



GRAPPLE

D9.4 Version: 1.1

Second documentation and training for GRAPPLE users

Document Type	Deliverable
Editor(s):	Christian Glahn
Author(s):	Christian Glahn, Christina Steiner, Paul De Bra, Françoise Docq, Eileen O'Donnell
Reviewer(s):	Noaa Barak, Dominikus Heckmann
Work Package:	WP9
Due Date:	30-07-2010
Version:	1.1
Version Date:	10-01-2011
Total number of pages:	15

Abstract:

The second version of GRAPPLE training offerings focuses on training activities and training material for the GRAPPLE infrastructure in higher education contexts. This deliverable documents the activities on improving the problematic issues that were reported in the D9.2 deliverable. This deliverable documents the training activities and self-study training material for the target groups in higher education.

Keyword list: Training, GRAPPLE, Instructional Design

Summary

The second version of the GRAPPLE training offerings focuses on training activities and training material for the GRAPPLE infrastructure in higher education contexts. This deliverable documents the activities on improving the problematic issues that were reported in the D9.2 deliverable. This deliverable documents the training activities and self-study training material for target groups in higher education. Consequently, this document reports on the state of related activities and includes only references to the actual training material.

This document has 6 sections.

Section 1 outlines the rationale for this deliverable by highlighting its two primary objectives. The first objective is to report on the training activities. The second objective is to report on the training material that has been developed throughout the project.

Section 2 recalls the context of this deliverable within the working plan of GRAPPLE. This section also highlights the key target groups that were identified before the start of the project.

Section 3 discusses the actual rationale for work based on the project results. The main needs for training in the higher education context have been identified in the area of “concepts of adaptation and personalisation” and in the area of “authoring and deploying courses with the GRAPPLE framework”. The feedback from pilot users indicated that the approach to adaptation, as the GRAPPLE framework implements it, is most suitable for content centric courses with repetitively high student throughput.

Section 4 reports on the different training activities to address the previously identified training needs. Four types of trainings have been conducted. Firstly, a joint training programme that addresses the generic training needs of teachers and instructional designers in higher education. This programme is based on a half-day workshop that includes an introduction to the core concepts of adaptation and a hands-on tutorial for using the GRAPPLE authoring toolkit for creating adaptive educational designs. This programme has been conducted at four partner sites and reached 31 innovators among the partners’ faculties. Secondly, a two-day training on authoring adaptive simulations that addresses the specific training needs related to adaptive simulations. Thirdly, scientific training for students in the area of technology enhanced learning and adaptive systems. This training focused on creating adaptive courses using the GRAPPLE framework. Finally, two trainings were set up on including personalisation concepts in educational designs for e-learning courses. These trainings focused on including adaptation concepts in GRAPPLE using the modelling approach of IMS Learning Design.

In total 11 training activities were conducted delivering more than 73 hours of training reaching 57 teachers and instructional designers and 160 students in higher education. All participants of the training activities also contributed to the evaluation of the GRAPPLE infrastructure.

Section 5 documents the activities on the development of training materials for the training activities mentioned in section 4 as well as for self-studying. Three kinds of training material have been developed. Firstly, standardised materials for conducting workshops like training events for faculty members at the different partner sites. Secondly, training material about specific scientific aspects of adaptive educational hypermedia for teaching students. Finally, a series of mini-slide sets about different aspects of the GRAPPLE project for supporting autonomous self-studying has been made available on the GRAPPLE web-site. By the time of this writing, six training resources were created for university teachers and instructional designers and two resources were provided for students on adaptive systems. In total the slides provide more than 500 pages of training material.

Section 6 concludes the deliverable by summarising the core results of the previous sections.

Authors

Person	Email	Partner code
Christian Glahn	christian.glahn@ou.nl	OUNL
Christina Steiner	chr.steiner@uni-graz.at	UniGraz
Paul de Bra	debra@tue.nl	TUE
Françoise Docq	Francoise.Docq@uclouvain.be	UCL
Eileen O'Donnell	odonnee@scss.tcd.ie	TCD

Table of Contents

SUMMARY	2
AUTHORS	2
TABLE OF CONTENTS	3
TABLES AND FIGURES.....	3
LIST OF ACRONYMS AND ABBREVIATIONS	4
1 INTRODUCTION.....	4
2 CONTEXT AND PREVIOUS WORK	4
3 WORK RATIONALE	5
4 TRAINING ACTIVITIES	6
4.1 Training activities for higher education teachers and instructional designers.....	6
4.2 Training procedure for the GRAPPLE authoring tool for creating adaptive simulations.....	9
4.3 Training activities for students.....	11
4.4 Other training activities	12
5 TRAINING MATERIAL	14
6 CONCLUSIONS.....	15
7 REFERENCES.....	15
DOCUMENT CONTROL	ERROR! BOOKMARK NOT DEFINED.

Tables and Figures

List of Figures

Figure 1: Presentation at the training event at the USI in Lugano.....	6
Figure 2: Group work at the training event at the USI in Lugano	7
Figure 3: Group work at the training event at the USI in Lugano	7
Figure 4: Group work at the training event at the OUNL in Heerlen.....	8
Figure 5: Group work at the training event at the OUNL in Heerlen.....	8
Figure 6: Seminar structure for the training on adaptive simulations	10

List of Acronyms and Abbreviations

GRAPPLE	Generic Responsive Adaptive Personalized Learning Environment
LMS	Learning Management System
IMS LD	IMS Learning Design

1 1 Introduction

The aim of the GRAPPLE project is to enhance major Learning Management Systems (LMS) with adaptive features and to provide an environment that delivers personalised courses in a LMS interface. However, designing an adaptive course requires some additional effort compared to static courses. Several models and systems were developed previously but their usability by ordinary teachers remains limited.

This deliverable reports on the efforts in the GRAPPLE project for raising awareness for the concepts of adaptation, for training different stakeholders in higher education and to utilise these concepts for teaching and learning. This document reports on the training activities and the training material for the target groups in higher education. This deliverable has the following two objectives.

- Report on training activities
- Report on the development of training material

The structure of this deliverable reflects these objectives.

Section 2 contextualises the work reported in this deliverable by briefly summarising the status that has been reported in deliverable D9.2 regarding the first documentation and training for GRAPPLE users

Section 3 outlines the working rationale of the underlying reported activities and resources.

Section 4 reports on the training activities that have been conducted by the higher education partner institutions.

Section 5 reports on the development and the availability of training material.

Section 6 conclusion of this deliverable with a summary of the results reported in the other section.

2 Context and previous work

The GRAPPLE project envisioned that various types of users would work with the GRAPPLE components. These users can be from different backgrounds and have different roles in educational processes, such as learners, university teachers, authors, instructional designers and administrators. In order to enable these users for utilising the system properly, there are various training needs.

Two main training tracks were followed by the GRAPPLE project. The tracks comprise the training needs of educational stakeholders in higher education and enterprise contexts. This deliverable reports on the training activities in higher education that were conducted by WP9. These activities were extended towards enterprise contexts by WP10. The underpinnings of the trainings conducted by both work packages are aligned, although the actual implementation of the training activities strongly depended on the particular needs, backgrounds and settings of stakeholders in the different educational settings.

The project identified four stakeholder groups with specific training needs in the higher education context.

- Learners
- Teachers
- Course authors
- System administrators

The work in WP9 towards this deliverable extends the work towards the work-package's objective of developing learning materials and to organise training events for learners, authors, teachers and administrators. This work is required to prepare the different user-groups to understand and utilise the GRAPPLE system.

The first version of the GRAPPLE documentation and training activities addressed the needs of course authors and focused on documenting the functions of the authoring environment as well as on developing training material that was largely based on this documentation (D9.2). This work is continued by a second iteration of GRAPPLE training offerings. These offerings focus on problematic issues from the first one and will present new features developed in the meantime.

The present deliverable reports on the second iteration of documentation and training activities.

3 Work Rationale

WP9 identified that university teachers and course authors have the largest training needs. These training needs are beyond understanding how the GRAPPLE software is used. Therefore, two main areas for training have been identified.

1. The training for integrating personalisation and adaptation concepts into educational designs and online courses.
2. The training for using the GRAPPLE infrastructure for authoring and deploying adaptive course designs.

Higher education teachers apply a wide range of educational approaches. The adaptive technologies that are considered by the GRAPPLE project cannot be generically applied in the higher education context. The greatest benefits of the promoted concepts and approaches were identified for lectures that meet two main conditions.

1. The lectures have to be highly content resource centred.
2. The lectures have a high student throughput.

The first condition is the core requirement to apply the approaches of concept adaptation. This requires teachers in higher education to identify the core concepts of a lecture and then define personalisation rules for the concepts and the resources. The second condition is a consequence of the additional needs for course preparation. A high numbers of students every academic term, justifies the additional work if this helps to achieve the educational goals for a lecture.

Based on these conditions introductory university courses were identified as the initial application area for GRAPPLE's adaptation and personalisation approaches. Therefore, higher education teachers and instructional designers who are responsible for preparing these introductory courses were targeted for the training activities.

The improvement of the LMS integration with the GRAPPLE infrastructure indicated that the approaches of adaptation are "invisible" to the learners. This is a consequence of the integration of LMS and adaptive engine, which removes the need of changing the working environment of different tasks. Consequently, learners do not need to learn new interfaces as a result of this integration. That is why the focus of WP9 emphasised training students on the concepts of adaptive systems and how these concepts are applied for creating concepts for adaptive and personalisable instructional designs.

The training of system administrators is related to the deployment of the complete GRAPPLE infrastructure or individual modules. Potential training material relies on deployable components in order to test administrative procedures and principles that are *specific* to GRAPPLE related products. So far the technical developers indicated only standard procedures for installing and administering the GRAPPLE infrastructure. These procedures have been extensively documented outside of the project's scope.

Given these considerations the main focus of developing training material and conducting training events lies on training the basics adaptation and personalisation concepts and on training the application of these concepts using the GRAPPLE technologies. This focus is addressed by developing a standard set of learning resources that can be used for self-study as well as for organised training events for different topics. For example, the adaptation and personalisation concept material is used for training events for GRAPPLE technologies as well as for modelling personalised courses using IMS LD.

4 Training Activities

The main training activities are tightly connected to the evaluation of the GRAPPLE infrastructure. Given the state of development at the time the events have been conducted, the main focus of the training activities has been on planning adaptive and personalisable courses and on using the authoring tools to create these courses.

4.1 Training activities for higher education teachers and instructional designers

For training activities on using the GRAPPLE core tools, a unified training module has been developed. This module has been applied for training events for higher education teaching staff at different partner sites.

The training module is based on a 3-4 hour workshop and has two parts. The first part covers the basic principles and concepts for adaptive courses. During the second part of the workshop the participants had hands-on experiences for applying the principles and concepts using the GRAPPLE authoring tools. The workshops concluded with a brief evaluation to gather the participant's perception of the GRAPPLE authoring tools.



Figure 1: Presentation at the training event at the USI in Lugano



Figure 2: Group work at the training event at the USI in Lugano



Figure 3: Group work at the training event at the USI in Lugano



Figure 4: Group work at the training event at the OUNL in Heerlen



Figure 5: Group work at the training event at the OUNL in Heerlen

The following list reports on the training activities that have been performed.

Partner	OUNL
Workshop date	19-05-2010
Duration	4h
Number of Participants	6
Description	The workshop participants were all educational technologists and instructional designers, who are actively developing course concepts and course material at

	the OUNL. The participants were of different expertise levels ranging from more than 15 to less than 4 years of working experiences.
--	--

Partner	USI
Workshop date	08-03-2010
Duration	4h
Number of Participants	12
Description	The workshop participants were partially teaching assistants who support university staff in designing online courses as well as professors from humanities and economic sciences. Both groups had at least one year practical experiences in using virtual learning environments in higher education courses.

Partner	UNIGRAZ
Workshop date	15-03-2010
Duration	4h
Number of Participants	7
Description	The workshop participants were university teachers and researchers in the field of psychology and computer science. The expertise level and working experience of the participants was varying, ranging from 17 years to 1 year. While all participants had some knowledge on the concepts of adaptation, concrete authoring experience of adaptive courses was limited.

Partner	UCL
Workshop date	19-03-2010
Duration	3h
Number of Participants	4
Description	Three out of the 4 participants were teachers with about 20 years of experience in teaching and in teaching and learning ICT uses. The last participant was a faculty developer specialised in eLearning.

4.2 Training procedure for the GRAPPLE authoring tool for creating adaptive simulations

Prior to the commencement of the evaluation of the authoring tool, two seminars of half an hour each were provided in order to brief participants on the development of an authoring tool for creating adaptive simulations, which could be experienced by students. The first seminar was to show potential users the functionality of the GRAPPLE authoring tool for creating adaptive simulations. The second seminar was to discuss the reasons for creating adaptive simulations and to outline the proposed evaluation procedure.

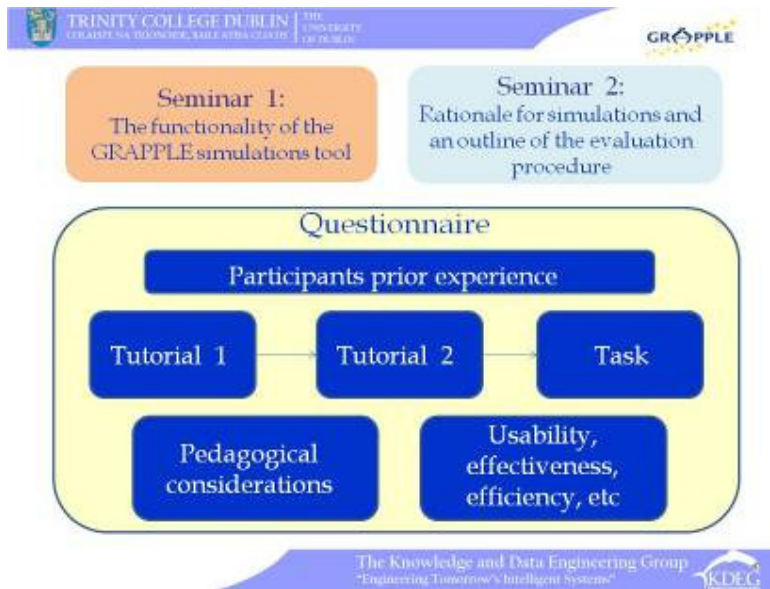


Figure 6: Seminar structure for the training on adaptive simulations

Due to the specialised nature of an authoring tool for creating adaptive simulations, it was envisioned that educational innovators, who may be based far and wide apart, would initially use such a tool. Therefore, the approach of incorporating the training into the authoring tool was deemed best. Instructional designers and educators, who are eager to try out this authoring tool, could freely download the software, follow the inbuilt tutorials and create their own adaptation models.

Throughout the evaluation process, participants were encouraged to volunteer feedback on the two tutorials as well as the task, so the developer could implement improvements in the online training as well as implementing improvements in the authoring tool for creating adaptive simulations based on one's role.

Participants were handed the questionnaire at the beginning of the two-hour evaluation process. All comments of the participants to the developer or the evaluator were recorded by qualitative feedback.

Two tutorials were devised to train participants in the use of the authoring tool for creating adaptive simulations:

- The first tutorial was created to introduce participants to using the authoring tool. A step-by-step procedure led participants through the creation of a Domain Model comprising both concepts and services. Participants authored a simple domain model relating to working in a coffee shop comprising concepts and activities/services. All the concepts are domain specific as are some of the activities (e.g. "Make coffee", "Operate cash register"). Other activities are generic and pedagogical in nature (e.g. WebQuest) but can be used in specific domains.
- The second tutorial provided a step-by-step guide to participants on how to create an Adaptation Model. Resulting in participants authoring a simple adaptation model relating to learning about working in a coffee shop. As specified in this tutorial, a learner must learn about the concepts of coffee beans and a grinder before being able to partake in the activity of making coffee. Once a learner has finished the activity of making coffee, he/she is then directed to either the activity of operating a coffee machine or operating a cash register. This is determined by the learner's assigned role (i.e. "cashier" or "operator" which is specified at run time by the adaptive engine). Finally, once either of these activities is complete, a learner is directed to the "peer discussion" activity.

Participants were then assigned to create an adaptation model, which portrayed the learning curve to be experienced by the various different employees in a coffee shop. A complete domain model called Coffee Shop was supplied along with an existing set of relationship types for the participants to use when creating an adaptation model. The objective of this task was for participants to create a training course for new employees in a coffee shop setting. Requesting participants to create adaptive simulations to train employees to work in a coffee shop was selected because it was believed that all participants would easily understand creating learning activities working in a coffee shop. The aim of the course was to train employees on the necessary concepts and services relevant to their position/role in the coffee shop.

Title	Evaluation of the GRAPPLE authoring tool for creating adaptive simulations
Partner	Trinity College Dublin
Workshop date	03 – 18/06/10
Duration	Seminar 1: The functionality of the GRAPPLE simulations authoring tool 13/04/10 Seminar 2: Rationale for simulations and an outline of the evaluation procedure 11/05/10 The workshops were held between the 3 rd and 18 th June, 2010 to facilitate participants availability. The workshops took two hours.
Target Audience	Lecturers, Assistant Lecturers, Instructional Designers and Researchers in Computer Science.
Participant Number	10
Description	The lecturing experience of the participants who volunteered to evaluate the GRAPPLE authoring tool for creating adaptive simulations ranged from a few years to twenty-two years. This way, participants would have experience of resourcing and creating course content and applying various different pedagogic approaches to teaching. Feedback from such participants was crucial to ensure that the authoring tool conformed to the pedagogical requirements of Higher Education. The experience of computer science researchers was sought to give crucial feedback on the functionality, usability and human computer interface aspects of this authoring tool.

4.3 Training activities for students

The training for students focused on supporting students in the adaptive hypermedia domain to learn to work with the GRAPPLE toolkits for creating, running and maintaining adaptive courses. The training has been embedded into the formal curriculum at the Technical University Eindhoven, but has been conceptualised in a way that other institutions can easily adopt it as a whole or in parts.

Each module addresses specific parts of the GRAPPLE infrastructure and the related application scenarios. The courses extend the trainings that were developed for teachers and instructional designers and include aspects of run-time orchestration and system organisation. The participants of the trainings develop a detailed technical understanding of the GRAPPLE concepts and system components.

Title of the Workshop	GRAPPLE architecture, infrastructure, GAT authoring tool and GALE
Partner	TUE
Workshop date	03-12-2009
Duration	2 hours
Number of Participants	40
Description	The GRAPPLE architecture, infrastructure, GAT authoring tool and GALE functionality were described to students in a course on Adaptive Systems, in preparation of an authoring (group) assignment.

Title of the Workshop	Using GAT as an authoring environment for GALE
Partner	TUE
Workshop date	From 4-12-2009 to 31-1-2010
Duration	8 weeks

Number of Participants	40
Description	Students attending the earlier workshop authored an adaptive application, using GAT as authoring environment and GALE as delivery engine. On 14-01-2010 a 2 hour workshop was held as a question and answer session in which problems were discussed and authoring was additionally demonstrated.

Title of the Workshop	Introduction to the GRAPPLE architecture
Partner	TUE
Workshop date	11-11-2010 and 18-11-2010
Duration	4 hours
Number of Participants	40
Description	Students of an Adaptive Systems course will receive a 4 hour tutorial on GRAPPLE with a teacher present but with an on-line GRAPPLE tutorial served by GRAPPLE (Sakai LMS, GUMF and GALE), explaining the GRAPPLE architecture, the GAT authoring environment and the GALE adaptation engine. During this tutorial there are on-line multiple-choice tests (served by Sakai) that interact with the adaptive course text (served by GALE) by sharing user model information through GUMF.

Title of the Workshop	Creating adaptive courses using GAT and GALE
Partner	TUE
Workshop date	From 19-11-2010 to 15-01-2011
Duration	6 weeks
Number of Participants	40
Description	Students attending the previous workshop will work in groups on creating an adaptive course (using GAT and GALE). On a to be determined date (between 16-01-2011 and 31-01-2011) a workshop will be held in which all groups will give a demonstration of the course text they created.

4.4 Other training activities

The training activities in this section report on trainings that are based on the principles and concepts of the project, however, they do not use the same authoring environments. These trainings have an extended scope with regard to existing standards and specifications. These trainings are loosely related to the work in WP5.

The main objective of these trainings is the recognition of educational approaches to personalisation in education. The trainings emphasise how different approaches of personalisation can get modelled in IMS Learning Design (IMS LD). These approaches exceed the content centred perspective of the core GRAPPLE framework and include personalisation in educational processes, collaboration, student support, process based assessment and self-assessment. During hands-on exercises the participants developed a deep understanding about IMS LD modelling, the integration of open educational resources into IMS LD units and how the ideas of personalisation can be translated into different application scenarios and contexts.

The results of these training activities partially were the basis of the analysis that has been conducted in WP5 and been reported in D5.3c.

Title	Modelling Adaptive Learning Designs using IMS LD
Partner	OUNL
Workshop date	May-July 2010
Duration	3x 4h workshop

Target Audience	Instructional designers and educational technologists working in other European projects, such as iCoper, ShareTec, IdSpace, LTFLL, and OpenScout
Number of Participants	8
Description	<p>This workshop series focused modelling techniques of interactive and personalisable instructional designs based.</p> <p>The workshops explored modelling approaches for content adaptation, adaptive sequencing of learning activities and approaches to personalisation. The objectives for each learning activity were to learn how the GRAPPLE concepts for adaptation can get translated to the concepts of IMS LD and to learn about appropriate modelling approaches.</p> <p>This training activity was provided to instructional designers at the OUNL who are involved in developing value adding educational solutions for open educational resources. These resources are found in the repositories that were connected as part of the MACE, OpenScout and Share.Tec project activities.</p>

Title	Modelling Adaptive Unit of Learning with IMS Learning Design Authoring Tools
Partner	OUNL
Workshop date	30-11-2010
Duration	Full Day Workshop
Target Audience	Researchers and University Teachers
Number of Participants	10
Description	<p>This full day interactive tutorial provides a practitioner's perspective to IMS LD. In the morning the background information on IMS LD is introduced and a short instruction on handling the authoring and deployment environment is given. The afternoon will contain interactive hands-on modelling of personalisable Units of Learning in IMS LD.</p> <p>This tutorial introduces basic modelling approaches for effective use of IMS LD for creating adaptive Units of Learning. The participants will apply these modelling approaches using the ReCourse editor (2010) for creating simple adaptive and personalisable courses and learn how to apply the modelling approaches into practice.</p> <p>The participants are encouraged to use their own content for modelling educational modules.</p> <ul style="list-style-type: none"> • Introduction to IMS LD and adaptive instructional design • Introduction to the ReCourse editor • Generic modelling concepts of IMS LD • Modelling concepts for personalisation and adaptation <ul style="list-style-type: none"> ○ Level A: learning path variations for different roles ○ Level B: interactive content <p>After the lunch break the participants learn modelling concepts for adaptive Units of Learning in hands on exercises.</p> <p>Through these series of activities the participants develop practical knowledge of leveraging personalisation using interactive resources through the following adaptation approaches.</p> <ul style="list-style-type: none"> • Adaptive sequencing • Adaptive content presentation • Adaptive content selection <p>This tutorial is held in conjunction with the International Conference of Computers</p>

	<p>in Education in Putrajaya, Malaysia. (http://www.icce2010.upm.edu.my/)</p> <p>The tutorial is based on the findings reported by Gruber, Glahn, Specht & Koper (2010).</p>
--	--

5 Training Material

The core training material of WP9 is developed to support training activities for higher education teachers and instructional designers in the different institutions.

The training material is conceptualised as resources that extend the technical documentation of the different GRAPPLE components. The extensions target the needs for more detailed information about the underlying adaptation concepts beyond the mere training the technical use of the tools. Additionally the training material includes background information about the project, its motivation and the related research problems.

The main format of the training material is the slide set. This allows trainers at the partner institutions to reuse the material for on-site training and to localise the resources to the specific conditions of the organisation and of the training situation.

All slide-sets of the training material for higher education teachers and instructional designers are published using the document sharing services such as "slideshare.com". This service allows embedding slides into other web-based content. This feature has been used to integrate the resources into the GRAPPLE project pages, so interested visitors can use these resources for self-study.

Based on this slide-set a number of focused information sets were created by OUNL. These additional slides provide a deeper coverage of specific topics than the workshop centred information. In order to create greater visibility of this information from the project's perspective, a special section on the Grapple project web-site has been created (see <http://grapple-project.org/tutorial>).

The following training material has been created.

- Creating adaptive learning designs.
Complete slide-set for half day training events for the GAT environment. The slides were used for the standardised training events (134 slides)
<http://grapple-project.org/tutorials/training-event-material>
- What is GRAPPLE?
Introduction to the project and the research objectives. Online presentation (20slides)
<http://grapple-project.org/tutorials/what-is-grapple>
- What is Adaptation and Personalisation?
Basic overview on adaptation and personalisation and the related terminology. Online presentation (20 slides).
<http://grapple-project.org/tutorials/what-is-adaptation-and-personalisation>
- Adaptive learning designs
Introduction to the underlying concepts of the GRAPPLE project. Online presentation (16 slides)
<http://grapple-project.org/tutorials/adaptive-learning-designs>
- Authoring adaptive learning designs
Introduction to the authoring procedure that is implemented in the GRAPPLE Authoring Toolkit. Online presentation (19 slides)
<http://grapple-project.org/tutorials/gat-the-grapple-authoring-toolkit>
- Getting started with the GRAPPLE authoring toolkit
Step-by-step guide for creating adaptive learning designs with GAT. Online presentation (50 slides)
<http://grapple-project.org/tutorials/gat-the-grapple-authoring-toolkit>

The training material for students has a slightly different focus. This material should provide insights about the underlying scientific concepts, the techniques, the technologies and the methodologies of adaptive systems. The main focus of this material is to help students to understand adaptive hypermedia research and to align their studies and research using appropriate methods. The GRAPPLE training material for this target group provides information on how the GRAPPLE tools can be used to support the studies and the research activities in the domain of adaptive hypermedia.

- Adaptive learning environments.
Presented by Paul De Bra at the JESS Summer School 2009 (70 Slides)
- Adaptive learning environments
Presented by Paul De Bra in a two-day workshop at the ECSE Summer School 2009 (217 Slides)

6 Conclusions

This deliverable reports on the WP9 activities on supporting teachers, instructional designers and students in higher education to develop adaptive and personalisable online courses. The training activities in the higher education context were an integrated part of the evaluation and training activities of WP8, WP9, and WP10.

During the process of preparing the training material it became clear that the training must not only cover tutorials for using the GRAPPLE infrastructure but the training activities also needed to provide insights of the underlying concepts of the GRAPPLE approach and how this relates to the design of online courses.

Considering the state of development of the GRAPPLE infrastructure while conducting the trainings, it has been expected that only the small group of highly innovative higher education teachers and instructional designers are interested in such specific training. Consequently, the majority of training material for the training sessions has been designed in such a way that it can be used for self-study at a later stage. All trainings had an intensive hands-on part, so the participants would have experience in developing adaptive courses.

Although the training activities had a strong focus on the GRAPPLE infrastructure, two additional training activities on educational modelling in IMS LD were included. These training activities covered the findings of WP5 and focused on how GRAPPLE's core concepts are applied using IMS LD. One of these additional training activities has been used to connect the findings of GRAPPLE to other European projects, such as iCoper, ShareTec, IdSpace, LTFL and OpenScout.

In total 11 training activities were conducted delivering more than 73 hours of training, reaching 57 teachers and instructional designers and 160 students in higher education. All participants of the training activities also contributed to the evaluation of the GRAPPLE infrastructure.

A special training section has been created on the GRAPPLE homepage in order to disseminate the training material for self-studying. By the time of this writing, six training resources were created for university teachers and instructional designers and two resources were provided to students on adaptive systems. In total the slides provide more than 500 pages of training material.

7 References

- Beauvoir, P. (2009). ReCourse Learning Design Editor 2.0.2 [Software]. Released under the three clause BSD license, copyright TENCompetence Foundation.
- Burgos, D. et al. (2009). GRAPPLE D5.3c Version 0.5: Extensions and modifications of learning specifications and LMSs focused on adaptive learning. Technical Report. The GRAPPLE project.
- Gruber, M. R., Glahn, C., Specht, M., & Koper, R. (2010). Orchestrating Learning using Adaptive Educational Designs in IMS Learning Design. In M. Wolpers, P. A. Kirschner, M. Scheffel, S. Lindstädt, & V. Dimitrova (Eds.), *Sustaining TEL: From Innovation to Learning and Practice Proceedings of EC-TEL 2010* (pp. 123-138). LNCS 6383. Berlin, Heidelberg, & New York: Springer.
- De Bra, P. et al. (2007). *GRAPPLE, Generic Responsive Adaptive Personalized Learning Environments. Annex 1 – Description of Work*. Project Plan. The GRAPPLE project.
- Kravcik, M., Cristea, A., Glahn, C., Hendrix, M., Nussbaumer, A., et al. (2009) *GRAPPLE D9.2 Version 1.1: First Documentation and Training for GRAPPLE Users*. Technical Report. The GRAPPLE project.
- MACE (web-site). Metadata for Architectural Content in Europe. <http://portal.mace-project.eu/>
- OpenScout (web-site). "Skill based scouting of open user-generated and community-improved content for management education and training". <http://www.openscout.net/>
- Share.Tec (web-site). Teacher education resources. <http://www.share-tec.eu/>