



DELIVERABLE

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D3.5 – Methodology on the Development of the GreeNET Web 2.0 Community

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Authors:

Panagiota Makri (GRNET)

Christos Andrikos (GRNET)

Olga Brani (GRNET)

Jad Najjar (EUMMENA)

Adham Najjar (EUMMENA)

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Executive Summary

This document presents a methodology identifying a set of strategies that have to be accomplished aiming at community building, i.e. the tools and methodologies that will be implemented for establishing the methodological approach of the respective project actors with the view to engaging school communities and science centers promoting formal and informal green science education. Such a methodology will actively contribute to reaching out our targeted audience from the very beginning of our project by involving teachers, school communities and professionals as soon as possible, establishing a relationship among the members of school community and green professional careers and form such communication channel that could stand alone and active even after the funding period of the project. The deliverable presents all those necessary steps that need to be followed in order for the GreeNET project to create and sustain a Web 2.0 community that will use the GreeNET platform and tools during and after the project lifetime. However, appropriate tools and services will be developed in the project to support all needed communication channels between the members. Ensuring a wide range of sharing experience of expertise and experiences across all partners' countries and beyond.

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1 Introduction

1.1 Scope

This deliverable presents the methodology for the development and integration of Web 2.0 tools and services to the GreeNET project.

1.2 Audience

This document is addressed to the members of the consortium of the GreeNET project, including EACEA and Commission services and project reviewers.

1.3 Definitions

Web 2.0: A Web 2.0 site may allow users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community, in contrast to websites where people are limited to the passive viewing of content. Examples of Web 2.0 include social networking sites, blogs, wikis, video sharing sites, hosted services, web applications, mashups and folksonomies.

Videoconference: A conference conducted by using a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions.

1.4 Structure

Chapter 1: contains an overview of this document, providing its Scope, Audience, and Structure.

Chapter 2: provides information for the Web 2.0, the reasons for the development of Web 2.0 in the GreeNET project and the basic characteristics.

Chapter 3: describes specific Web 2.0 tools that the GreeNET project will investigate and try to exploit.

Chapter 4: concludes this document and presents a summary of the GreeNET strategy for the development of a Web 2.0 community

2 Web 2.0 community and GreeNET

The main goal of GreeNET is the development of a network that is going to strengthen the connection between environmental sciences education and the respective labor market. Promoting innovative and engaging activities that project the scientific aspect of environmental education, GreeNET aspires to provoke interest on green sciences among students, and thus contribute to the increase of number of students choosing science-related subjects.

GreeNET aims to develop an appropriate scheme for collecting and exchanging these exceptional good practices and their respective tools in the area of environmental education and green careers counseling that exist in various EU countries, in accordance with the “Education and Training 2010” framework. This way, GreeNET network aspires to address the necessity to develop an integrative approach in collecting and disseminating best practices that promote environmental education using enquiry-based and problem-solving approaches. To this end, a European network of teachers shall be formed and motivated through specific educational actions, contests, and summer schools, to develop the competencies necessary in order to properly educate their students according to cutting-edge approaches in environmental education.

One of the main aspects for GreeNET success is not only the creation of a community of users (teachers and students) but also the continuous expansion of the community with new users. To achieve so GreeNET needs to exploit Web 2.0 tools to disseminate the project outcomes (as described in D6.1 and D7.1) and also to engage the Web 2.0 community and embed these users to GreeNET.

In this chapter, we first present the main aims of the GreeNET project, we then analyse the importance of Web 2.0 community and how it has evolved and finally we identify the important requirements/challenges GreeNET project needs to fulfil in order to benefit from exploiting and integrating Web 2.0 tools to engage the Web 2.0 community and create its own.

2.1 Background of GreeNET Project

Global change is going on and research and society are calling for effective approaches to increase awareness for environment and sustainable living. The constantly increasing emphasis on environmental protection is linked to the connection between environmental education and the safeguard of the environment. The EU considers environmental education as the most prominent instrument to influence human behaviour towards more environmentally sustainable patterns (Nicolae, 2005)¹. Further a lack of strategies for the advancement of strategic skills that correspond to the identified need for the connection of environmental education to the green labour market can be noticed.

¹ Nicolae, L. (2005) Council of Europe Plenary Session: *Youth Education for Sustainable Development*.

GreeNET builds on these findings and aims to promote environmental education by using appropriate competence-building approaches (e.g. inquiry- based science education *IBSE* or problem-solving approaches) and to develop a network to strengthen the connection between environmental sciences education and the respective labour market.

More specifically the main objectives of GreeNET are:

1. ***To successfully and permanently link environmental education to career contexts.*** To address future skills' needs, the focus is on tackling major challenges by properly training the next generation to correspond to major issues such as sustainable development and climate change, and make sound decisions for their future careers.
2. ***To create an inventory of the most outstanding educational scenarios connecting the curricula of the participating countries to professions related to sustainable development and environmental protection.*** These shall render students more environment friendly, active and personally and professionally responsible and make them reflective problem solvers.
3. ***To establish a constantly-expanding network of teachers and school communities informed on the necessity of 'green living and teaching' and trained in effective use of digital resources in science teaching.*** This network shall operate in an independent way, with teachers supplying the educational material and ultimately being responsible for the preservation and further enhancement of the inventory.
4. ***To perform an extended dissemination and validation of the project outcomes in a wide network across Europe, and to circulate effective science teaching methods through networking with relevant projects, networks and initiatives.*** This way, it will be certified that the collective knowledge on climate consequences leading to building of eco-conscience will be used after the 3-year circle of GreeNET. The "Roadmap towards Outstanding Environmental Education based on Enquiry-based Methodologies", to be composed for this network, supports the deployment of Environmental educational content through constantly increasing access and re-usability of 'green-jobs' related lesson plans with use of enquiry-based science education.

These efforts will lead on the one hand to the formation of a European community of teachers, working together to push ahead a proper environmental education of the new generation. This will foster the formation of active citizens and the increase of students who follow green careers. Further the experiences and lessons learnt from the implementation activities will be formulated as a set of recommendations for policy stakeholders to show ways how to use the GreeNET inventory and the collected and evaluated good practices in order to support the training of their citizens in taking advantage of ICT services. Moreover, a roadmap for teachers, resulting from the overall work, will be elaborated and disseminated through teacher communities across Europe.

2.2 Web 2.0 characteristics and community

The term Web 2.0 started as a way to describe web pages where the users could social interact with other users. Today, this term is used in a broader way to describe all those methods, tools and technologies that are related with the social networking sites, blogs, wikis, video sharing applications and generally anything that has to do with user interaction and collaboration through the network.

Over the last years not only Internet users increased but also they completely changed the way they use the network mainly due the growth of Web 2.0 applications and especially of social network sites and social media. Today users access web applications, such as facebook, twitter, instagram, etc. almost continuously to communicate with friends/followers.

One major factor that affected the way people interact through the network and led to this growth of users, is the expansion of the mobile networks and the usage of mobile applications through smartphones and tables to browse the internet and connect to the social media.

Apart from the social interaction, an also important factor is the user friendlier environment and the simplicity many of the Web 2.0 applications and tools nowadays offer. In the past, computer users (and mostly novice computer users) were not able to use many web 2.0 applications (like forum or wikis) due to the difficult user environment they had. Today, from one side users are more familiar with specific environments (e.g. text and message editors) while at the same time the development of a user environment has become itself a separate part of the development of a Web 2.0 service where developers and designers work together to offer a user friendly experience.

Today millions of people use the network over various forms of Web 2.0 tools, applications and services. Hence, it is important, for the GreeNET project not only to use Web2.0 as a way to disseminate project outcomes, but also to exploit them to improve the learning experience and access a much wider audience.

2.3 GreeNET Web 2.0 requirements

Deliverables D6.1 and D7.1 present the GreeNET dissemination and exploitation plan respectively. Disseminating a project means to introduce and to popularise the main ideas to a large audience, while exploiting the project results refers to the establishment of suitable actions to make a successful and sustainable project.

Apart of the general dissemination and exploitation plan of a project, and especially in the context of projects such as GreeNET, one has to take into account methods and ways to associate the project's outcomes with the Web 2.0 community.

Providing a service with social interaction and disseminating it through Web 2.0 tools, doesn't guaranty its success. In order for the GreeNET project and the GreeNET network to be successful even after the project life, meaning a large audience and a large pool of users that will use and continue to use the platform, it has to exploit Web 2.0 tools by integrating services and by following those characteristics than can be affiliated with the success of many Web 2.0 tools.

As a first requirement we could refer to term "simplicity". Today Internet users are bombarded with new applications, new sites, etc. each one offering different services in a very different way. Users are often required to register for a new account in order to use specific services. As a result, many users have different usernames, passwords, profiles in the various services they use and many of them use password reminder applications to save all these information. The growth of open source projects and the usage of Application Profile Interfaces (APIs) have given the opportunity to developers to integrate parts from one service to another. For example, many sites offer today automatic registration with accounts from other services as facebook or google plus.

In addition, while many Web 2.0 tools where initially targeting a wide audience, they didn't achieve the desired successfulness due to their non user-friendly environment. Users don't want to go through complicated interfaces in order to use a service. It is a very important factor for any application and service to provide a user-friendly interface and environment.

Similarly to the above, but can be considered as a different requirement, is "familiarity". Many users, and especially novice internet/computer users, have learned and use only specific and popular services. This category of users find very difficult to use additional services where they will need technical assistance in order to learn how the new service can be used. To overpass this, it is important for new services to implement user interfaces similar to other popular services. Users, being already familiar with the interface, will easily learn to use a new service and there is more chance for them to adapt the service and thus achieve the desired successfulness.

GreeNET project needs to take intro account the above requirements and integrate services accordingly.

3 Web 2.0 Tools

This chapter is dedicated in presenting the Web 2.0 tools that the GreeNET project will investigate and if possible exploit during the development of the GreeNET platform. These tools can be summarized in the following:

- Social media integration,
- Collaboration tools – wiki,
- Online forum and
- BigBlueButton, a video conference tool.

The final section of this chapter is dedicated on the development and integration of these tools in the GreeNET platform.

3.1 Social Media Integration

In the last years, social media have become the most common way for people to interact, share and exchange information and ideas. As a definition, social media are "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content" [1]. Today, social media are used by millions of people every day. Even more, social media applications are not only available through web browsers, but they can also be accessed with mobiles and tablets creating a 24-hour basis user interaction.

In the context of GreeNET, apart from disseminate the project through social media as Facebook (<https://www.facebook.com/GreeNETproject>) and Twitter (as shown in the figure below) and others, it is very important to integrate these social media to the online project portal and inventory platform. This can be done by integrating plugins to allow login with credentials from other platforms such as Facebook and Google plus and to allow users to easily share information provided in the GreeNET platform to the social media.



Figure 3.1: GreenNET facebook page

3.2 Collaboration Tools - Wiki

One of the benefits of exploiting Web 2.0 tools is the usage of collaboration tools. With these tools, users can work together in order to share, plan, create and collaborate in editing documents and pages. The most common collaborating tool is a wiki.

Wikis are web sites that allow users to add, edit and delete pages on the fly through a web browser. Editing of the page can be done in collaboration since more than one users can edit the same pages. Wikis are very successful collaborating tool with the most known being Wikipedia. In the past, a main drawback of wikis was the non user-friendly environment and more specifically the page editor. Today, the new versions of wikis include advanced editors that resemble known text editors such as WordPad making it easy for users to learn and use wikis.

GreenNET project will include a wiki page where users will be able to collaborate in order to share information and work together on the description of best practices.

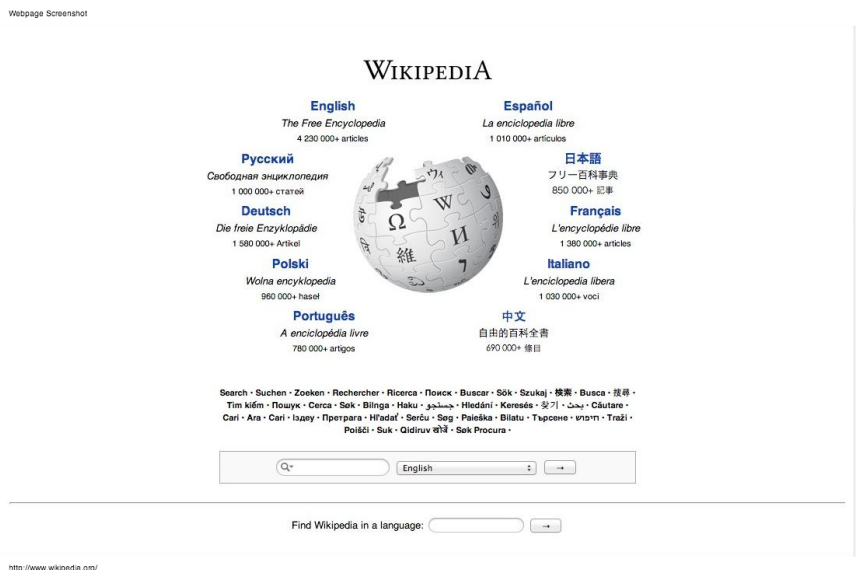


Figure 3.2: Wikipedia, the most publicly know wiki

3.3 Online Forum

Internet forums are a great tool for online discussions. In contrast with a simple chat room, messages are stored to viewed later by all registers users (or at least those that have access to the specific forum). Unfortunately even though online forums are very useful as discussion boards, they usually don't have a user friendly environment making difficult for novice internet users to participate.

In the GreeNET project the creation of an online forum will be investigated. The main factor based on which the decision to integrate a forum in the GreeNET platform will be the possibility to use themes and plugins to create a user-friendlier environment. Such solutions could be themes and plugins that emulate the user interface of known social media, such as facebook.

An example of such theme is the Vanilla Facebook Theme [2]. A preview of such an implementation is shown in Figure 3.3.



Figure 3.3: The Vanilla Facebook Theme for forums

3.4 *BigBlueButton, a Video Conference Tool*

BigBlueButton is an open source project web conferencing system that aims to enable remote students to have a high-quality learning experience. It engages students to View & listen to presentations, ask questions & participate in group conversations.

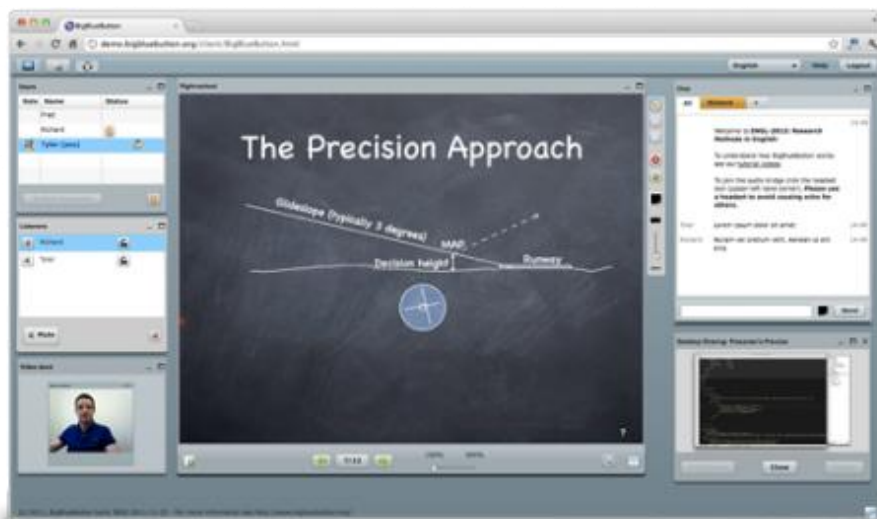


Figure 3.4: BigBlueButton main screen

3.4.1 About BigBlueButton

BigBlueButton [3] was created by a group of developers who believe strongly in the project's social benefits and entrepreneurial opportunities and they have been working on BigBlueButton since 2007.

Their vision is that starting a web conference should be as easy as clicking a single metaphorical big blue button so it should be easy for others to embrace and extend education. It is an open source web conferencing system built on over fourteen open source components to create an integrated solution that runs on Mac, Unix, and PC computers.

The main feature of BigBlueButton is recording lectures (slides + audio + chat) for later playback by students. It provides a whiteboard tool that lets you annotate and call out key parts of your presentation for viewers. Even more, it can be used not only to show presentations but also for teachers to broadcast their desktop for all students to see.

All these features are provided along side with a voice and video out-of-the-box conference tool with the only requirement for the participants is a microphone and a camera while at the same time, students can participate in group conversations by using the chat tool.

Finally, a key feature of BigBlueButton is multilinguality, since the end user can choose a translated interface in more than 40 languages.

3.4.2 BigBlueButton and GreeNET

GreeNET project aims to use the BigBlueButton tool to create an online video conferencing tool. The main idea is to integrate the BigBlueButton in the online platform that will be created in the context of GreeNET.

Users of the platform will have the ability to use the BigBlueButton functionalities to improve the online learning experience. In addition the simplicity of the BigBlueButton tool will provide all kind of users (experienced or novice internet users) with a user-friendly environment to easy access the provided services and resources.

From the developer point of view, the benefit of the BigBlueButton is that is an open source project, meaning that GreeNET will be able to exploit the public API and integrate the service accordingly.

3.5 Integration with the GreeNET Platform

In the previous sections, we focussed on the description of all those Web 2.0 tools that will help the GreeNET platform to sustain its own Web 2.0 community. In this section we proceed on describing how all these tools can be integrated in the Moodle based GreeNET platform.

3.5.1 FB_Comments

It is used to add Facebook like and comment box to a Moodle platform. This plugin makes Moodle more user friendly by allowing users to like or comment on specific subjects and courses with a very familiar environment. More specifically the plugin provides the following features:

- Facebook comment box, with custom number of comments
- Facebook like box
- Display individual box for each page or a single one through out the site.

3.5.2 Cubic

Cubic is a theme for Moodle platforms. Its objective is to provide users with a user-friendlier interface with several forms of social awareness and some new concepts.

On the top of every Moodle page, this theme introduces a user bar which provides users with several menus. Each of these menus contains information about the current user courses, activities, notifications, events, messages, settings, and others.

This theme also provides a settings page where you can change several properties like logos, colors, system name, and others. On this page you can also remove the institutions and applications menus from the user bar in case you don't want to use them.

3.5.3 Forum_NG

Forum NG is an alternative forum plugin for the Moodle platform. The plugin provides with the platform with a forum as an alternative to the standard Forums within Moodle. The plugin can sit alongside the original forum activities, as it is completely independent; the user can set up new forums using either way.

The Forum NG plugin has some key extra features which make it quite a nice tool to use including:

- Easy to use, Ajax driven User Interface
- Simplified view of a thread, e.g. repeated or blank subject lines are ignored
- Hybrid discussion view: a combination of nested and threaded view
- A friendly star system for ratings
- Multiple file attachments
- Private one to one discussions between individual students and teachers
- Subscription at the discussion level
- Export of forum postings into a document.
- "Save as draft" option for posts
- Flagging posts.

- Sticky posts.
- Ability to lock a discussion.
- Ability to look at readers of a thread.

When creating the forum, the teacher is given options to select the forum type. Unlike the standard Moodle forum, there are only two types available: the Standard forum and the Study Advice (an one to one forum with a student/teacher format).

The teacher can also set ratings, limit posts times, remove old discussions and limit users to a number of posts per day.

To add a Forum_NG, the teacher needs to first add a resource and from the activities menu and then choose the Forum_NG, as shown in the figure bellow

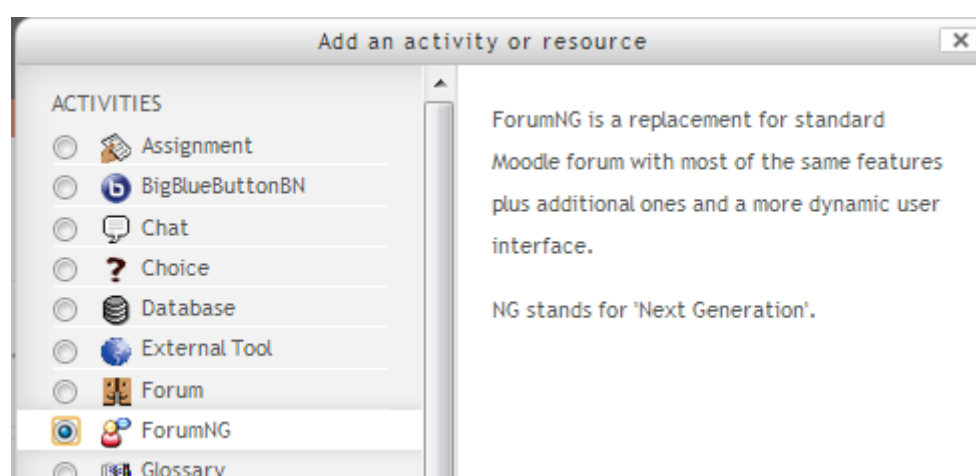



Figure 3.5: Adding a ForumNG in a course

After the selection, the user is redirected to the configuration menu for the new ForumNG as shown in the figure bellow.

Adding a new ForumNG to Topic 2

General

Forum name*


Forum type  Standard forum for general use

Forum introduction

Font family Font size Paragraph

B *I* U ABC X₂ X²

Path: p

Subscription  Everyone can choose to be subscribed


Maximum attachment size  500KB

Figure 3.6: Configuring a new ForumNG

3.5.4 Group Self-selection

The Group self-selection activity module allows students to select the group they want to be members of. Teachers can set up this activity to enable the students to self-select groups from either all groups or a specific grouping of groups.

Limits on the group memberships can also be set and in order to complete the selection process a password can be required.

We have to note that for the students to self-select groups, the groups and groupings must have already been created and defined.

This is a very useful tool for getting students into different streams of work.

3.5.5 MoodleBook

Moodlebook is a three-column that emulates the look and feel of Facebook. It improves usability by shifting setting blocks to top of the page, so called "Moodle awesome bar". This is great plugin to create a familiar and user-friendly environment.

3.5.6 Wiki Module

A wiki is a collection of collaboratively authored web documents. Basically, a wiki page is a web page that everyone in your class can create together, right in the browser, without needing to know HTML.

A wiki starts with one front page. Each author can add other pages to the wiki by simply creating a link to a page that doesn't exist yet. A wiki is indeed a fast method for creating content as a group. It's a hugely popular format on the Web for creating documents as a group. There is usually no central editor of a wiki, no single person who has final editorial control. Instead, the community edits and develops its own content. Consensus views emerge from the work of many people on a document.

In Moodle, wikis can be a powerful tool for collaborative work. The entire class can edit a document together, creating a class product, or each student can have their own wiki and work on it with you and their classmates.

The Wiki is available through the activities menu.

Adding a new Wiki to Topic 20

General

Wiki name*

Wiki description*

Font family Font size Paragraph

B *I* U ABC X_o X^{*} [List icons] [Link icon] [Image icon] [Table icon] [Code icon] [HTML icon]

Path: p

Display description on course page

Wiki settings

First page name*

Wiki mode

Default format

Force format

Figure 3.7: Configuring a Wiki

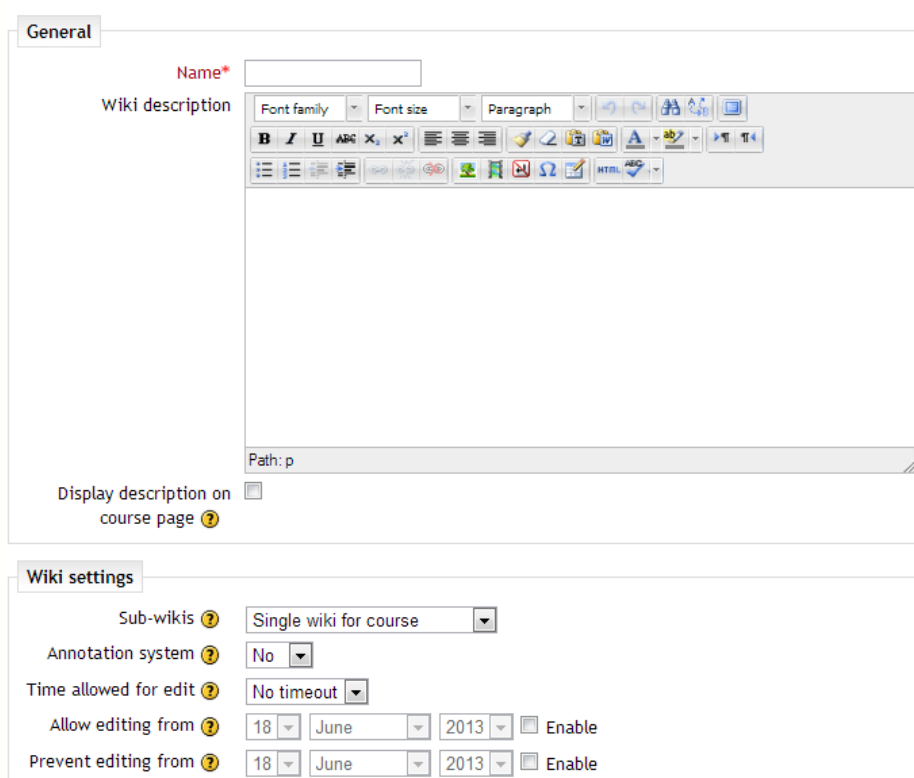
3.5.7 OU_Wiki

OU wiki plugin is an alternative wiki option within Moodle. It does not replace the standard wiki, and operates alongside it. The key intention of this wiki is to provide a simple teaching tool suitable for student use with minimal required training. It is in no way intended to be a full-fledged wiki like MediaWiki. For example, there is no wiki syntax except for links with two square brackets.

The option to add an OU wiki is also available through the activities menu. In this case, the wiki settings for the OU wiki are more detailed than for the normal Moodle wiki.

Firstly, you can set a collaborative wiki for the course, or a group or just have the individual work on their own wiki. Secondly, a user can be given rights to add inline annotations to the wiki. A nice additional feature is the edit timeout: when two people want to edit the same page in a wiki, it is locked to one of them. This allows setting a timeout that will release auto-submit the person who is editing saving their changes and unlocking it.

Adding a new OU wiki to Topic 2



The screenshot shows the Moodle configuration form for a new OU Wiki. It is divided into two main sections: 'General' and 'Wiki settings'.
In the 'General' section, there is a 'Name*' text input field. Below it is a 'Wiki description' area with a rich text editor toolbar (including options for font family, size, bold, italic, underline, text color, background color, bulleted list, numbered list, link, unlink, insert image, insert video, insert audio, insert table, and source code) and a large text area. At the bottom of this section is a 'Path:' text input field and a checkbox labeled 'Display description on course page'.
The 'Wiki settings' section contains several dropdown menus and checkboxes:
- 'Sub-wikis' is set to 'Single wiki for course'.
- 'Annotation system' is set to 'No'.
- 'Time allowed for edit' is set to 'No timeout'.
- 'Allow editing from' is set to '18', 'June', '2013', with an 'Enable' checkbox.
- 'Prevent editing from' is also set to '18', 'June', '2013', with an 'Enable' checkbox.

Figure 3.8: Configuring a OU Wiki

The OU wiki sets itself up as a simple wiki with clear goals, and it delivers on them all. It is easy to use for teacher and student whilst also having the option of annotation and grading which are very good for teaching practice and feedback.

3.5.8 BigBlueButton

The BigBlueButton module integrates the BigBlueButton conferencing system, presented in section 3.4, to the Moodle platform. The module provides users with the ability of real-time sharing of slides (including whiteboard), audio, video, chat, and desktops and also the ability to record lectures for later playback, i.e not only the slides but also the audio and the chat.

This module enables users to:

- Create multiple activity links to on-line sessions within a course
- Restrict students from joining a session until a teacher (moderator) joins the session
- Launch BigBlueButton in a separate window
- Create a custom welcome message that appears at the top of the chat window when joining the session
- Specify join open/close dates for the session that appears in the Moodle's calendar
- Record a session (requires BigBlueButton 0.8 or later)
- Access and manage recordings (requires installation of recordingsbn)

The BigBlueButton module is available through the activities menu and its configuration is shown in the figure below.

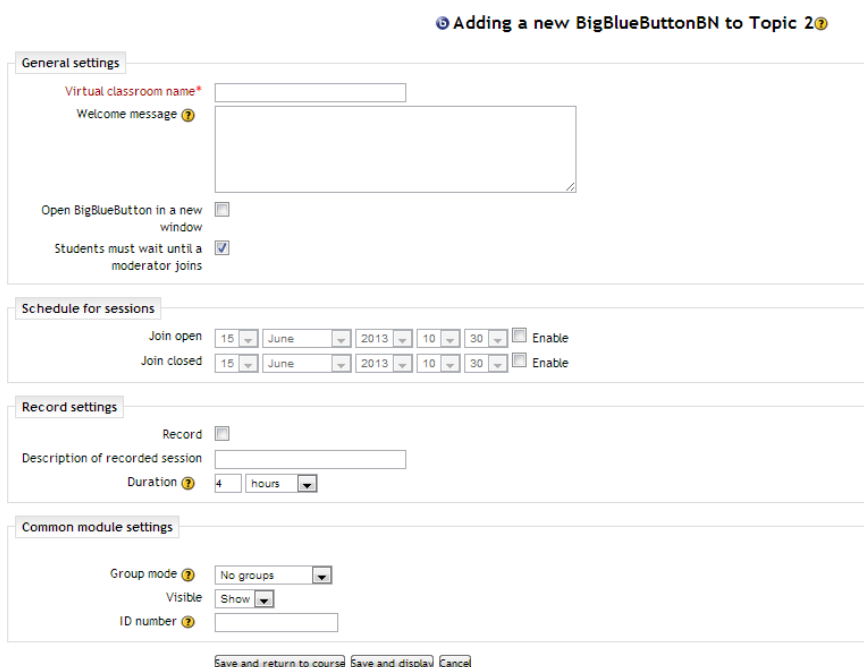


Figure 3.9: Adding and configuring a BigBlueButton activity

3.5.9 Recordingsbn

The recordingsbn module is an additional to the BigBlueButton module that allows users to view and manage your BigBlueButton recordings within a course.

With this module students can have access to, publish or unpublish and delete the recordings.

Recordingsbn can only be installed and used alongside BigBlueButton module.

In short, the BigBlueButton module lets you create BigBlueButton sessions from within your course while recordingsbn lets you view and manage the BigBlueButton recordings from within your course.

4 Conclusion – Strategy

In this document we presented how the GreeNET will connect with the Web 2.0 community. Overall aim of the GreeNET project is to create a self-sustainable community of users that will exploit the project outcomes, i.e. the GreeNET platform and the corresponding tools. To achieve this goal, GreeNET project from the very beginning needs to reach out to existing communities and form such communication channel that could stand alone and active even after the funding period of the project.

Through the dissemination and exploitation plan, GreeNET project aims to engage targeted user communities such as school communities and science centers. But apart from that, GreeNET project needs to provide tools to connect these users through a Web 2.0 community.

To achieve the above, GreeNET needs to embrace and incorporate all these characteristics that make successful the existing Web 2.0 communities. Social media integration, familiar and friendly interfaces, common elaboration tools are just some of the tools GreeNET could exploit while at the same time, it should maintain those essential features that make a Web 2.0 tool successfully: simplicity and familiarity.

The rational is that GreeNET will provide those tools to create and sustain a community and also embed existing Web 2.0 communities into the GreeNET community. This way GreeNET will create a pool of users who will use and sustain the GreeNET platform even after the project lifetime.

The Web 2.0 tools GreeNET project will use are the following:

- Social media integration: to integrate the GreeNET community with existing communities
- Collaboration tools – wiki: a wiki tool for people involved in GreeNET to collaborate
- Online forum: a way for the members of the GreeNET community to discuss with other members
- BigBlueButton: a video conference tool for members of the GreeNET community to participate in video conferences and enhance the educational experience.

5 References

1. Kaplan Andreas M., Haenlein Michael, (2010), Users of the world, unite! The challenges and opportunities of social media, Business Horizons, Vol. 53, Issue 1 (page 61)
2. <https://github.com/crysfel/Vanilla-Facebook-Theme>
3. <http://www.bigbluebutton.org/>