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Building Links with Industry, Schools and Home

Work Package 4 | Deliverable 2

D4.2 Interim Web-based IBSE materials for Teacher Education

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Name of lead partner for this deliverable: UmU

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A.   Background to this report

This report is a deliverable of Work Package 4 (WP4) of the European FP7-funded project "European Science and Technology in Action: Building Links with Industry, Schools and Home" (ESTABLISH; 244749, 2010-2013). It meets the requirements of the Deliverable 4.2 by presenting a report on the web-based IBSE materials selected and adapted by the beneficiaries of ESTABLISH. (See Table 1 below for beneficiary list). As the materials are equally applicable to both in-service and pre-service teacher education, it was agreed at the general assembly meeting held in in Umeå. (GA4) that this Deliverable 4.2 would also meet the original requirement of Deliverable 5.2, and that the focus of D5.2 be reassigned. The development of the materials presented here have been led by Margareta Ekborg (MaH), Maria Sandström (MaH), Annika Kjellsson Lind (UmU), Helena Nas (UmU) and Christina Ottander (UmU)

B.   The ESTABLISH consortium

Beneficiary short name	Beneficiary name	Country	Abbreviation
DCU	DUBLIN CITY UNIVERSITY	Ireland	IE
AGES	AG EDUCATION SERVICES	Ireland	IE
UCY	UNIVERSITY OF CYPRUS	Cyprus	CY
UmU	UMEA UNIVERSITET	Sweden	SE
JU	UNIWERSYTET JAGIELLONSKI	Poland	PL
CUNI	UNIVERZITA KARLOVA V PRAZE	Czech Republic	CZ
AL	ACROSSLIMITS LIMITED	Malta	MT
UPJS	UNIVERZITA PAVLA JOZEFA ŠAFÁRIKA V KOŠICIACH	Slovakia	SK
COUO	CARL VON OSSIETZKY UNIVERSITAET OLDENBURG	Germany	DE
UTARTU	TARTU ULIKOOL	Estonia	EE
UNIPA	UNIVERSITA DEGLI STUDI DI PALERMO	Italy	IT
MaH	MALMÖ UNIVERSITY	Sweden	SE
IPN	LEIBNIZ-INSTITUT FUER DIE PAEDAGOGIK DER NATURWISSENSCHAFTEN UND MATHEMATIK AN DER UNIVERSITAT KIEL	Germany	DE
CMA	CENTRE FOR MICROCOMPUTER APPLICATIONS	Netherlands	NL
MLU	MARTIN LUTHER UNIVERSITAET HALLE-WITTENBERG	Germany	DE

Introduction

This report describes how to access the web-based materials selected and adapted by the beneficiaries of ESTABLISH to support the provision of teacher education in Inquiry Based Science Education (IBSE).

1. Accessing ESTABLISH Teacher Education resources

The materials and resources for teacher education adapted by the beneficiaries of ESTABLISH have been posted to the members area of the project website: www.establish-fp7.eu, in the category for TEACHER EDUCATION (WP4/5)

In order to access this area of the website, an account for the Project Officer has been setup with the username "project.officer".

A password will be forwarded on request from info@establish-fp7.eu

2. ESTABLISH Teacher Education

The provision of teacher education in IBSE is central to the ESTABLISH project. In terms of defining IBSE and scientific inquiry the ESTABLISH definition is based on the definition of inquiry (Marcia C. Linn, Elizabeth A. Davis, & Philip Bell, 2004)

"Inquiry is the intentional process of diagnosing problems, critiquing experiments, and distinguishing alternatives, planning investigations, researching conjectures, searching for information, constructing models, debating with peers, and forming coherent arguments."

The ESTABLISH Teaching and Learning units (WP3) are the central component of all teacher education programmes. The framework, outlined in D5.2, for ESTABLISH teacher education is focused on core elements supported by additional materials and resources to address aspects of implementing of IBSE within the classroom (Fig.1).
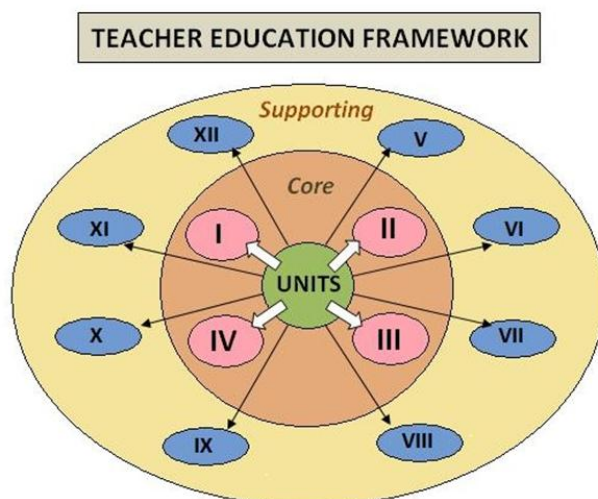

Figure 1: Framework for ESTABLISH Teacher Education

The core elements are:

    I.   ESTABLISH view of IBSE
    II.   Industrial Content Knowledge (ICK)
    III.   Science Teacher as Implementer
    IV.   Science Teacher as Developer

While the supporting elements are:

     V.   Classroom Management
    VI.   ICT
   VII.   Argumentation in the classroom
  VIII.   Questioning Skills for Inquiry
    IX.   Research and design projects for students
     X.   Assessment of IBSE
    XI.   Critiquing activities for IBSE
   XII.   Evaluating evidence

An outline of four workshops addressing the core elements for ESTABLISH teacher professional development programmes are presented online:

1.   Introduction to IBSE – what it is, and why IBSE *(ESTABLISH view of IBSE)*
2.   To work with ESTABLISH units *(Science Teacher as Implementer)*
3.   Ideas of how to work with Industrial Links *(Industrial Content Knowledge (ICK))*
4.   Teachers' reporting and reflecting about classroom work *(Science Teacher as Developer)*

The resources available on this website are to facilitate the provision of ESTABLISH teacher education programmes, with details of the workshops, followed by a number of activities to support the implementation of IBSE within the classroom. A forum is also available for consortium members to post their comments, feedback and suggestions.