quality assured activities (communications and surveys) are described in chapters 3 and 4 below.

Chapter 3: Communication

Effective communication is fundamental to the success of the BlueEDU project. There are many challenges in engaging industry, VET providers and other stakeholders to discuss the skills needs and VET requirements of finfish cage farmers, as they do not see this as their most urgent priority. Presentations on aquaculture VET systems are necessary to increase their receptiveness to innovative VET practices in the future that can help unqualified aquaculture staff to become qualified. This represents the biggest communication challenge of all.

Therefore, communication must be carefully designed, and dissemination monitored, to share good practice and enable partners to learn from each other. In addition, reporting the dissemination activities and their impact and effectiveness is obligatory to satisfy the completion of the deliverables in WP 9 (Dissemination) to satisfy the conditions of the Erasmus+ grant agreement.

The quality assurance of communication, both in terms of the content before release, and its effectiveness within dissemination activities, is an important component of quality assurance.

3.1 Content

The BlueEDU Communication Strategy and guideline (D2.2) provides comprehensive guidelines on the design and presentation of communication via a range of channels. All communication is designed to suit a defined purpose and target audience to maximize the likelihood of impact and effect.

The quality assurance of content

Descriptions of the BlueEDU project including the benefits will be developed by the WP2 leader for each target audience, with input from partners to ensure that they are appropriate. They will be subjected to readability evaluation, before final approval by the Project manager for use within dissemination.

The content will be presented within a range of media, including

- BlueEDU web site with navigation to direct each target audience to the information designed specifically for them
- News letters releases for producer organizations to include in their updates to members
- Leaflets for promotional purposes to raise awareness of BlueEDU events
- Power point presentations at conferences and events
- Journal articles in the aquaculture press.

The BlueEDU partners are encouraged to use their own web sites and social media presence to raise awareness of BlueEDU, but are obliged to refer to the approved descriptions of the project according to the signed Grant Agreement, when devising communication for their networks. However, they are trusted to adapt the presentation to suit the context of the aquaculture sector in specific countries as required to achieve engagement.

3.2 Effectiveness

Once quality assured communication content has been designed, as described above, the effectiveness and impact of each episode of communication will be monitored as described in the Communication Strategy Guideline and re-iterated below.

Table 3: Quality assurance of Communication effectiveness

QA process	By whom	Frequency
The partners shall maintain records of significant formal and informal communications held and their **immediate impact**. The impact will be determined using on line surveys and Rapid Response Technology to support immediate feedback on an event or presentation	All partners according to agreed stakeholder communication and dissemination responsibilities.	Reported to the TB, periodically as a fixed agenda item
The **attitudinal change** of industry towards VET 'post Initial Opinion' survey (WP2) will be monitored through qualitative surveys (structured interview) with key stakeholders, which will be supported by quantitative surveys when the opportunity arises.	The partner assigned to manage the relationship as defined by the stakeholder analysis	Month 23 of the project (October 2018)
Stakeholder representative groups (industry and VET providers) will be consulted regarding their **perceptions** of BlueEDU's progress and outputs (deliverables). This will provide an indication of the penetration and effectiveness of BlueEDU communications in each country.	The Lead Partner will circulate progress reports with a link to the deliverables inviting comment and feedback	Month 15 (February 2018) derived from interim report Month 22 (September 2018) derived from progress with WP 4 5 and 6 deliverables)
Monitoring social media communication to qualitatively evaluate the impact of the communication based on the views being expressed regarding the BlueEDU project and aquaculture workforce development in general. Partners actively using their own organisations web based/social media for BlueEDU dissemination will support this activity	FEAP, supported and informed by partners	The information flow will be accessed in twitter and other media platforms and evaluated monthly from Month 15 (February 2018)

Chapter 4: Surveys

There are two survey strategies to be deployed within BlueEDU, quantitative qualitative. The qualitative surveys are invaluable to helping the interpretation of the hard data analysis derived from the qualitative surveys and both strategies have been devised holistically. In both cases, group activity to gather a body of opinion, and one to one meetings and interviews with knowledgeable well informed senior managers might be utilised effectively

- Group activity

Industry attendees at a meeting or event must be quickly engaged by presentations that focus their minds on workforce development issues as a prelude to effective data collection. In some countries, including Norway, a facilitated interactive meeting of managers of up to 1-hour duration will be acceptable for an interactive data collection.

When engaging industry in data collection on VET demand partners should:

i. Infiltrate existing industry meetings and events and ask for permission for a 30 to 60 minutes session on the benefits BlueEDU can offer them.

ii. Deliver a short, focused, well prepared presentations to get the audience attention and then collect the data swiftly

iii. Send the results from the survey to the appropriate senior manager giving permission, after the analysis has been completed.

- One to one engagement

In large aquaculture companies there is often a senior manager with the complete overview of the company's VET needs. It may be worth investigating who is the quality manager, as this person may be responsible for the quality assurance system. Education may be one of the components in this system. When the managers have been identified, with the permission of their company CEO it is possible for them to access a wide range of useful company HR records and data. In addition, structured, interactive interviews can be undertaken to gather information and some associated data.

Where knowledge is lacking, a detailed stakeholder analysis may be particularly helpful, providing insights to how the company is organized, and which senior managers have the greatest interest in workforce development, and therefore, the strongest motivation to assist BlueEDU VET demand data gathering and analysis. In some countries National Production Organisation and the Federation of European Aquaculture Producers (FEAP) may be able to assist.

4.1 Quality assuring quantitative surveys

The partnership has chosen the open source Lime survey system https://www.limesurvey.org, as it can be operated from the internet and a local server in the event of poor internet connectivity. Simple questionnaires, or advanced assignments with conditionals and quota management can both be handled. It will be hosted and supported by NTNU as lead partner.

To ensure surveys are effectively quality assured, the following process is followed:

- A draft set of questions with explanations of the purpose of each question, the conditionals, and target audience must be produced in a word-file.
- The word file is shared with partners for comment to ensure that all questions are appropriate to the context in each BlueEDU country. Any issues are discussed, leading to refinement of the question, or its designation as a country specific question. All changes are recorded on the word file
- The word file is sent by the WP leader to NTNU Lime survey specialists for necessary structural or content changes, in consultation with the WP leader.
- NTNU will then upload the questions into the Lime survey on line system
- The survey undergoes technical testing by the BlueEDU partners, using a range of devices with differing screen sizes, including a smartphone to measure how long it takes each target audience to their allocated question set.
- In some BlueEDU countries, English is widely enough spoken for surveys to be undertaken in English. In others translation of the questions into their first language is undertaken.
- Once the partners have agreed that the survey seems suitable, it is then tested on 'tame' and cooperative members of the target audience to make sure there are no ambiguities or inappropriate questions for the target audience.
- When the survey has been approved, NTNU´ publish it at BlueEDU web-page and produce a QR code in preparation for its presentation to the target audience.

The quality assured survey is then ready for online usage.

The initial returns are monitored to determine whether any questions are being ignored or providing responses that are indicative of ambiguity or misunderstanding

The WP leader is notified by the Lime Survey technical support of any questions that may be a concern. Modifications are proposed by the WP leader to the Project Manager for their approval.

Approved modifications to question sets are made by the Lime Survey technical support team.

Staff in fish farming companies as well as teachers at the VET schools and in training companies, have limited access to time and the engagement will vary. Thus, surveys cannot be too long and each question should not include too much text. It is useful if the questions engage the target audience based up on their local, regional or national needs. In order to address this, questions may be structured and organized in such a way that those who respond, recognize challenges they have to deal with on a day-to-day basis. This may help increasing the motivation to answer the survey.

In the north of Europe large companies dominate the industry. Some of them are global actors and several control the whole production chain. In Norway, as an example, the 3 largest fish farming companies produce approximately 60 % of the fish and employs from several hundred to more than thousand persons. In order to collect quantitative data within such a market, it is enough to engage the 3 large producer companies and maybe 2-3 medium sized ones, in order to get a representative selection.

4.2 Quality assuring qualitative surveys

The use of well-designed, structured 'one to one' interviews with well-informed senior managers is recognised as an important aspect of the BlueEDU survey strategy, when targeting both industry and VET providers. This approach is much more flexible and fluid, and encourages engagement and interaction. However, careful preparation is essential, and questions and prompts need to be prepared to ensure consistency between different interviews in a country and comparability of the subsequent analysis of responses between countries.

Therefore, qualitative surveys are to be subjected to the following QA process when targeting VET providers and industry:

- Selection of key themes for discussion that reflect the question sets within WP 5 (VET supply) or WP 6 (VET demand), as appropriate
- Development of a scripted set of questions and prompts to reflect those themes for use during the interview.
- Inclusion of a limited selection of quantitative questions that can be delivered verbally during the interview and the responses recorded.

To ensure the accuracy and reliability of information and data gathered for later analysis, a recording device should record the interview. An alternative could be to engage an assistant, according to the preference of the person being interviewed.