

TASK 02/A3.

Pedagogical test and implementation of IT improvements of BIMclay Multimedia Cards



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1. DESCRIPTION OF THE TASK

This report is included in the IO2 “BIMclay Multimedia Materials. New interactive BIM-learning methods” which is based on the implementation in technical courses and trainings on specialisation focused on the BIMclay project. Partners of the Project have implemented pilot courses and used current courses based on the products of the project, which was also served as evaluating products for possible improvement before the end of the project.

The feedback obtained from pedagogical experts during these courses and events was very useful to the improvement of the products of the project, mainly the Production of the ORC, BIMclay Multimedia Cards and the Interactive BIM Tool, both quality assessment of technical content and pedagogical approach and IT quality assessment of ICT Based.

The beta versions of those products were shown to experts and teachers, to be checked and used in during or after the courses. It was necessary because beta versions to correct them, as well as sometimes the trainings are carrying out in facilities where there is not online connection.

Finally, the consortium has also scheduled courses, trainings and other events (workshops, meetings, seminars, etc.) beyond the end of the project in order to guarantee the sustainability of the project.

2. EXPERTS AND ENTITIES CONSULTED ON BIMclay PROJECT

2.1. EXPERTS IN THE FIELD OF EDUCATION CONSULTED

Table 2.1.1. Educational experts

CTM

Name	Surname	Contact (email or phone)	Profession	Name of Organisation where he/she works or freelance, if applicable
Universidad de Sevilla (USE)		<i>Private e-mail</i>	Architect	Universidad de Sevilla (USE)
Universidad de Sevilla (USE)		<i>Private e-mail</i>	Architect	Universidad de Sevilla (USE)
Universidad de Sevilla (USE)		<i>Private e-mail</i>	Architect	Universidad de Sevilla (USE)
University Transilvania din Brasov (UTBv)		<i>Private e-mail</i>	Civil Engineer	University Transilvania din Brasov (UTBv)
University of the West of England		<i>Private e-mail</i>	BIM Professor	University of the West of England
University of the West of England (UWE)		<i>Private e-mail</i>	BIM Professor	University of the West of England (UWE)
Warsaw University of Technology (WUT)		<i>Private e-mail</i>	BIM Professor	Warsaw University of Technology (WUT)
Department of Technical Sciences, University of Bucharest		<i>Private e-mail</i>	Building techniques Professor	Department of Technical Sciences, University of Bucharest
Klesarska skola (KSK)		<i>Private e-mail</i>	Construction teacher	Klesarska skola (KSK)

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Name	Surname	Contact (email or phone)	Profession	Name of Organisation where he/she works or freelance, if applicable
Dinamiki VET Center		kek@dynamiki.gr	VET CENTER	Dinamiki VET Center
Larissa's Center for life-long learning		learning-city@larissadimos.gr	Life-long learning	Center for life-long learning
Open Mellon		info@iekopenmellon.gr	VET CENTER	Open Mellon
University of Thessaly-Department of Civil Engineers		g-civ@uth.gr	University	University of Thessaly-Department of Civil Engineers
University of Thessaly-Department of Architecture		g-arch@uth.gr	University	University of Thessaly-Department of Architecture

Department of Computer Engineering, Technological Educational Institute of Thessaly		pr@teilar.gr	University	Department of Computer Engineering, Technological Educational Institute of Thessaly
GSEVEE VET Center		larisa@kekgsevee.gr	VET CENTER	GSEVEE VET Center
GSEE VET Center		info@gsee.gr	VET CENTER	GSEE VET Center

CTCV and APICER

Name	Surname	Contact (email or phone)	Profession	Name of Organisation where he/she works or freelance, if applicable
Universidade do Minho		<i>Private e-mail</i>	Civil Engineer	Universidade do Minho
Universidade do Coimbra		<i>Private e-mail</i>	Civil Engineer	Universidade do Coimbra

2.2. ORGANISATIONS/ENTITIES CONSULTED

Table 2.2.1. Organisations/entities consulted

CTM

Name	Contact (email or phone)	Type of organisation (SME, LE, VET, University, etc.)	Field (industry, mining, research, etc.)
Centro Provinciale Di Istruzione Professionale Edile (C.P.I.P.E.)	<i>Private e-mail</i>	VET Center	Construction
Lycee Des Metiers Leonard De Vinci	<i>Private e-mail</i>	VET Center	Construction
Deutscher Naturwerkstein-Verband E.V (DNV)	<i>Private e-mail</i>	Technical counselling	Construction
University Transilvania din Brasov (UTBv)	<i>Private e-mail</i>	University	Faculty of Civil Engineering
Asociatia Romania Green Building Council (RoGBC)	<i>Private e-mail</i>	Technical counselling	Construction

Asesoramiento, Tecnología e Investigación (ATIN)	<i>Private e-mail</i>	Technical counselling	Technology
Colegio Oficial de Arquitectos de la Región de Murcia (COAMU)	<i>Private e-mail</i>	Architects Association	Architecture
Department of Technical Sciences, University of Bucharest	<i>Private e-mail</i>	University	Architecture
Klesarska skola (KSK)	<i>Private e-mail</i>	VET Center	Construction
Department of Sustainable Construction of Universidad de Sevilla (USE)	<i>Private e-mail</i>	University	Architecture

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Name	Contact (email or phone)	Type of organisation (SME, LE, VET, University, etc.)	Field (industry, mining, research, etc.)
University of Thessaly- Department of Civil Engineers	g-civ@uth.gr	University	Education
University of Thessaly- Department of Architecture	g-arch@uth.gr	University	Education
Department of Computer Engineering, Technological Educational Institute of Thessaly	pr@teilar.gr	University	Education
Center for life-long learning	learning-city@larissadimos.gr	VET	Life-long learning
Dinamiki VET Center	kek@dynamiki.gr	VET CENTER	VET
Association of Civil Engineers in Larisa (TEE)	tee_lar@tee.gr	Association	Technical counselling
ARMOS	info@armosprokat.gr	Company	Construction/Manufacturing
DOMOTECHNIKI A.E.	info@domotechniki.gr	Company	Construction
Association of Thessalian Enterprises & Industries (STHEV)	info@sthev.gr	Association	Business and Industry
GSEVEE VET Center	larisa@kekgsevee.gr	VET CENTER	VET
GSEE VET Center	info@gsee.gr	VET CENTER	VET

CTCV and APICER

Name	Contact (email or phone)	Type of organisation (SME, LE, University, etc.)	Field (industry, mining, research, etc.)
Gres Panaria	<i>Private e-mail</i>	LE	Ceramic Industry
Gres Panaria	<i>Private e-mail</i>	LE	Ceramic Industry
Aleluia Ceramicas	<i>Private e-mail</i>	LE	Ceramic Industry
Revigrés	<i>Private e-mail</i>	LE	Ceramic Industry
Recer	<i>Private e-mail</i>	LE	Ceramic Industry
Certeca	<i>Private e-mail</i>	SME	Ceramic Industry
Vidrala	<i>Private e-mail</i>	LE	Glass Industry
Vidrala	<i>Private e-mail</i>	LE	Glass Industry
Vidrala	<i>Private e-mail</i>	LE	Glass Industry
Costa Verde	<i>Private e-mail</i>	SME	Ceramic Industry
Sanitana	<i>Private e-mail</i>	LE	Ceramic Industry

HISPALYT

Name	Contact (email or phone)	Type of organisation (SME, LE, VET, University, etc.)	Field (industry, mining, research, etc.)
GRES ACUEDUCTO S.A.	lapaloma@ceramica-lapaloma.es	SME	Industry
CERAMICA ELU S.L.	lapaloma@ceramica-lapaloma.es	SME	Industry
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CERAMICA PIERA S.L.	ceramicas@pierapierola.com	SME	Industry
CERAMICA MALPESA S.A.	malpesa@malpesa.es	SME	Industry
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LADRILLOS MORA S.L.	info@ceramicasmora.com	SME	Industry
PALAU TECNOLOGIA CERAMICA S.L.	palautech@palau.es	SME	Industry
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KLINKER SEG. S.L.	lapaloma@ceramica-lapaloma.es	SME	Industry
CERAMICA MATEO S.L.	cmateo@arrakis.es	SME	Industry
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TEJAS BORJA S.A.	info@tejasborja.com	SME	Industry
TEJAS VEEA S.A.	veea@tejasveea.com	SME	Industry
CERAMICA FARRENY S.A.	cerfasa@ceramicafarreny.com	SME	Industry
CERAMICA LA COMA S.A.	ceramica@lacoma.com	SME	Industry
CERAMICA LA MANCHICA S.L.	romero@ceramicalamanchica.com	SME	Industry
CERÁMICA LA PALOMA S.L.	lapaloma@ceramica-lapaloma.es	SME	Industry
CERAMICA LA UNION S.L.	ceramicalaunion@eresmas.com	SME	Industry
CERAMICA MARLO S.A.	ceramicamarlo@ceramicamarlo.com	SME	Industry
CERAMICA MILLAS HIJOS S.A.	comercial@ceramicamillas.com	SME	Industry
CERAMICA PEÑO S.L.	comercial@cerape.es	SME	Industry
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INDUSTRIAL CERÁMICA BELIANES, S.L.	info@ceramicabelianes.com	SME	Industry
LA LADRILLERA MURCIANA, S.A.	ladrillera@ladrilleramurciana.com	SME	Industry

3. QUESTIONNAIRE

For the pedagogical evaluation of the products of the BIMclay project, a survey was distributed to obtain the opinion of the pedagogical experts. This form is divided into four large blocks into which the project is divided:

- Training materials.
- Online Resource Centre.
- BIMclay Multimedia Cards.
- Interactive BIM Tool.

It also includes a generic question for experts to propose the comments they consider necessary to improve the pedagogical quality of all BIMclay project products.

Below is the questionnaire carried out for the pedagogical evaluation of this project and its products.



Feedback questionnaire of BIMclay Multimedia Cards

1. Overall, how satisfied were you with the training materials?

Please tick a box in the respective line.

Very satisfied	Rather satisfied	Neither satisfied nor unsatisfied	Rather unsatisfied	Not satisfied at all

2. To what extent do you agree or disagree with the following statements?

Please, tick a box in each line.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Training materials' contents were of my interest.					
I feel now better informed on various aspects related to the clay sector.					
I now better understand the benefits of the BIMclay Multimedia Cards approach.					
I feel that it has helped me to reinforce my knowledge, competences and skills about methods of placing clay and ceramic products.					

3. To what extent do the Online Resource Centre (ORC) show the following attributes?

Please, tick a box in each line.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The contents of the ORC are clearly understandable and motivating.					
The ORC is well-organised and well-structured.					
The ORC is user-friendly.					
Overall, the ORC is adequate for the self-learning of LCA, clay products and described placement methods.					



4. Do you have any further comments and recommendations on the BIMclay Multimedia Cards? What could have been done better?

Please tick a box in each line.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The stage relates to the product and its method of placement.					
The design of the working environment is detailed enough to understand the situation.					
The animation is enough to be able to carry out the works described in it.					
The development of the content is correct for attract and paying attention.					
The contents of the animations are useful.					
The duration of the animations is adequate.					

5. Do you have any further comments and recommendations on the Interactive BIM Tool? What could have been done better?

Please tick a box in each line.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The position of the elements (buttons, menus, images, etc.) follow a logical order in the BIM Tool.					
The operating speed of the BIM Tool is correct, considering the type of task required.					
The message system helps the user to develop his tasks and orientate himself within the BIM Tool.					
The colours used facilitate the user's understanding of the contents and structural elements.					
The BIM Tool is suitable for users and their degree of experience.					
LCA data are easy to find in the BIM Tool.					

Please, tell us what kind of improvement you can suggest:

Thank you for your feedback!

3.1. QUESTIONNAIRE RESULTS

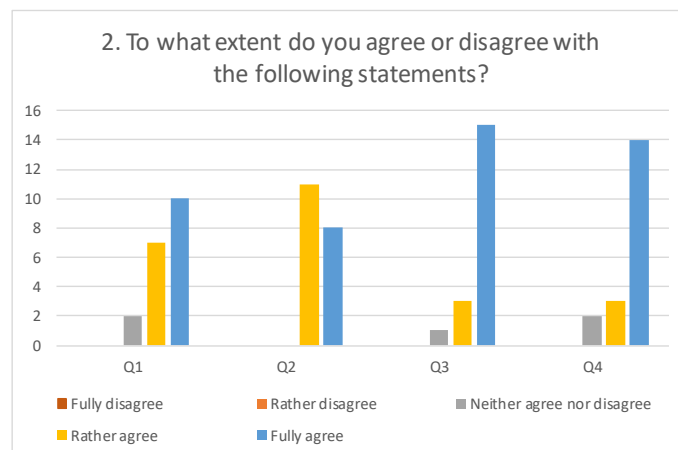
1. Overall, how satisfied were you with the training materials?

Very satisfied	Rather satisfied	Neither satisfied nor unsatisfied	Rather unsatisfied	Not satisfied at all
17	2	0	0	0



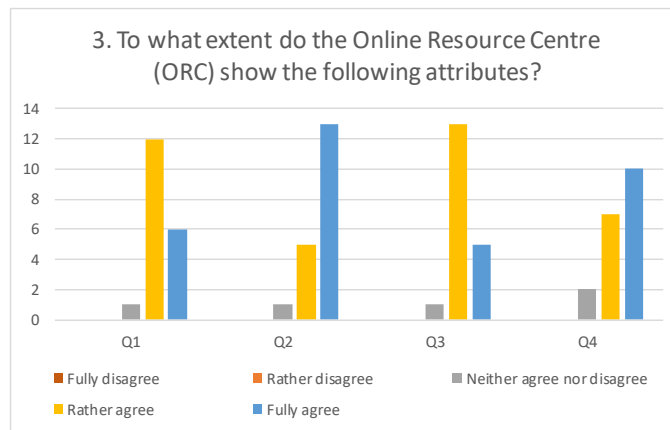
2. To what extent do you agree or disagree with the following statements?

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Q1: Training materials' contents were of my interest.	0	0	2	7	10
Q2: I feel now better informed on various aspects related to the clay sector.	0	0	0	11	8
Q3: I now better understand the benefits of the BIMclay Multimedia Cards approach.	0	0	1	3	15
Q4: I feel that it has helped me to reinforce my knowledge, competences and skills about methods of placing clay and ceramic products.	0	0	2	3	14



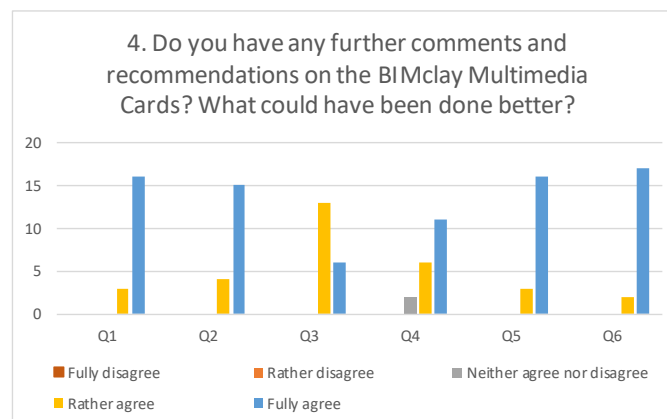
3. To what extent do the Online Resource Centre (ORC) show the following attributes?

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Q1: The contents of the ORC are clearly understandable and motivating.	0	0	1	12	6
Q2: The ORC is well-organised and well-structured.	0	0	1	5	13
Q3: The ORC is user-friendly.	0	0	1	13	5
Q4: Overall, the ORC is adequate for the self-learning of LCA, clay products and described placement methods.	0	0	2	7	10



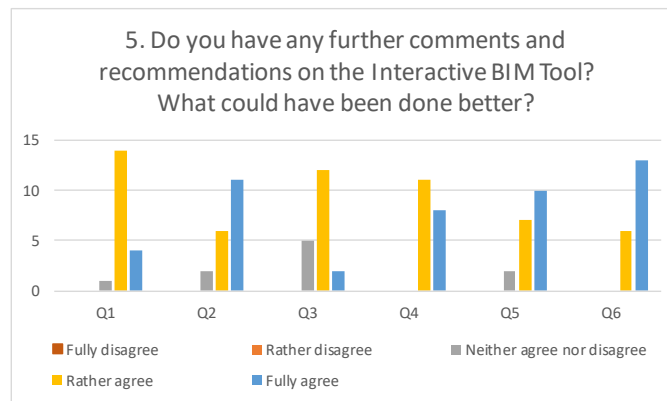
4. Do you have any further comments and recommendations on the BIMclay Multimedia Cards? What could have been done better?

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Q1: The stage relates to the product and its method of placement.	0	0	0	3	16
Q2: The design of the working environment is detailed enough to understand the situation.	0	0	0	4	15
Q3: The animation is enough to be able to carry out the works described in it.	0	0	0	13	6
Q4: The development of the content is correct for attract and paying attention.	0	0	2	6	11
Q5: The contents of the animations are useful.	0	0	0	3	16
Q6: The duration of the animations is adequate.	0	0	0	2	17



5. Do you have any further comments and recommendations on the Interactive BIM Tool? What could have been done better?

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Q1: The position of the elements (buttons, menus, images, etc.) follow a logical order in the BIM Tool.	0	0	1	14	4
Q2: The operating speed of the BIM Tool is correct, considering the type of task required.	0	0	2	6	11
Q3: The message system helps the user to develop his tasks and orientate himself within the BIM Tool.	0	0	5	12	2
Q4: The colours used facilitate the user's understanding of the contents and structural elements.	0	0	0	11	8
Q5: The BIM Tool is suitable for users and their degree of experience.	0	0	2	7	10
Q6: LCA data are easy to find in the BIM Tool.	0	0	0	6	13



In relation to the free-answer questions included in the pedagogical experts' questionnaire, the most outstanding answers are the following:

- To make it clearer which materials or elements are being placed at any time in animations, it would be advisable to include some texts indicating technical information that is not able to be appreciated with the multimedia materials developed.
SOLUTION: Some texts were included with specific information in each animation.
- In some parts of the animations, it would be necessary to increase the image so that some details necessary for its understanding are better seen.
SOLUTION: In those animations in which very small constructive details were executed, the image was enlarged to show more clearly the elements that formed that process and how it was executed.

3.2. CONCLUSIONS

In general, the evaluation of the project by technical experts was really positive.

Despite the comments mentioned in the previous section, all the experts considered that the constructive processes included in the animations were correctly carried out and easy to understand and assimilate even by pupils or workers who have never seen such constructive methods or procedures before.

Teachers from VET centres appreciated the production of these animations and the didactic materials developed for this sector because, in some cases, it is very difficult to explain some constructive methods and, without multimedia materials, it is particularly complicated. In this sense, they commented that they are very useful as formative material for some workers who do not know yet how these constructive details are executed.