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Abstract

This Deliverable describes two workshops and related activities in which the project DynaLearn was presented to the scientific community, and members of the project presented the ongoing work for discussion and exchange of ideas.

Acknowledgements

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Document History

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Contents

1. Introduction

According to Deliverable D8.1 (Gómez-Pérez *et al*., 2009), DynaLearn should be presented in international conferences and workshops, as these meetings are interesting outlets for presenting the progress in the development of models and software, in order to interact with the scientific community.

The International Conference on Ecological Informatics (ISEI) is one of the major conferences in ecology, and involves an audience of stakeholders that is of significant importance to DynaLearn. In 2010 this conferences was organised in Gent, Belgium. Dynalearn featured at this conference with three special sessions, namely (1) QR modeling, and (2) Education and Training, both with regular presentations, and (3) a Demo session in which the DynaLearn software was demonstrated to the audience.

Taking the opportunity created by the second year DynaLearn project meeting held in Brasília, FUB invited Brazilian researchers involved in Artificial Intelligence and Education and in Science Education for a meeting with European researchers, to participate a the DynaLearn workshop on Aritifical Intelligence and Education (DYNA 2011).

This Deliverable describes these successful events, and discusses the potential consequences of these dissemination activities.

2. Ecological Informatics

The 7th edition of the International Conference on Ecological Informatics (ISEI7) was held in Ghent, Belgium, between 13-16 December 2010, organized by the University of Ghent. The theme of the conference, 'Unravelling complexity and supporting sustainability', highlights the two major pillars of ecological informatics: the analysis of the complexity of nature and the functioning of ecosystems both at small as large scale.

The DynaLearn project organised three session at this conference: Qualitative Reasoning, Education and training on ecological informatics, and a DynaLearn demonstration session.

2.1. Session on Qualitative Reasoning

't Pand Conference Building, Room 3,
Ghent, Belgium
14 December 2010

2.1.1. Presentations

The chair of this session was Bert Bredeweg, and it started with the keynote speech 'Qualitative reasoning in ecological informatics: setting the scene' by Paulo Salles. Next, 12 contributions were presented, including 9 abstracts produced by DynaLearn partners.

The complete list is as follows:

10h00-10h20	QR1 : Session keynote 'Qualitative reasoning in ecological informatics: setting the scene'	P. Salles
10h20-10h40	QR2: 'The use of the DynaLearn learning environment to construct qualitative models of fundamental concepts in ecological sciences'	R. A. A. Noble
10h40-11h00	QR3: 'Hypothesis assessment with qualitative reasoning: modelling the intermittent Fontestorbes fountain'	K. Kansou & B. Bredeweg
11h30-11h50	QR4: 'What is needed to create a low carbon society? A qualitative reasoning approach to modeling the role of biofuels and the carbon market'	A. Souza, G.F.M. Leite & P. Salles
11h50-12h10	QR5: 'Integrating direct and indirect ecological impacts of cooling water on surface waters based on qualitative models'	P. Goethals & K. Töpke
12h10-12h30	QR6: 'Understanding and predicting time-lags in the response of birds to agricultural intensification using qualitative models'	F. Goulart, P. Salles & C. H. Saito
14h00-14h20	QR7: 'A Qualitative Model of Diving Pressure in Coral Reefs'	R. Barankin, L. Yosef, D. Zurel, M. Leiba, H. Benayahu, D. Mioduser & R. Zuzovsky
14h20-14h40	QR8: 'Construction of a qualitative foodweb based	S. Van Nieuland, I.

	dynamic habitat suitability model to describe pike populations in rivers'	Pauwels, J. Baetens, A. Mouton, B. Baets & P. Goethals
14h40-15h00	QR9: 'How agricultural matrix intensification may affect understory passerines that inhabit forest patches?'	F. Goulart, P. Salles & R. Bomfim Machado
15h00-15h20	QR10: 'Qualitative Models of Global Warming Amplifiers'	U. Milosovic & B. Bredeweg
15h40-16h00	QR11: 'Using qualitative reasoning to model life cycle assessment of wind energy'	A. Souza & P. Salles
16h00-16h20	QR12: 'Bird communities in the transition Amazon – Cerrado, Brazil: a qualitative model to predict the richness of trophic guilds according to the structure of vegetation'	R. de Souza Yabe, P. Salles & G.F.M. Leite
16h20-16h40	QR13: 'Qualitative models about metapopulation dynamics'	I. Gontijo de Sá & P. Salles

2.1.2. Participants

On average 15 persons attended the session, and at certain moments, circa 25 persons were present. The audience consisted of researchers, teachers, and students in the area of Ecological Informatics.

2.2. Session on Education and Training on Ecological Informatics

't Pand Conference Building, Room 3,
Ghent, Belgium
15 December 2010

2.2.1. Presentations

The chair of this session was Paulo Salles, and Bert Bredeweg gave the keynote speech, 'Education and training in ecological informatics'. Next 12 abstracts were presented, 9 of them produced in the context of DynaLearn.

The complete list is the follow one:

10h00-10h20	ET1: Session keynote 'Education and training in ecological informatics'	B. Bredeweg
10h20-10h40	ET2: 'Progressive knowledge representations for learning conceptual knowledge of system behaviour'	B. Bredeweg, J. Liem, W. Beek, P. Salles & F. Linnebank
10h40-11h00	ET3: 'Design decisions for virtual characters in the DynaLearn Interactive Learning Environment'	R. Bühling, M. Wißner, M. Häring, G. Mehlmann & E. André
11h30-11h50	ET4: 'DynaLearn in school: introduction to qualitative reasoning modeling for secondary school teachers'	P. Salles, I. G. Sá, Adriano Souza, L.H. Wilhelms & P. A. Costa

		e Silva
11h50-12h10	ET5: 'Issues and opportunities for learning by conceptual modelling: a pilot case study of the new DynaLearn integrated learning environment'	R. A. A. Noble, P. Salles, D. Mioduser & R. Zuzovsky
12h10-12h30	ET6: 'Learning by modeling: an attractive approach to learning environmental systems knowledge for secondary school students'	I. G. Sá, A. Souza, L.H. Wilhelms, P.A. Costa e Silva & P. Salles
14h00-14h20	ET7: 'A new curriculum for teaching conceptual systems understanding of river catchments'	A. Zitek, M. Poppe, M. Stelzhammer, A. Jung, M. Zacharias & S. Muhar
14h20-14h40	ET8: 'Semantic enrichment of models in DynaLearn learning environment'	E. Lozano, J. Liem, J. Gracia, A. Gómez-Pérez & B. Bredeweg
14h40-15h00	ET9: 'Development of ecological assessment models for the European Water Framework Directive: key issues for trainers in datadriven modeling approaches'	G. Everaert, I. Pauwels, P. Boets & P. Goethals
15h00-15h20	ET10: 'Habitat suitability modeling for Master of Science students: case of pike modeling in Flanders'	P. Goethals, R. Zarkami, I. Pauwels & A. Mouton
15h40-16h00	ET11: 'Learning by qualitative modeling: undergraduate students' conceptual understanding of ecological systems'	R. Zuzovsky, D. Mioduser, Y. Benayahu, D. Zurel, M. Leiba, R. Nachmias & Y. Ram
16h00-16h20	ET12: 'First evaluations of the effect of the DynaLearn software on conceptual systems understanding of river catchments'	A. Zitek, M. Poppe, M. Stelzhammer, A. Jung, B. Bredeweg & S. Muhar
16h20-16h40	ET13: 'A survey on education and training in ecological informatics'	P. Salles, B. Bredeweg & P. Luiz Pizzigatti Correa

2.2.2. Participants

Similar to the previous session, on average 15 persons attended the session. At certain moments, circa 25 persons were present. The audience consisted of researchers, teachers, and students in the area of Ecological informatics.

2.3. DynaLearn Demo session

't Pand Conference Building, Room 3
Ghent, Belgium
16 December 2011

2.3.1. Program of the session

The session was conducted by Woulter Beek (UvA) with support from co-workers in WP3, 4 and 5. The session lasted 2 and half hours. Two 45 minutes lasting demos were given, followed by an

approximately 30 minutes lasting question answering and discussion period. The central theme was "DynaLearn software for education and training in ecological informatics". All the functionalities of DynaLearn were shown and explained to the audience, raising a great deal of interest.

2.3.2. Participants

On average 20 persons were present during the session. The audience consisted of researchers, teachers, and students in the area of Ecological informatics.

The number of participants of the ISEI7, about 125 persons in total, goes beyond those who participate of the two technical sessions and of the demo session run by DynaLearn. However, in terms of dissemination, DynaLearn became largely known among the community of Ecological Informatics.

2.4. Dissemination of the event

The event was announced via the web site: http://www.isei7.ugent.be/. The page has all the relevant information required for interested people to have the basic information needed.

The most important aspect of dissemination is the possibility to organize a special issue of *Ecological Informatics* on Education and training in ecological informatics / Qualitative Reasoning (visit http://www.elsevier.com/wps/find/journaldescription.cws_home/705192/description#description).

Bert Bredeweg and Paulo Salles will act as special issue guest editors. In accorddance with the Editor-Chief, Prof. Dr. Friedrich Recknagel, the call for papers will be issued by the end of February, and the journal may the published in the middle of the year.

3. DynaLearn, Artificial Intelligence and Education (DYNA 2011)

DYNA 2011 was an initiative consisting of two scientific meetings, involving European members of the DynaLearn Project and Brazilian researchers, for exchanging ideas and discussing state of the art Artificial Intelligence and Education, and Science Education.

The first activity was the Workshop DynaLearn, Artificial Intelligence and Education, a meeting mostly dominated by computer scientists and IT developers during which the state of the art on qualitative modeling, the use of semantic technology, and virtual pedagogical agents was discussed.

The second activity was a meeting between researchers from DynaLearn project and Brazilian researchers in Science Education. DynaLearn was presented to the audience, followed by a discussion on the learning by modelling approach, and the use of technology in science teaching.

The event was partially funded by the University of Brasilia, via the Research and Post Graduate Studies Administration; Post Graduate Program in Ecology; Post Graduate Program in Science Education; Department of Computer Science and the Institute of Biological Sciences. FUB was responsible for funding the travel expenses of the Brazilian researchers.

3.1. DynaLearn workshop on Artificial Intelligence and Education

University of Brasilia
Central Institute of Sciences
Faculty of Communication
Room number ASS 610/9 underground, North Wing
Brasília, Brazil
3-4 February 2011

The Workshop was held in the premises of the Faculty of Communication / University of Brasilia. The paper presentation during the 1st day (03/02) was held at the Auditorium. The demo session (04/02) was held at the Laboratory of Journalism.

Workshop Objectives:

- Create an opportunity for Brazilian and European researchers to interact and exchange ideas about the latest development of theory, techniques and applications of Artificial Intelligence, Ecological Modeling, and Science Education.
- Present software developed in research projects (latest development within the DynaLearn Project as well as Brazilian Artificial Intelligence and Education projects).
- Discuss possibilities of collaborative work.

Main topics addressed during the Workshop:

- The use of Artificial Intelligence in Education
- Conceptual modeling (with Qualitative Reasoning - QR)
- Virtual Characters (VC)
- Semantic Technology (ST)
- Integration of Qualitative Reasoning + Virtual Characters + Semantic Technology

3.1.1. Paper presentations

The session was opened by Professor Dr. Sonia Báo, head of the Institute of Biological Sciences; Dr. Patricia Barreto, Director of the Computer Science Department; Dr. Nélia Rodrigues Del Bianco, Vice Director of the Faculty of Communication; and Prof. Márcia Marques Coordinator of Campus Laborary.

When?	Who?	What?
9h – 9h30min	S.Báo; P.Barreto; N. Del Bianco; and M. Marques	*Opening session*
Session 1: Conceptual modeling		
9h30min – 10h	B.Bredeweg (UvA)	*DynaLearn Project: learning by modeling with the support of AI techniques*
10h – 10h30min	J.Liem, W.Beek (UvA)	*DynaLearn: A conceptual modelling worksbench*
10h30min – 11h	Coffee Break	
Session 2: Virtual Characters / Affective Pedagogical Agents		
11h – 11h30min	E. Andre	*Virtual Characters in the DynaLearn Project*
11h30min – 12h	M.Wissner, R.Buhling	*Virtual Characters in the DynaLearn Project*
12h – 12h30min	E.B.Costa	*The Convergence between Artificial and Human Agents: A Harmonious Partnership*
12h30min – 14h	Lunch	
Session 2: Virtual Characters / Affective Pedagogical Agents		
14h – 14h30min	R.Vicari	
14h30min – 15h	P.J.Maillard	*Affective Pedagogical Agents in Intelligent Tutoring Systems*
15h – 15h30min	M.A.S. N. Nunes	*How psychological-based Recommender Systems could improve the personalization in an Interactive Learning Environment?*
15h30min – 16h	R.Guizzardi	*Agent-Oriented Constructivist Knowledge Management*
16h – 16h30min	Coffee Break	
Session 3: Semantic Technology		
16h30min – 17h	J.Gracia	*Semantic Technology in the DynaLearn Project*
17h – 17h30min	E.Lozano	*Semantic Technology in the DynaLearn Project*
17h30min – 18h	G.Guizzardi	*Foundational Ontology, Conceptual Modeling and Domain Ontology Engineering*
18h – 18h30min	I.I.Bittencourt	*Building Semantic Web Based Educational environments*

3.1.2. Demo session and 'hands on'

The practical session was held in the following day February 4th, and the Laboratory of Journalism of the Faculty of Communication. Initially the Conceptual Modelling environment was presented by Bert Bredeweg and UvA co-workers. Part of DynaLearn presentation was a collaborative "hands on" activity, in which the participants jointly created a model guided by Bert Bredeweg. Next, Michael Wissner and René Buhling presented the Virtual Characters and showed the agents in action. Esther Lozano and Jorge Gracia presented the semantic technology basis of DynaLearn and demonstrated the grounding mechanism. Finally, Rosa Vicari and Ig Ibert Bittencourt run a demo of their work.

The full program is presented below:

When?	Who?	What?
9h – 9h30min	B.Bredeweg, J.Liem, W.Beek	DEMO Session 1: Conceptual modeling
9h30min – 10h		
10h – 10h30min		
10h30min – 11h	Coffee break	
11h – 11h30min	E.Andre, M.Wissner, R.Buhling	DEMO Session 2: Virtual Characters / Affective Pedagogical Agents
11h30min – 12h		
12h – 12h30min		
12h30min – 14h	Lunch	
14h – 14h30min	J.Gracia, E.Lozano,	DEMO Session 3: Semantic Technology
14h30min – 15h		
15h – 15h30min		
15h30min – 16h	Coffee Break	
16h – 16h30min	R.Vicari and I.I.Bittencourt	DEMO Session 4: AI and Education
16h30min – 17h		
17h – 17h30min	All	Final discussions

3.1.3. Participants and Dissemination

During the first day, for the opening session, there was circa 60 participants, including the invited Brazilian researchers, members of DynaLearn projects and lecturers at the Computer Science Department, the Faculty of Communication, the Institute of Biological Sciences, students and members of the public. Along the day the technical sessions and paper presentations were followed by circa 30 persons.

The second day there was a similar number participants, attracted by the chance of seeing the demos, and possible using the software. Along the presentations, circa 50 persons were present at the sessions, including lecturers and students of Journalism and Visual Arts.

Dissemination was done in different media, always announcing the events as a joint initiative of the University of Brasília and of the DynaLearn Project.

(a) *Correio Braziliense*, the local (Brasilia) newspaper has published (03/02/2011) one full page about the importance of DynaLearn for education and raising awareness on environmental science, presenting the technology developed in the Project and discussing how the software may support learners of different ages. The newspaper report can be accessed at

http://www.correioweb.com.br/euestudante/noticias.php?id=17371

(b) A crew of the Globo Television from the Amazonas, having read in the Correio Braziliense news about DYNA 2011, came to the venue, interviewed Paulo Salles, video taped Michael Wissner running a demo in his computer, the location and short parts of a paper presentation. The whole report was shown at the TV Amazonas over the weekend (5/2).

(c) The first day of the Workshop was live broadcasted via the internet;

(d) The presentations of the first day were video taped and will be available for the DynaLearn project and for the Brazilian Open University, to be used by teachers while preparing their lectures. Part of the video taped material can be found at

http://www.reid.unb.br/index.php/noticias/item/49

(e) The event was announced in different lists of emails, including the three Post Graduate Programs, the Institute of Biological Sciences, the Faculty of Communication, the Department of Computer Science and other lists, three times before the event.

3.2. Science Education meeting

University of Brasilia
Institute of Biological Sciences
Building 1 Auditorium 1
Brasília, Brazil
4 February 2011

DYNA 2011 included a meeting between DynaLearrn partners and Brazilian researchers in Science Education. The meeting occurred in 4th February 2011, at the Auditorium 1 of the Institute of Biological Sciences, between 9h30min and 12h.

Main topics addressed during the meeting:

- Learning by modelling
- The use of Artificial Intelligence and Information Technology in Science Education

DynaLearn researchers Davi Mioduser, with the support of Ruth Zuzovsky (TAU), presented the DynaLearn project to an audience of 10-12 persons. After his presentation, the audience raised questions about the software DynaLearn, the use of Information Technology in education (including distant education), and research in science education.

3.2.1. Participants and Dissemination

10 lecturers and two students linked to the Post Graduate Program in Science Education.

The event was announced in different lists of emails, including the three Post Graduate Programs, the Institute of Biological Sciences, the Faculty of Communication, the Department of Computer Science and other lists, three times before the event.

4. Conclusion

Two workshops were realized one at the ISEI 7 international conference and one at the University of Brasília. These were two important opportunities for dissemination of DynaLearn among the scientific community, researchers, students and developers, and also, to a certain extent, among other type of stakeholders. Although the total number of participants of all the activities was something around 150 persons, important to note that DynaLearn reached a number far larger than that. By means of email lists and direct communication with key people (many of whom have the power to communicate to others) DynaLearn was announced in the ISEI7 website, the workshop at the UnB was announced in a local newspaper and on TV, and broadcasted via the internet. .

Relevant conclusions of these activities include:

- The DynaLearn project is known and caused a good impression in different communities (ecological modelling, science education, computer sciences journalists and the public in general);
- A significant number of participants expressed interest in using the software in their teaching activities, and some were interested in using DynaLearn for ecological research purposes; in fact, students from the University of Ghent, presented an abstract at ISEI 7 motivated by the research done in DynaLearn and one of the participants, stimulated by his supervisor, is planning to work with DynaLearn in his master thesis about ecological aspects of a river basin.
- Researchers on Artificial intelligence were contemplating the possibility of taking up some of the DynaLearn opportunities to address specific research questions, among those where the inclusion of Affect and emotions and the impact thereof on the communicative interaction, and the further enhancement of semantic technology.
- It turned out that installing DynaLearn is somewhat complex and requires knowledgeable IT people on behalf of the educational institute that wants to use DynaLearn. Being a research project, this is a problem that is not easy to solve for project. Yet, effort should be undertaking to investigate how the situation of installing software can be improved.
- Finally, the international journal on *Ecological Informatics* invited the DynaLearn project to take the lead on a special issue on Education and training on ecological informatics and Qualitative Reasoning. This is a good opportunity to publish papers describing the work done in the Project.

References

[1] Gómez-Pérez, J.M., Salles, P., Wissner, M., Mioduser, D., Bredeweg, B., Noble, R., Uzunov, Y., Zitek, A. and consortium members. (2009). *Dissemination and Communication Plan*. DynaLearn, EC FP7 STREP project 231526, Deliverable D8.1.

[2] Goethals, P. 2010. Introduction to the Book of abstracts. *In* Proceedings of the *Seventh International Conference on Ecological Informatics: Unravelling Complexity and Supporting Sustainability*. Ghent, Belgium, University Press.

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