



Education and Culture DG



Virtual Portal for Interaction and ICT Training for People with Disabilities

ViPi Handbook

Outcome No.		Deliverable 12	
Workpackage No.	WP3	Workpackage Title	Consolidation of existing materials and development and design of new learning materials
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Status (F: final; D: draft; RD: revised draft):		RD	
File Name:		D12 Handbook.doc	

The ViPi KA3 LLL project (511792-LLP-1-2010-1-GR-KA3-KA3NW) has been partially funded under the Lifelong Learning program, subprogramme KA3 ICT. This publication reflects the views only of the author(s), and the Commission cannot be held responsible for any use which may be made of the information contained therein.



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Version History table

Version no.	Dates and comments
1	30-01-2012 – ViPi handbook first draft. Outline of the expected content for the handbook by NTU
2	Comments & insertions by Steficon
3	Comments by EuroCy
4	11/02/2012 Comments by PhKM
5	05/04/2012 Cleaned by NTU
6	Edits made at Vilnius meeting
7	30/05/2012 – Edits made by NTU -addition of first draft desktop games sections. Reformatting of document.
8	08/06/2012 – Input and contributions by EuroCy
9	12/06/2012 – Additional edits by PHKM and EuroCY
10	12/06/2012 – Additions by NTU particularly in sections 3.2.5 and by Penny Standen in Section 2 - tidied
11	12/06/2012 – Input and contributions by Hypertech
12	14/06/2012 – Input and contributions by Steficon
13	18/06/2012 – further updates to 3.2.5 by NTU (and references)
14	22/06/2012 – alt text added to NTU captures of games

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Lifelong Learning Programme

ViPi Project 511792-LLP-1-2010-1-GR-KA3-KA3NW

1 Overview

This handbook document aims at enabling the trainers utilising the deliverables of the ViPi project, to fit them together into the envisaged educational and pedagogical framework. Details are provided on each of the outcomes, as well as, advices on how to use them.

2 Combining the ViPi curriculum and desktop/online/mobile applications – a blended learning approach

In order to maximise learning and to provide a package that caters for the needs of a wide variety of users, ViPi adopts a blended learning approach. This is a combination of traditional face-to-face classroom methods with computer delivered materials in the form of an online elearning platform. These two methods of supporting learning have different strengths and in combination provide a more motivating learning environment. The inclusion of serious games (both desktop and mobile based) and a collaborative and accessible social platform provide additional modes of discovery and learning which learners (referred to as trainees in ViPi) find motivating.

The ViPi curriculum has three levels ranging from the most basic level to a more detailed approach with specific software packages. Delivering this through a combination of face to face teaching and an online elearning platform allows the teacher to identify what is the most appropriate entry level for each learner so that they can balance level of challenge with a chance to experience success and progress. With the additional components provided such as learning objects, social network and the facility for creating new material, ViPi allows the teacher to create a personalised learning pathway for each student. Flexibility is further enhanced by the facility to deliver materials via either desktop computers or mobile devices.

In addition, ViPi delivers all its outcomes in an accessible format (both as an electronic document as well as accessible online training content) so that it can be easily transferred into other accessible formats (accessible PDFs, Braille, Daisy audio books, etc.), and with content adjusted to the different target groups (ranging from basic and accessible course content for people with learning difficulties, to regular content but adjusted to the target group of people with e.g. upper limb impairments, hence also putting emphasis on identifying assistive technology that is beneficial for the trainees).

To enable trainers to get the best out of the VIPI platform, its tools, services, training material and games and integrate it into current training practices while making use of the provided learning objects to create customized e-portfolios for their students, we have developed the **VIPI blended educational and pedagogical framework**. This provides a blue print on how to optimally use the VIPI platform, its tools, services, training material and games and integrate it in current training practices.

The trainees beneficiaries of ViPi will vary considerably in needs and ability so while there are general pieces of advice and good practice that will apply in all learning environments where ViPi will be used, we cannot always be prescriptive in how ViPi should be used. For this reason, the framework provides dimensions that can generate directives and questions. A directive is like an instruction i.e. telling someone what they should do e.g. “training should be provided” on the basis of evidence that suggests this advice is good for a range of trainees and learning environments. This is in contrast to situations where actually the trainer has to make up their own mind because only they know the situation in which they are using ViPi. For these eventualities, ViPi will prompt them with a question such as “what is the best balance for this student between individualistic and collaborative learning?”.

There are four dimensions to the ViPi blended educational and pedagogical framework taken from Minocha et al, (2009):

- **Social** (e.g. issues related to collaboration and group working). Young people with disabilities can be socially isolated. Thus the right balance must be found between different strands of blended learning to reduce their feelings of isolation and acknowledge that an online community of trainees may actually help those who have difficulties in face-to-face environments. An example of a directive from this dimension would be: “students should be encouraged to engage in the social activities provided by ViPi”. Examples of questions that trainers would need to answer: “Is ViPi able to promote collaborative learning?” “Are trainees helping each other to learn and can some peers act as tutors?”
- **Educational** (factors that have a bearing on learning and teaching). Educational factors include both general skills that need to be acquired (e.g. sustained attention) and specific (e.g. keyboard skills, maths). An example of a directive from this dimension would be: “trainers should record activity and review it in order to better identify trainees’ requirements and modify their practice to optimise benefits for trainees”. An example of a question for trainers to think about would be: “Is there a right balance between individualistic and collaborative learning?”
- **Organisational** (the way in which the institutions involved deal with introduction and use of ViPi). Organisational factors can often be the biggest barrier to implementation because the school or training centre must be supportive of the introduction of ViPi and possess an appropriate pedagogic culture. An example of a directive from this dimension would be: “If trainees can take mobile devices home and learn with their parents or carers, then these individuals are also part of the “organisation” and their barriers need to be taken into account”. Example questions for trainers to consider would be: “When are face to face sessions scheduled?” “What is the optimal group size or ratio of trainers to trainees?”
- **Technological** (factors related to access, implementation and maintenance of the tools and services). It is important that there is sufficient technical support for the initiative inside the institution and that the trainers themselves feel confident using the platform. The flexibility built into ViPi will facilitate its use by trainees with a wide range of ability and learning styles, but they will still require help to use the technology initially and if there is a steep learning curve for the technology or the usability is poor, they will have an unsatisfying experience and may feel that the technology is ‘getting in their way’. An example of a directive for this dimension is to “ensure trainees are receiving sufficient support in their use of the technology to avoid their demotivation”. An example of a question would be: “What is the best mix of different components of the blend e.g. group learning, discussion, games, drill and practice?”

3 How to access the ViPi portal via the internet or on your smartphone

3.1 Minimum requirements

In order to access the ViPi Portal with a desktop or laptop computer, we recommend following minimum requirements:

- in terms of hardware, a Pentium 4 CPU running at least at 2GHz with 1GB of ram at least should suffice;
- the portal will run on any machine having a Web Browser installed (minimum requirements: Firefox 11.0, Chrome 19.0, Explorer 9.0, Opera 12.0, Safari 5.0, etc.).

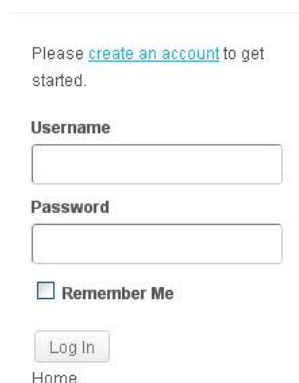
In order to access the ViPi Portal with a mobile device (Smartphone or Tablet), we recommend following requirements for running ViPi applications:

- **Software:** ViPi App will work
 - on all phones that are running Android version 2.3.x (Gingerbread) or higher, while on tablets Android 3.x (Honeycomb) or higher. In order to take advantage though of the whole new accessibility API we would suggest Android 4.0.x (Ice Cream Sandwich) or higher.
 - with WordPress 3.0 installations or higher
- **Hardware:** The minimum hardware requirements comprise 800 Mhz - 1GHZ CPU, 512MB or RAM, displays from 3.5" and higher.

3.2 Desktop environment

3.2.1 Registering with ViPi

The registration of the ViPi portal is essential for every user that wants to have access to the ViPi content. This can be performed through the main page of the portal:



Please [create an account](#) to get started.

Username

Password

☐ Remember Me

[Home](#)

Figure 1: The registration and login panel of ViPi portal

If the “Create an account” option is selected, then the user is redirected to the following page, where he/she is prompted to enter all required data. More specifically, username, password, email address and the name of the user are required for registering into ViPi portal.

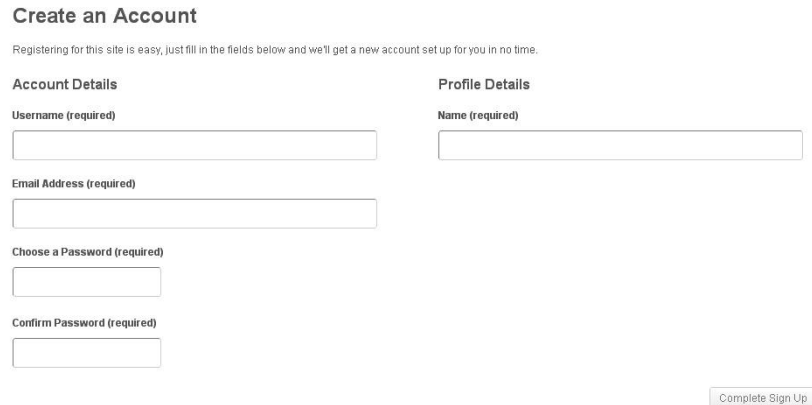


Figure 2: User fills in all required registration data

Once submitted, the user has to activate the registration by following the instructions that have been sent to his/her email.

One essential part of the registration process, is to provide a detailed profile with option to indicate interested fields that match you as user. Just drag and drop those that fit you from left to the right, so you could have the ability to personalize your experience in ViPi platform.

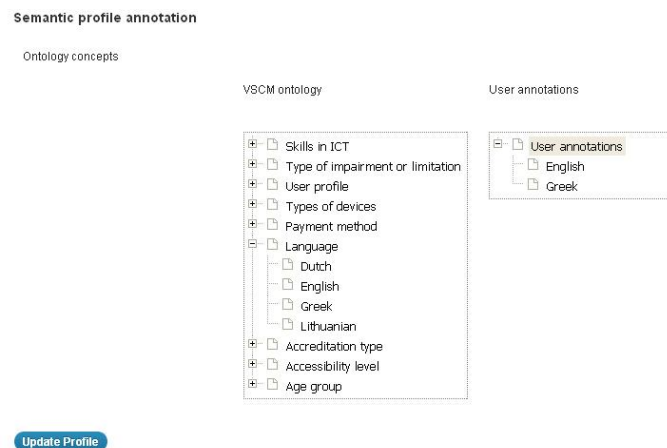


Figure 3: User profile annotation

3.2.2 Browsing through the portal and finding appropriate content

The content of ViPi portal is available through its main web page, which is of the following form:

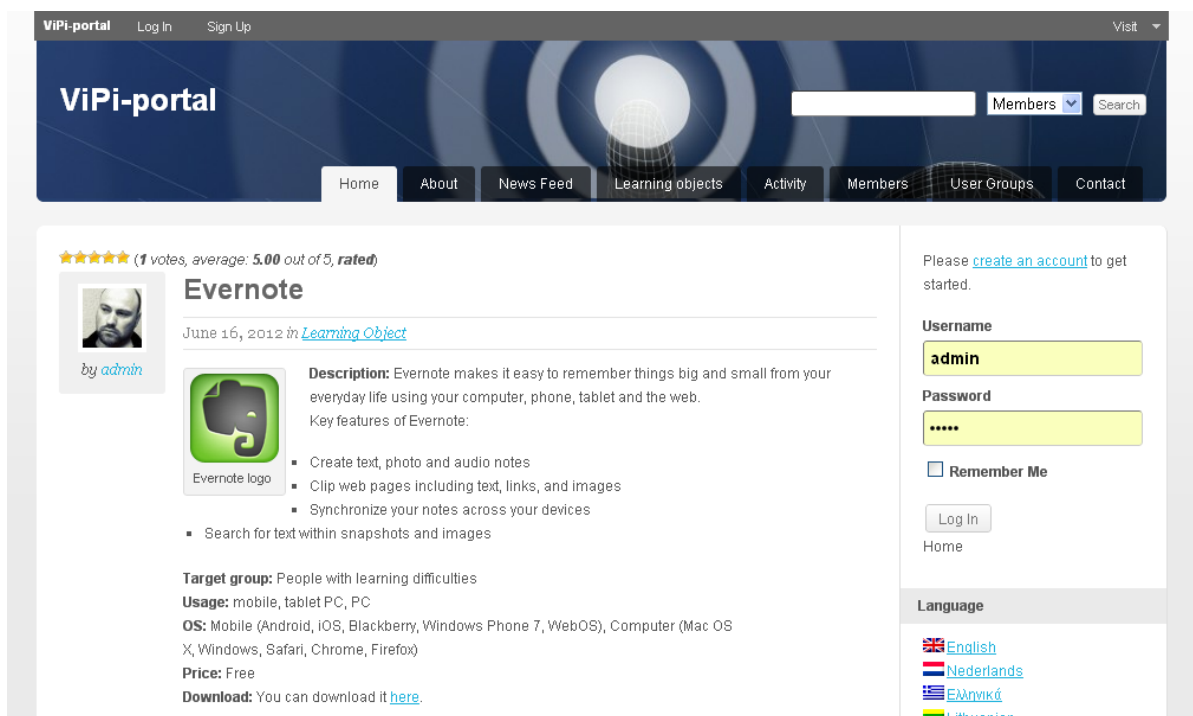


Figure 4: The main page of ViPi portal

Users can navigate through the available pages of the portal that are: Home, About, News Feed, Learning objects, Activity, Members, User Groups and Contact. Home page contains all posts that have been submitted in any category by any user, as in Figure 4. The About page contains some general information about the ViPi platform, while News Feed page contains news that are submitted by any user into the News Feed category. Learning Objects page include all published learning objects of the ViPi portal. Moreover, Activity page contains the activity of the registered users in the platform, Members contains information about registered users, User Groups information about user groups within ViPi platform, and finally Contact page a form for contacting the administrator of ViPi platform.

Browsing through posts of ViPi platform can be performed by the build in mechanism of WordPress, while browsing and searching of Learning Objects can be performed through the corresponding dedicated page.

3.2.3 The ViPi learning object repository

An important part of the ViPi portal is the Learning Object (LO) repository that can be accessed through a dedicated Web page provided as an item in the central menu of the portal's homepage (see the red-box mark in Figure 5).

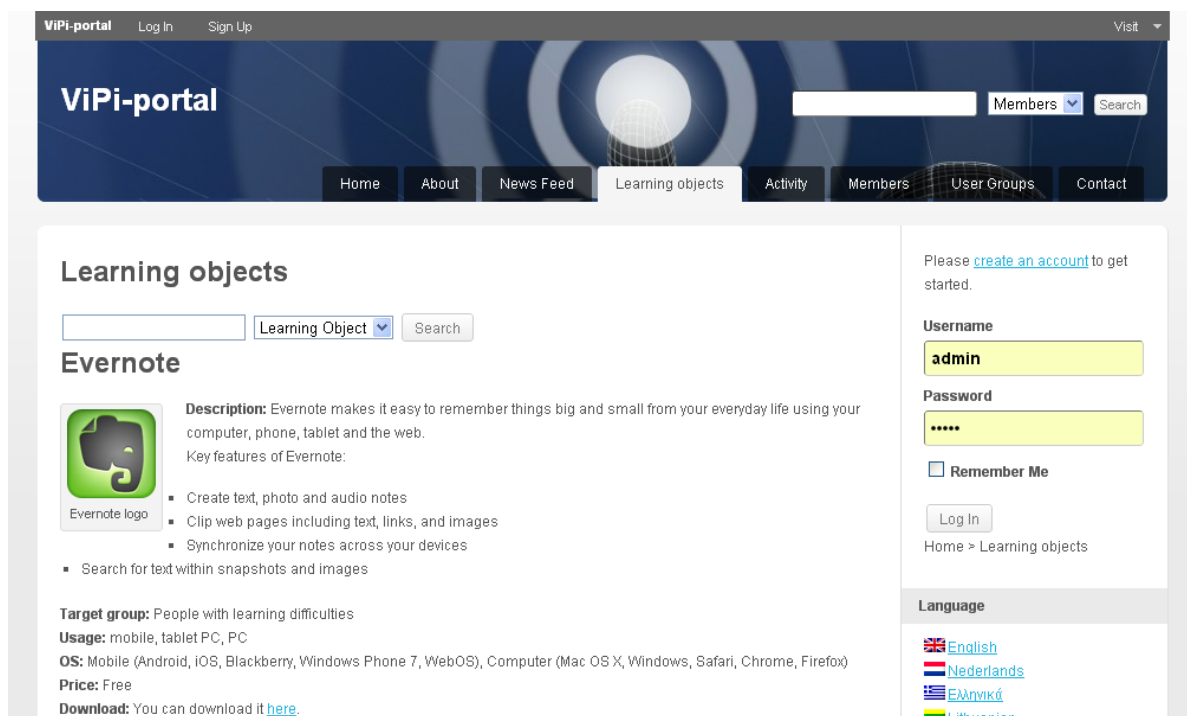


Figure 5: Accessing the LO repository from the ViPi portal homepage

The repository will also be accessible through ViPi's mobile application (Android based). This repository strives to become a one-stop-shop of learning content created by trainers and other content providers, for the training of persons with disabilities, and providing trainers and other stakeholders with learning content in a variety of formats (URLs, courses, serious games, mobile games, etc.). Initially the repository will contain fully accessible training material for basic ICT skills, which was the application area of the ViPi project, however, the repository is implemented with built-in scalability to host content from any other area in the future and of any accessibility level.

Learning Objects is the terminology used in the ViPi portal to describe any piece of content that can be considered as content/material useful for the training of people. Therefore, LOs can span from structured courses, to small pieces of textual information, to multimedia files, to links to other resources, to serious and other games, etc.

The repository is implemented as multilingual, that is, the content can be provided in different and in more than one languages, as long as the content provider performed and uploaded the required translations.

The LOs are a specific category of content in the ViPi portal and, therefore, dedicated search functionality is available to the interested users to locate the content they look for. Details on how to use the search capabilities are given later in section 3.2.7. LOs are stored in the repository as individual and well separated entities, with title, content and other metadata that support their discoverability. Furthermore, they are all linked to specific categories of skills (currently only basic ICT skills), as well as, to specific types of disabilities, devices, etc. The LOs are expected to be used by trainers in their teaching either using the ViPi curriculum or using their own curriculums and practices, but also by trainees that want to find material on specific topics and suggest these to their

trainers or read on their own, possibly while taking the courses through the ViPi training environment.

Overall, the ViPi LOs repository is the hosting place for a vast number of training content entities/material and offers an easy-to-use search mechanism to facilitate the efficient discovery of what the user is exactly looking for.

3.2.3.1 Rating and commenting on content

Rating in ViPi portal is only allowed to learning objects, as depicted in the following figure:



Figure 6: Rating of learning objects

Each user is allowed to rate only once a learning object, and the average rating of each one is displayed above its main title. The results of the rating of learning objects, will help other users in making their decisions when selecting learning content. Objects with high rating are expected to be preferable by others and this is a mechanism that helps maintaining a high quality of learning content.

Commenting on a learning object or a post in general can be performed by opening each post. Then the commenting box will appear, where the user can write his/her comment about the original post.



Figure 7: Commenting on a post

The commenting feature is a key one since it provides an interaction channel between the users and the portal administrators but also among the users. The content, in this way, become live and can emerge to a common agreement between the participating users. The availability of such kind of technology, allows for actual inclusion in what users read, making the communication bidirectional.

3.2.4 Using the ViPi social network

The ViPi platform features an integrated internal social network that allows providing social network capabilities between portal users. The social network of ViPi portal contains the following components:

- Profiles for members
- Private message functionality
- Friend Networks
- Groups, photos and other user generated content
- Activity/Action streams of public actions on the portal

All of the social network functionality is accessible through the “My Account” tab in the header of the ViPi portal.

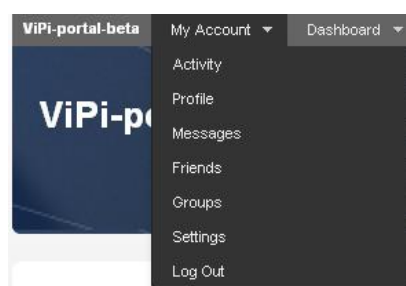


Figure 8: ViPi portal social networking

3.2.5 Playing serious games

Serious Games are computer and mobile games that are intended to not only entertain users, but also to have additional benefits such as education and training.

ViPi intends to use serious games as part of the blended educational and pedagogic framework in order to enable delivery of parts of the course content in both relevant and engaging ways.

For people with intellectual disabilities, computer based learning could make a big difference. Hawkrigde & Vincent (1992) said it enables pupils to take charge of their own learning. Students with intellectual disabilities will find stimulation through ‘enjoyable repetition’ and a gradual increase in level of challenge. “With computers”, they said, “learners can be less dependent and more capable.”

Blamires (1999) argued that technology provides access to life experiences and educational opportunities. It facilitates engagement with knowledge and people. Blamires states, “Speech,

pictures, words, and animation can be combined in interactive ways to structure concepts to suit the level of understanding of learners and their interests". Technology can create alternative ways of imparting information which may help people with intellectual disabilities, and particularly a poor grasp of language, assimilate more complex concepts. The varied use of visual stimuli makes the use of technology also particularly suitable for those with little or no hearing.

Interactive software encourages active involvement in learning, and allows the user to have control over the learning process (Pantelidis, 1993). This is especially important for people with intellectual disabilities who are often perceived as being passive. The learner can work at their own pace. They can repeat mistakes without irritating others (Salem-Darrow 1996), The computer will not tire of the learner repeating tasks or exercises, and will not get impatient of low speeds or wandering attention (Cromby et al, 1996).

An important development in educational software has recognised the value of learning through playing computer or video games: the advent of serious games and games based learning. When computer games emerged, the majority of the research on them focused on the negative aspects (Elgi & Meyers 1984). Pivec (2007) states that while it is widely recognised that games have an important role in early learning, as education becomes more formal, games tend to be seen as just an "unserious activity". More recently however, the positive aspects of games have been documented. In a review of both the positive and negative effects of playing videogames, Griffiths (2004) describes the potential of videogames in cognitive rehabilitation, for example in perceptual disorders, conceptual thinking, attention, concentration and memory in patients with brain damage following stroke or trauma.

In addition to these cognitive rehabilitation advantages, one of the primary advantages of games in learning is their ability to engage the learner voluntarily in sufficient repetitions of the activities to ensure learning takes place (Pivec, 2007). This is what Garris et al (2002) termed persistent reengagement, where the player returns to the task unprompted. Proof of the motivating power of computer game playing can be found in a report by Standen et al (2006a), a study to design a new navigational interface for people with intellectual disabilities. The users in this study needed to use the device regularly over a period of eighteen months in order to complete a baseline evaluation and to test each version of the prototype. This was easily achieved by allowing them to play computer games specifically designed for the study.

Instant feedback is another advantage that can be exploited in serious games so that an activity is easily linked with a learning outcome (Pivec, 2007).

Games can be structured with different levels of challenge. One of the primary functions of tutoring is to allow the learner to make progress by initially providing scaffolding, for example by controlling those elements of the task that are initially beyond the beginner's capability (Wood, Bruner & Ross, 1976). As the beginner becomes more familiar with elements of the task and develops the ability to carry it out independently the tutor intervenes less. The secret is to ensure a balance between success and challenge. The different skill levels that can be built into games can provide this.

There is increasing research evidence on the positive effects of computer games. Green & Bavelier (2003) found that playing action video games can give a person the ability to monitor more objects in their visual field and do so faster than a person who does not play such games. In their most recent study, Green & Bavelier (2007) found a causative relationship between action video game playing and increased spatial resolution of visual processing. In order to explore whether game playing might have benefits for people with intellectual disabilities, Standen et al (2006b) assessed the effect of playing a switch controlled computer game with a time limit for responses on choice reaction time. They found a significant decrease in choice reaction time in the intervention group compared to the control group who, for the same amount of time, played a game with no time limit. In a later study, Standen, Rees & Brown (2009) investigated whether computer games may give people with intellectual disabilities the opportunity to practice the underlying components of decision making, a skill in which they can experience difficulties. After repeated sessions playing a Tetris like game, the intervention group showed a significant improvement in two paper based tests of decision making.

Different types of games lend themselves to learning particular types of skills. Quiz based games for example are good for delivery of fact based information allowing the reinforcement of learning by feedback and repetition. Role playing games, on the other hand, may be better for increasing awareness of the repercussions of actions taken by the user, by allowing them to explore scenarios in a virtual world and witness the results of their actions.

The fact that the games themselves are being played using the ICT, will serve to reinforce parts of the ViPi curriculum content regarding input and output technologies, and using the computer. Being able to use a computer or smart phone is necessary for independent use of the game elements of ViPi, and so by a process of demonstration and repetition of the use of the games, it is expected that users will gain vital hands on experience with ICT.

Section 0 describes the games that are being created in ViPi.

3.2.6 Contributing to ViPi - Creating and uploading content

As explained in section 3.2.3, the ViPi portal is the interface to the ViPi Learning Objects (LO) repository. The LO repository is expected to be enriched by training content to be contributed by persons external to the ViPi team. However, in order to maintain a high quality for the content in the repository, all potential training content providers are expected to follow the registration procedure offered on the ViPi portal and described in section 3.2.1. To further ensure the quality of the content, only approved and registered (on the ViPi platform) trainers are allowed to take the role of “Content Provider”.

If you consider you are eligible for creating or suggesting learning material, you may apply for the role of “Content Provider” during your registration to the platform. The administrator will review your application, possibly come back to you asking for further authentication information, and finally activate your account and role within the ViPi platform. After that point and as long as you are logged into the platform (red-box number 1 in Figure 9), you will be able to see and access the

“Submit training content” functionality on the ViPi portal, as shown in Figure 9, red-box with number 2.

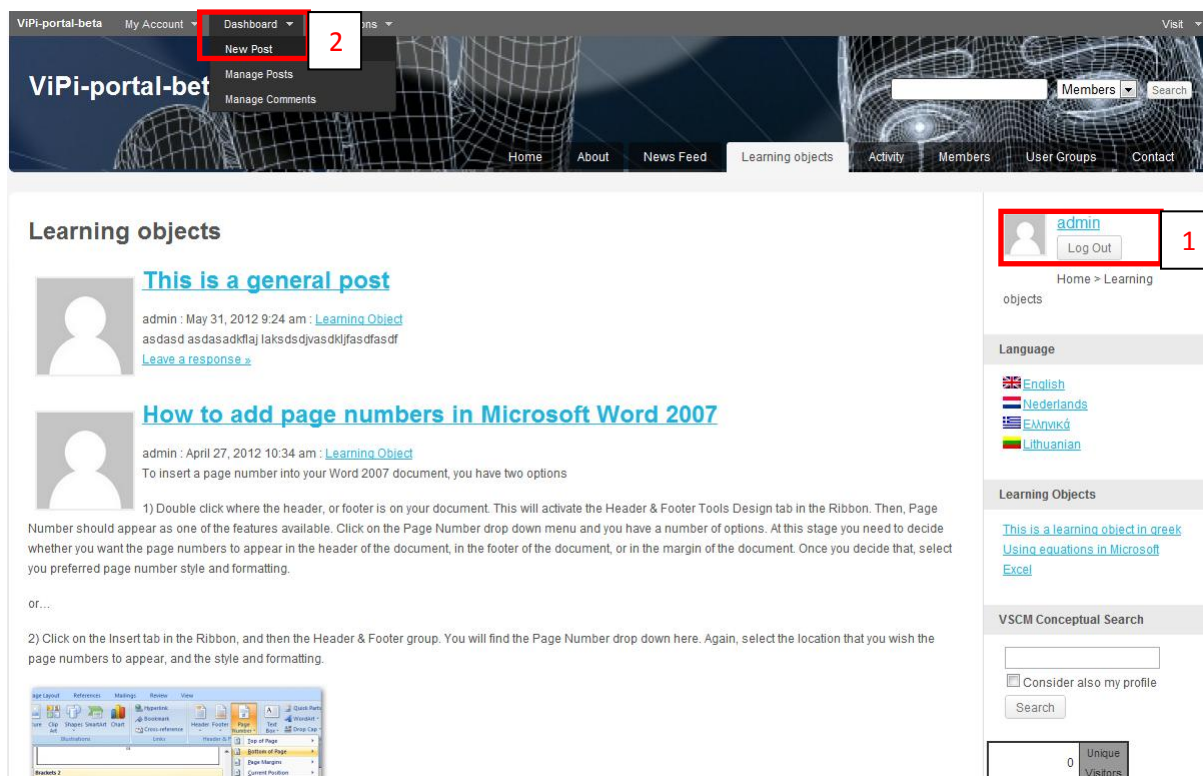


Figure 9: Showing the “Submit training content” functionality

Once you have content ready to be uploaded and shared within the ViPi LO repository, you can click on the “Submit training content” service and follow the steps to perform the uploading (see numbered indications in Figure 10). You will be requested to give the following information:

- Title: a title for the piece of content, that will describe the content in short and be visible to the users in search results (indication number 1)
 - Fields are also available to provide translations for the title in more languages. Initially, the supported languages are the English, Greek, Dutch and Lithuanian, but more can be added in the future
- Main content: you can write or copy-past here your content, upload and include pictures and other multimedia files using the dedicated button on the top of the box, provide links to documents and other Internet resources using the dedicated button, etc. (indication number 2a and 2b)
 - You will find tabs on the main content box to provide translations of the content in the supported languages. Translations are highly recommended in order to increase your audience, however, they are optional.
- Categorization of the content: last but not least, you will have to provide a categorization of the content using a pre-defined set of categories and tags. The categorization procedure is

guided, therefore, it is not expected that you will face problems. In any case, you will always be able to contact the administrator and seek help for finalising the submission of the content. (indication number 3a and 3b)

- The categorization is mandatory in order to support the later discovery of the content through the guided search engine. Indicatively, you will need to define the language(s) in which the content is provided, its accessibility level, whether it is associated with an accreditation type, the assistive devices for which it is accessible, the types of disabilities for which it is intended (if any specific exist), the skills it addresses and with which it can be associated, and others that will added gradually in the future.

1

Publish

Preview

Status: Draft [Edit](#)

Visibility: **Public** [Edit](#)

 Publish immediately [Edit](#)

[Move to Trash](#)

Publish

Categories

All Categories Most Used

- ☐ General
- ☒ Learning Object
- ☐ News Feed
- ☐ Uncategorized

3a

[+ Add New Category](#)

Tags

Separate tags with commas

[Choose from the most used tags](#)

Featured Image

[Set featured image](#)

3b

After completing all information, you will be able to “Submit” the content, as shown in Figure 10 (indication number 4). The content is not automatically published but it first undergoes a proof-read and approval process by the administrators. You will be notified as soon as the content is approved

and published in the repository or the reasons for its rejection and possibly follow up actions to correct it.

There is no limit on the number of learning objects that an eligible content provider can upload to the ViPi repository.

To edit or delete a previously uploaded content, you need to contact the ViPi administrators and pass your request, also explaining the reasons for this decision. They will then guide you through the process.

3.2.7 Discovering and downloading content using simple and advanced search capabilities

The ViPi portal hosts a variety of content types, from information articles, to news articles, to events, to learning objects. As explained in section 3.2.3, the learning objects are treated as a separate category of content, therefore, two separate search functionalities are offered; one for the portal content apart from learning objects and a second dedicated to the learning objects.

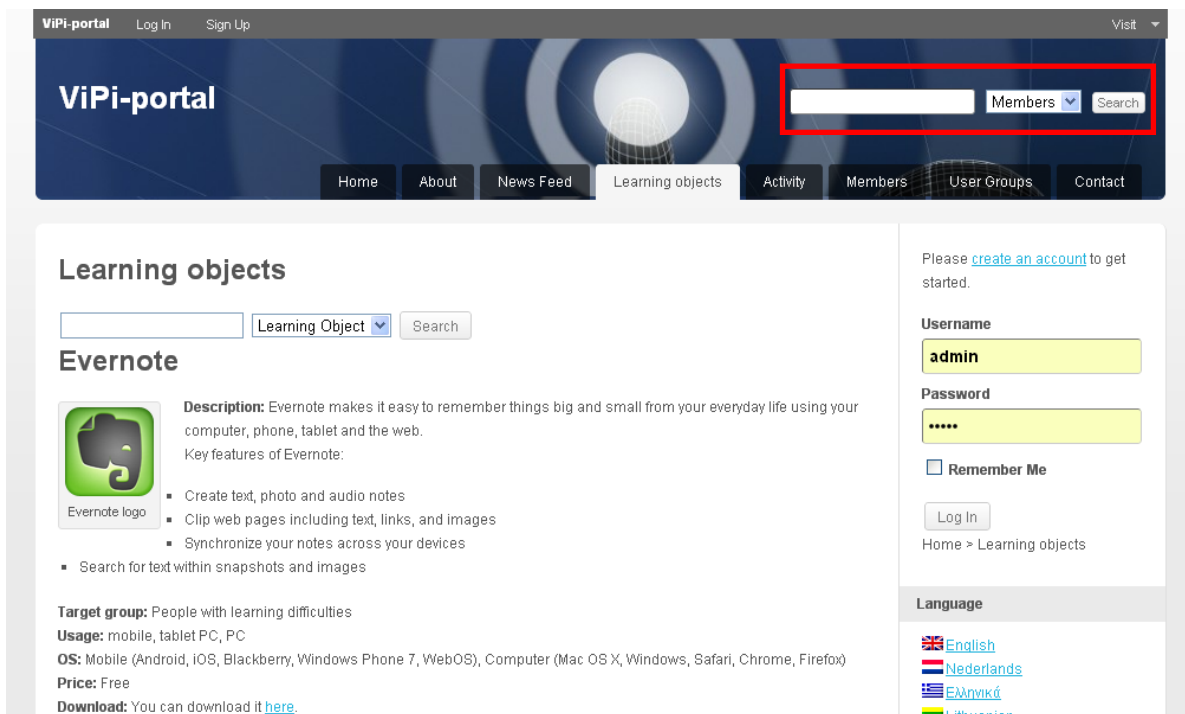
These two search functionalities are described in the following:

1. Search through the portal content, excluding learning objects

The general search functionality of the ViPi portal, from which the learning objects are excluded, is provided through the header space of every portal page. Figure 11 shows how the search engine looks like. Using this search engine to discover content in the portal is rather simple and similar to many other search functionalities available on the Web.

To perform a search, you need to type keywords in the available text box. The number of keywords is unlimited and they must be separated by a space. Then you hit the “enter” button and the processing of your search query starts. After a short time, the main page of the Portal changes and presents the results of your search, sorted based on relevance to the search criteria. The engine tries to discover content in the Portal, through all types of content entities, from pages, to single posts, to files and links.

You can browse through the results and open the ones you want by clicking on their title, which is a link to their dedicated page. After you check a result, you can return back to the result-set by clicking on the “Back” button of your browser.




ViPi-portal Log In Sign Up Visit

Home About News Feed Learning objects Activity Members User Groups Contact

Learning objects

Learning Object Search

Evernote

 Evernote logo

Description: Evernote makes it easy to remember things big and small from your everyday life using your computer, phone, tablet and the web.
Key features of Evernote:

- Create text, photo and audio notes
- Clip web pages including text, links, and images
- Synchronize your notes across your devices
- Search for text within snapshots and images

Target group: People with learning difficulties
Usage: mobile, tablet PC, PC
OS: Mobile (Android, iOS, Blackberry, Windows Phone 7, WebOS), Computer (Mac OS X, Windows, Safari, Chrome, Firefox)
Price: Free
Download: You can download it [here](#).

Please [create an account](#) to get started.

Username
admin

Password

☐ Remember Me

Log In

Home > Learning objects

Language

[English](#)
[Nederlands](#)
[Ελληνικά](#)
[Iithuanian](#)

Figure 11: The ViPi portal general search engine

2. Search through the Learning Objects' repository

Inside the "Learning objects" page that is accessible from the main menu of the ViPi Portal, you will find the dedicated search engine for the specific category of content, called learning objects. As explained in section 3.2.6 this type of content is created and uploaded by users with the role of "Content provider" and the size of the repository is expected to grow steadily.

This search engine is further split into two different options; the "Regular" and the "Guided" search options, as shown in figure X.

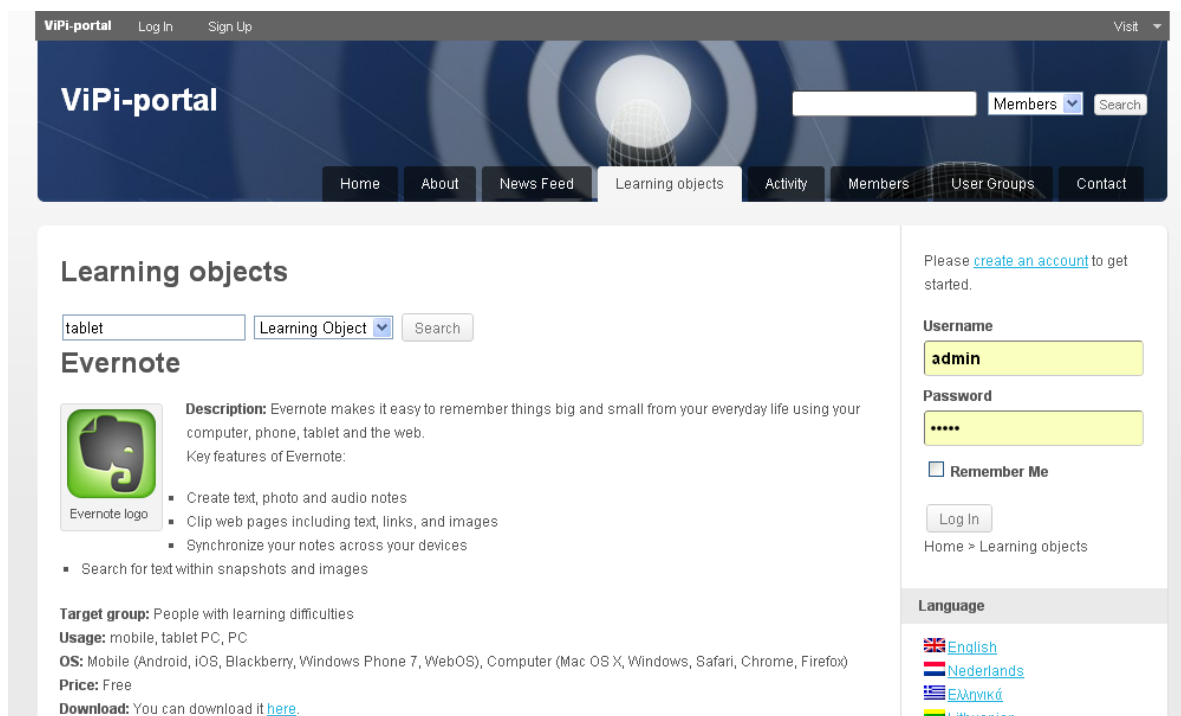


Figure 12: LO search engine

The **Regular search option** operates specifically on the Learning Objects content category and it comprises a basic keyword search, just like the general search engine described earlier. The difference is that the engine here tries to match the search criteria (keywords) to the content of the learning objects only, excluding any other type of content. The result is a page with a list of learning objects matching the search criteria. These are accessible exactly in the same way as the other content types, that is, clicking on their title will open a page with the content of the learning object.

The **Guided search option** operates in a different way. Two sub-options are provided; using the first sub-option, you can still type in the search text box and click on the “Enter” button to obtain results, however, instead of the engine to try to match your words with the content of the learning objects, it tries to match it with the categorization information that was provided by the content provider when he/she was uploading the learning object (Figure 14).

This categorization comprises a summary description of the content of the learning object, and is well defined such that it matches the needs of the potential users of the learning objects. For instance, you may be looking for learning objects on Internet browsing. Typing the keywords “internet browsing” in the regular search box, will also return for example, among others, the result with content “...using your email software is different than browsing the Internet...”. On the contrary, when you use the guided search box, the engine will match your words with the category “Web browsing and security” and will return only relevant results to your needs. Overall, the advantage is that the list of the returned results is clean, in the sense that you can be confident that the results are highly relevant to what you hoped to discover. In addition, the result-set will most likely be smaller, which will make it easier for you to navigate through them.

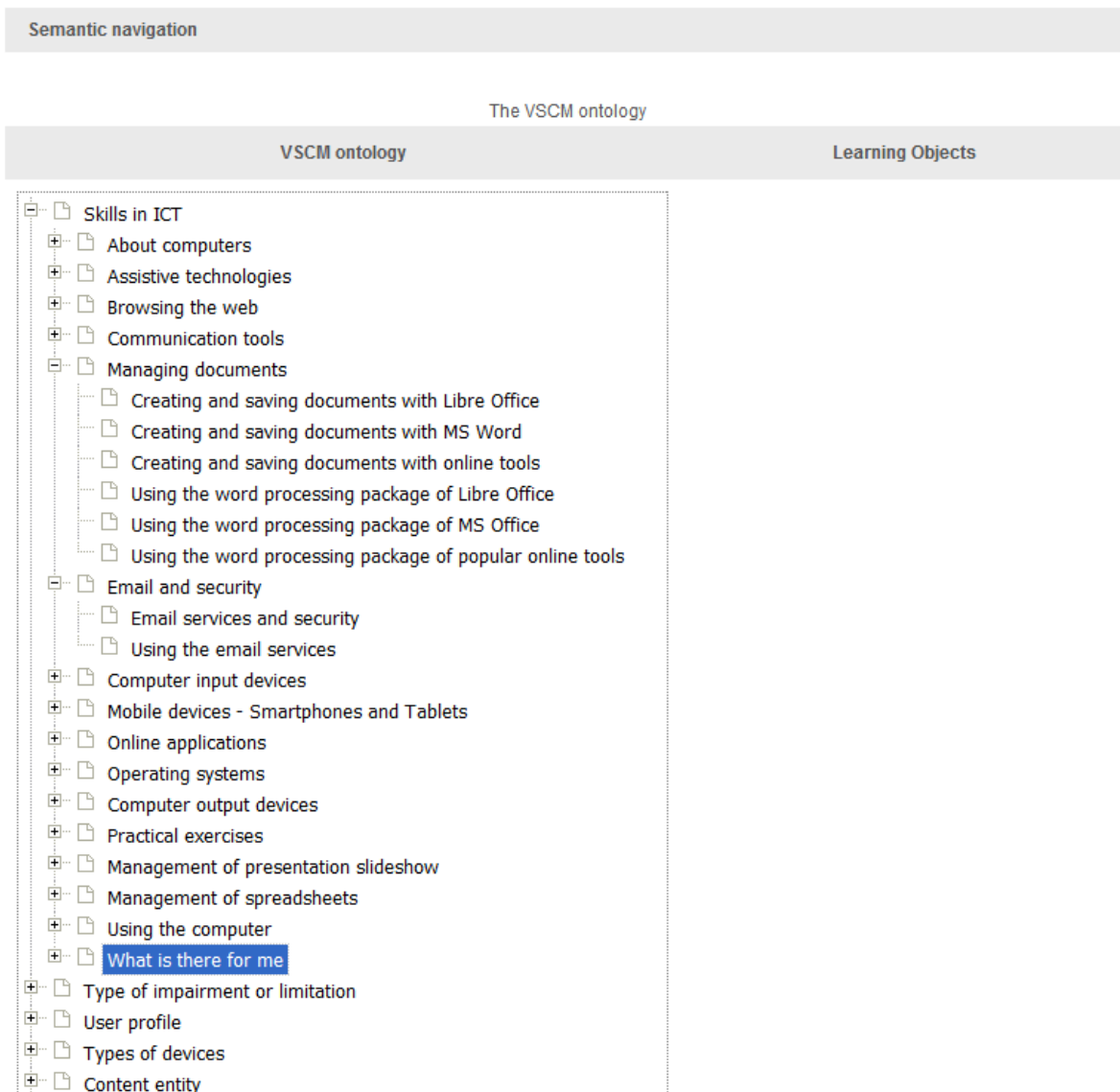


Figure 13: The LO guided search with navigation through the categories

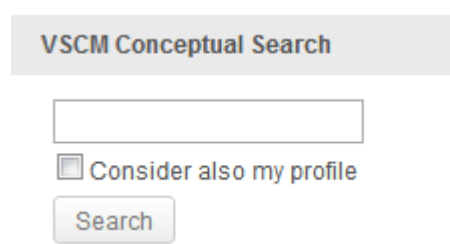


Figure 14: The LO guided search with free text entry and option to consider the pre-annotated profile

The second sub-option provided through the Guided search option, is the direct navigation through the categorization information of the learning objects and the direct selection of well-defined search criteria (Figure 13). For instance, you will be able to define the language for which you want to see results, specific types of learning objects (e.g. videos), content accessible for specific types of disabilities, content relevant to specific skills, and many more. As expected, the result-set will contain

a very good quality of results that will match your preferences with high accuracy. Figure 15 illustrates an example of selections and the respective result set.

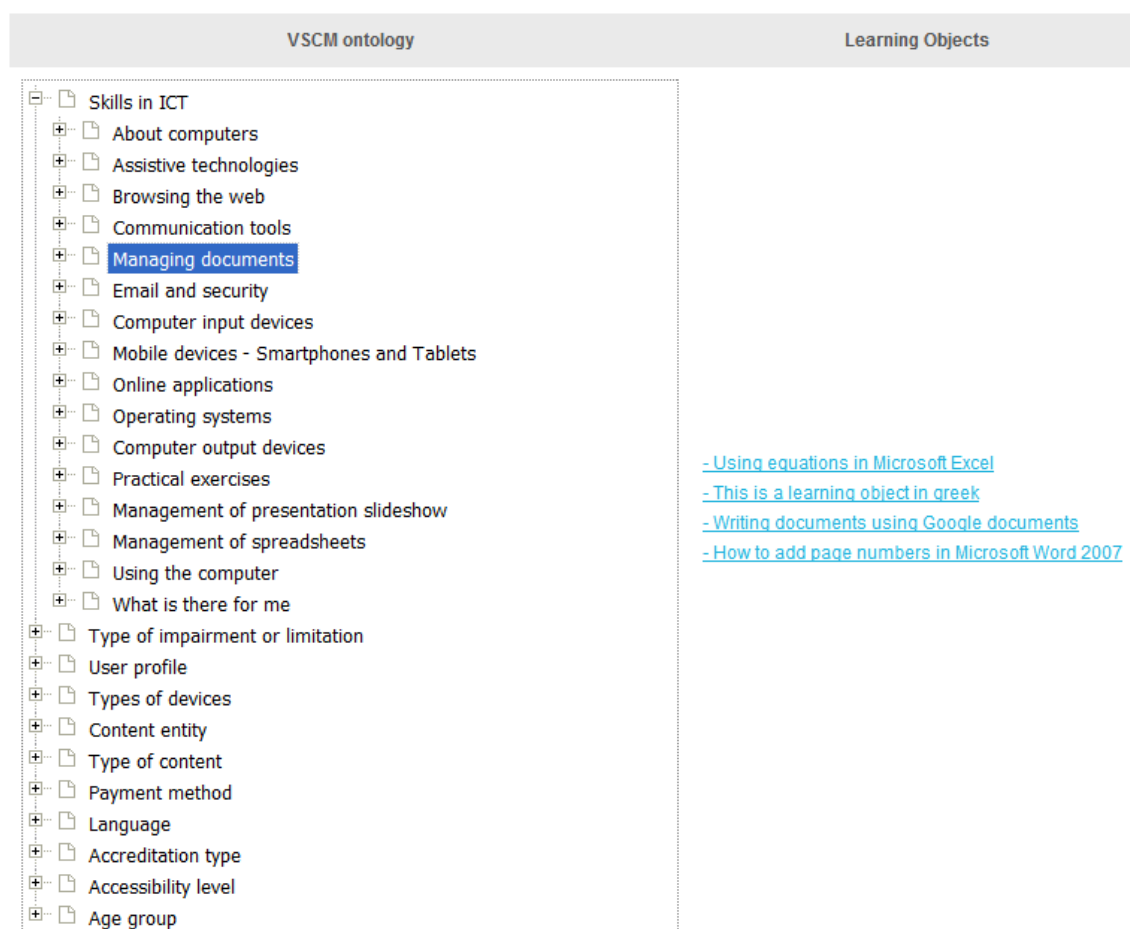


Figure 15: An example of results after searching for LOs related to “Managing documents”

Last but not least, an important feature is provided together with the Guided search option (with both sub-options described above). When you are logged in the ViPi platform, you are provided with the option to tell the search engine to consider your profile when performing the search. Remember that when you registered in the platform, as described in section 3.2.1, you described yourself (annotated your profile) with pre-defined categories and objects. These categories are internally mapped to the categorization information of the learning objects. Therefore, considering your profile in the search function means that your profile preferences will automatically be added to any preferences you define through your search query. In case of conflicts, your current selections take higher priority than your profile preferences. This feature is capable of offering you an easy and customisable pre-configuration of the search results, considerably minimizing your search effort.

It is noted that all search functionalities are available in all four supported languages of the ViPi platform (English, Greek, Dutch, and Lithuanian) and more languages may be added in the future.

3.2.8 Using the ViPi online training environment

The core training environment is offered through the ViPi platform, supported by ATutor. This learning management system was designed with accessibility as a priority. A wide range of features ensure assistive technology users can participate fully in learner, instructor, and administrative activities.

Once a user is logged into the ViPi platform, s/he can access also the training environment clicking on the provided link.

We outline below the different roles a user can have in the learning platform. This data is partially taken from the ATutor features page¹.

3.2.8.1 *Trainees*

- **Things Current:** When a trainee or instructor trainer logs into the platform, s/he will see the “My Start Page, which contains a list of all current information, providing quick access to ongoing activity in their courses.
- **My Courses :** Trainers and trainees can manage the learning environment courses they teach and/or are enrolled in. When trainees register they are automatically logged into “My Courses”.
- **Inbox/Messaging :** All users of the learning environment have an Inbox, through which they can send and receive private messages from other users. Messages sent are saved to Sent Messages, which remain for a set period before being deleted. Messages can be exported and saved externally.
- **Trainee Profile :** Trainees can add personal information about themselves for others to see, and include a profile picture, which is also displayed with forum posts. The photo gallery can be used to create a profile album, where a collection of profile pictures can be stored.
- **Adaptive Navigation:** Trainees can move through the learning environment content using global, hierarchical, or sequential navigation tools.
- **Work Groups:** Trainees can collaborate with others on course projects, communicate as a group through the forums, share resources using the File Storage utility, and work together authoring project documents. Exercises or assignments can be submitted to a group leader, or course instructor.
- **File Storage:** All users have their own file storage utility. File storage areas can also be shared across groups, or an entire course. Version control can be enabled to keep track of drafts or changes to documents.
- **Feedback:** Following an action (such as saving preference settings, or posting a message), feedback is given on the status of the operation. This could be a success message, warnings to consider, or errors to fix.

¹ <http://atutor.ca/atutor/features.php>

- **Preference Settings:** Trainees can control the learning environment features and the theme the environment is presented in. Trainees can control visual display settings, content adaptation settings, navigation controls and learning tools settings. The Preference Wizard is available from anywhere in the learning environment, to make quick adjustments to preference settings.
- **Communication Tools:** Trainees can communicate with others through their Inbox using their learning environment private mail, through the discussion forums, the chat rooms, or the "User's Online" tool. Threads and messages can be sorted in a variety of ways. Trainees can communicate with those in other courses through shared forum, or a community forum, or through networking contacts or groups. Subscribe to forums or topic threads to have messages sent by email. Trainees can edit their forum posts for a specified number of minutes, and can search through messages in the current course, enrolled courses, or all available courses.
- **Content Package Viewer:** Standard Content Packages can be exported from the ViPi learning environment to be viewed offline in the accompanying viewer.
- **Content Tracker:** Trainees can keep track of the content pages they have visited.
- **Test Manager:** Trainees can take tests (where available), review test results, and keep track of their scores. Course Guests can take practice tests. Trainees can return to a test previously started but not completed, and begin where they left off.
- **Glossary:** Words and phrases added to the glossary by the Trainer, can be accessed from terms embedded within content pages, or viewed alphabetically in their entirety using the Glossary tool.
- **Links Database:** Each course, and groups within courses, has a tool for collecting links to Web-based information. Both Trainees and Trainers can add links. Trainers can manage course links, and Trainees can manage group links.
- **Course Search:** A search engine allows Trainees to search course content, and search for courses in the course catalogue.

3.2.8.2 *Trainers*

- **Instructor Learning Environment Handbook:** Trainer documentation is linked from each section of the handbook to the screen of the environment it refers to. A link to the full Handbook is available on every screen. The online ATutor handbook can also be searched or browsed. If enabled, instructors can add their own notes to the handbook.
- **Guest Access to Courses:** Guests can be granted access to private courses through a guest URL, sent to them by a course Trainer. Guests can view, but not post content to a course.
- **SCORM Run-Time Environment & SCO Manager:** The ViPi learning environment has a SCORM run-time environment (RTE) and SCO (SCORM Shareable Content Object) package manager to add pre-packaged, interactive and interoperable content to your courses. It supports SCORM 1.2 LMS-RTE3.

- **Course Tool Preferences:** Trainers can choose from the available course tools and menu modules, and configure them for each particular course: optionally display tools in the main navigation bar, or link them into the course home page for quick access. Tools can be located on the course home page, or moved to a separate Trainee Tools page. There is drag-and-drop support for course tools to arrange their order.
- **Course Manage Page:** All learning environment tools can be accessed quickly under the Manage tab.
- **Content Usage:** Individual usage statistics can be reviewed to identify gaps in content coverage and the learning tendencies of each Trainee.
- **Work Groups Manager:** Trainers can manually create, or automatically generate work groups for a variety of purposes. Groups might be used to provide a private area where Trainees can work, to create an assignment submission area, to assign a test to specific Trainees, or for a variety of other possibilities.
- **File Storage:** In addition to the File Manager, which contains files associated with the learning environment content pages, the File Storage utility can be used to store private files, to share files with course members or group members, or can be used as a place to collect assignment submissions.
- **Assignment Drop Box:** Extending the File Storage, trainers can create file folders for collecting assignment submissions, collected from all course members, from group members, or from individuals. A collection of assignments can be zipped together and downloaded. Comments can be made on each submitted assignment for review by the submitter.
- **Content Editor:** Trainers can create content in HTML or plain text. This content can be imported from a local editor, or edited directly online. Release dates can be set to control when content is viewable to trainees. Content pages can be rearranged within a course. Related pages can be linked to content as references or relevant information. Use the File Manager while creating content to upload and link in resource files. Click on the **Insert** button next to a file in the file manager to embed a link or an image in a page while authoring content. Add Latex formatted mathematical notation and multimedia objects to content pages. Content authors can include scripts and style sheets to control the functionality and appearance of content. Tests can be associated with content for quick access to a test after completing a learning unit. Tests can also be setup as prerequisites, so Trainees must pass a test before accessing new content.
- **Visual Editor:** A JavaScript based WYSIWYG editor is available as an extension of the Content Editor so trainers can format course materials without knowing any HTML. Using the Visual Editor, you can paste an MS Word document to have it converted to learning environment content.
- **Accessibility Checker:** The [AChecker Web service](#) has been integrated into the Content Editor to allow authors to review the accessibility of their content to people with disabilities who may be

accessing the learning environment using assistive technology. A variety of standards are available for an international audience. AChecker automatically identifies known accessibility problems, and allows authors to make decisions on potential problems that AChecker cannot identify for certain. Accessibility reports are saved in the AChecker database, and allow ongoing monitoring of accessibility as content evolves.

- **Interoperable Content:** Trainers can export content from ViPi learning environment as **IMS/SCORM conformant Content Packages** that can be viewed offline in the accompanying viewer, or imported into a similar to the ViPi learning environment or another conformant e-learning system. Entire courses or individual course units can be packaged for viewing or redistribution. Content from other compliant systems can be imported into the ViPi learning environment. Also the import and export of complex content is possible, such as Java applets, Flash content, and other embedded programmed objects. Content packages can be imported and exported with **QTI Tests**, and **AccessForAll** adapted content together in a single package. **IMS Common Cartridges** can be imported, authored or modified, and exported. AccessForAll adapted content can also be imported and exported with common cartridges.
- **Reading List:** Trainers can gather a list of resources (books, papers, urls etc.) related to topics in a course, and create a Reading List based on those resources.
- **Backup Manager:** The entire content and structure of a course can be backed up and stored on the learning environment server, or downloaded and saved to your local computer for safe keeping. Create a copy of a course as a master for future sessions, or move a course to a new location. When creating a new course, choose from the available backups to populate the course.
- **News & Announcements:** Trainers can post messages to the course Home Page to guide Trainees through the course. News can be used for weekly introductions, announcing important dates, or posting critical information. The announcements page is always the first page a learner visits when they log into a course. An RSS feed can be turned on to display course announcements on other Web sites, or through news feed compilers.
- **File Manager:** Trainers can upload and manage course related files. Directories can be created to sort files and zip archives can be uploaded and unpacked. A popup file manager can be opened alongside the Content Editor or test question editors. Course files can be easily linked into content pages or test items as they are being created. Text or HTML files can be created or edited online. Rename files, or batch move or delete files.
- **Test Manager:** Trainers can create tests with multiple choice (M/C), multiple answer (M/A), true/false (T/F), Likert, ordering, matching, drag and drop, and a number of open ended question types. M/C, M/A, ordering, matching, and T/F questions are marked automatically. A test release window can be set to make a test available for a certain period, feedback can be customized, and test results can be archived. Self-marking tests can be created to provide

Trainees with instant feedback. Create surveys and link them to the course home page. Select from a pool of questions to generate random question quizzes. Assign tests to groups of Trainees. Add questions to a Question Bank, then select questions from it to assemble a test or quiz. Create image based test items, and arrange items horizontally or vertically. Questions can be arranged in any order or presented in random order. A test property can be set to allow guests to take tests. Add Latex formatted mathematical notation and multimedia objects to test questions. Test questions can be presented all on a single page, or one at a time. Data from guest test takers can be collected.

- **Polls:** Trainers can create one-question polls to quickly gather Trainees' opinions.
- **FAQs:** Trainers can create a collection of Frequently Asked Questions to provide additional documentation for Trainees.
- **Forums:** Trainers can create and manage multiple forums for each of their courses. Messages can be edited, deleted, locked from reading and/or replying, and "stuck" to the top of a thread list if a message is important. Administrators can create forums shared across multiple courses. Subscribe to forums, or to topic threads to have messages sent by email. Trainers can set a time limit for editing forum posts, so messages can be corrected if errors are made in the original post. Add Latex formatted mathematical notation and multimedia objects to Forum messages. Past forum discussions can be archived.
- **Course Email:** Trainers can send bulk email to course members, assistants, or both. Insert tokens to customize messages for each individual user.
- **Course Properties:** A default display language can be set for each course. Assign a course as public, protected, or private, or hide a course while it is being developed. Control Trainees' access to content packaging. Turn on an RSS feed for course announcements, and display them on other Web sites. Set the start date and finish dates for a course, during which it is available to Trainees. Create a custom splash page for each course. Upload a custom course icon as a visual representation of the course. The course directory name can be customized to extend Pretty URLs (described for Administrators) creating a unique URL for each course.
- **Enrolment Manager:** Trainers may import a comma separated list of Trainees to enrol in their courses, or export an enrolment list for staff keeping or to import into other systems. Create an enrolment list online to add new Trainees to a course. Automatically generate login names and passwords for Trainees and send them by email when a Trainee is enrolled in a course. Assign Trainees as Alumni so they can participate in discussions for future course sessions. Filter enrolled Trainees by login, first or last name, or email address.
- **Privileges:** Through the Enrolment Manager, Trainers can assign course members access to various Trainer tools, creating teaching assistants or co-instructors.

3.2.8.3 *Administrators (ViPi staff)*

- **Module Manager:** Administrators can install modules, enable and disable them, and define a default set of modules and menu blocks for new courses. Modules can be imported directly from a central module repository, and can be automatically uninstalled.
- **Security:** Administrators can enable CAPTCHA and email confirmation features to ensure the validity of those registering on the system.
- **Administrator's Home Page:** All administrator tools can be accessed quickly from a central Administrator Home Page.
- **Patcher Module:** Administrators can install patches issued at update.atutor.ca to keep their learning environment system up-to-date, and secure. The Patcher can also be used to share custom features across multiple installations.
- **Administrator ViPi Learning Environment Handbook:** Administrator documentation is linked from each section of the handbook to the screen of the learning environment it refers to. The Handbook can be translated, and multiple translations are managed for each environment installation.
- **Multiple Administrators:** Create multiple administrator accounts assigning specific privileges to each.
- **Pretty URLs:** Administrators can turn on Pretty URL to have URLs with variables attached, rewritten in a more readable form. When turned on, public courses in the learning environment can be indexed by search engines.
- **Master Student List:** Require newly created Trainee accounts to be authenticated against a custom imported student ID/PIN paired list.
- **Automated Installer and Upgrade:** A fast and easy way to install or upgrade the learning environment. In most cases it only takes a couple minutes, with little need for technical knowledge. Support is available through atutor.ca if you need help installing or upgrading
- **General Statistics:** View system login statistics.
- **Secure Course Content:** Secure course content directory to prevent unauthorized access to course files.
- **Instructor Request:** Review requesting Trainers' personal information, and assign Trainer status so they may create courses. Administrators are informed by email when new requests are made.
- **User Manager:** Users on a system can be sorted, personal information can be viewed, and access privileges can be modified. Send announcements to all users on a ViPi learning environment system, or to Trainees, or to Trainers. Search through the users; database using a variety of search strategies to find individual Trainees, or a group of Trainees. User accounts can be batch managed to rapidly add, modify, or delete accounts.

- **Enrolment Manager:** Administrators have all the same tools for managing course enrolments as Trainers do, with the ability to manage Trainees in any course. Create an enrolment list online to add new trainees to a course. Automatically generate login names and passwords for trainees and send them by email when a trainee is enrolled in a course. Assign trainers as Alumni so they can participate in discussions for future course sessions. Filter by login, first or last name, or email address.
- **Course Manager:** Much like the User Manager, courses on a system can be sorted, their properties modified, and their trainers managed. Create new courses and assign a Trainer. Use course backups to generate initial content for a new course. Create shared forums for select courses, or create a community forum for all courses. Easily jump between the administration section and courses without having to re-login each time. Administrators can create an enrolment "trigger" link, that when followed, Trainees are enrolled in specified courses automatically when they register.
- **Backup Manager:** Generate backups of courses to create master copies. Download backups for safe keeping or to move courses to another same learning environment server. Use backups to generate new courses.
- **Course Categories:** The ViPi learning environment course browser includes a course category browser, so courses can be sorted into a custom defined set of categories, perhaps by department or topic or grade level. Themes can be assigned to course categories so all courses within a category look the same.
- **Language Manager:** Import language packs directly from atutor.ca, or upload them into the system from a downloaded language pack. Once imported, edit languages as needed. Create an ATutor Language Pack by exporting the language from your learning environment system. Make the language pack available to others, and submit it to the atutor.ca Translation Forum as an attachment to have it added to the central language repository. Easily search through the text of the language to quickly find and customize interface, feedback, and module language. All languages are available in UTF-8, and courses can display multiple languages at the same time.

3.3 Smartphone / Tablets

The minimum recommended requirement (hardware and software) for running ViPi applications on a mobile device is:

- Software: ViPi App will work
 1. on all phones that are running Android version 2.3.x (Gingerbread) or higher, while on tablets Android 3.x (Honeycomb) or higher.
 2. In order to take advantage though of the whole new accessibility API we would suggest Android 4.0.x (Ice Cream Sandwich) or higher.

3. with WordPress 3.0 installations or higher
- Hardware: The minimum hardware requirements comprise 800 Mhz - 1GHZ CPU, 512MB or RAM, displays from 3.5" and higher.

3.3.1 Suggested mobile supportive technologies

3.3.1.1 *Basic Supportive Technologies on Android OS*

Mobile supportive technologies on Android are available with any phone running version 2.1 or later of Google's Android OS. Devices equipped with Android 2.2 and higher have access to Google's text-to-speech and speech recognition services. For better accessibility experience, it's essential to have a phone that includes either a D-pad (an optical button that allows to the user to arrow around the screen) or some other form of arrow keys. A physical QWERTY keyboard is also highly recommended for optimal use. All current smartphones and tablets have the ability of having a D-Pad installed, but the combination of touchscreen and physical keyboard is not so frequent in the market. In cases where a physical keyboard is required, there are various solutions through Bluetooth keyboards.

Main Android accessibility features that support People with Disabilities are Talk Back, Sound Back, and Kick Back, which are present since early Android operating system versions (mainly 2.x.x versions).

3.3.1.2 *TalkBack, Kickback, and SoundBack*

TalkBack, Kickback, and SoundBack are apps for the Android Accessibility Service to help blind and vision-impaired users use their devices more easily. These apps add spoken, audible, and vibration functionality services to your device. They are system applications that are pre-installed on most devices and are updated when the accessibility service is improved.

To download, go here:

- TalkBack: TalkBack adds spoken functionality services to your device.
https://play.google.com/store/apps/details?id=com.google.android.marvin.talkback&feature=search_result
- KickBack: KickBack provides haptic feedback for eyes-free computing.
https://play.google.com/store/apps/details?id=com.google.android.marvin.kickback&feature=related_apps
- SoundBack: SoundBack provides audible feedback for eyes-free computing.
https://play.google.com/store/apps/details?id=com.google.android.marvin.soundback&feature=related_apps
- IDEAL Accessibility Installer: IDEAL Accessibility Installer (previously called Platform Access Installer) was designed to make it easy for users to install current versions of Google's Android accessibility applications including TalkBack, KickBack, and

SoundBack (TKS) on their Android devices.

https://play.google.com/store/apps/details?id=com.ideal.backbundle&feature=related_apps

These apps only get activated if you explicitly turn on Accessibility. The steps to activate Accessibility are the following:

- Go to Settings
- Select Accessibility
- Enable Accessibility checkbox
- Enable TalkBack, KickBack, SoundBack checkboxes

3.3.1.3 *Tecla*

Tecla is a set of open software and hardware tools that facilitate switch access to electronic devices for people with mobility impairments. You can download it at

https://play.google.com/store/apps/details?id=ca.idi.tekla&feature=search_result.

For instructions on how to install, activate and select the Tecla Access keyboard, please visit:

<http://scyp.idrc.ocad.ca/projects/tekla/the-app>.

The Tecla App is an input method that enables external switch access to Android. This is a special kind of application that integrates tightly with the operating system enabling access to most of its functions.

Tecla supports wireless control of Android, via an on-screen keyboard, directly from a powered wheelchair or standard ability switches connected to a Tecla Shield: see

<http://scyp.idrc.ocad.ca/projects/tekla/the-shield>.

Features include:

- Provides access to the whole device, not just to apps written for it.
- It scans in full-colour on the built-in on-screen keyboard, so you don't have to be looking at a separate screen.
- Affordable, end-to-end, standards compliant solution that allows controlling your Android device using the powered wheelchair or adapted switches.
- Google Voice Actions integrated: Control the device and enter text using your voice.
- Scanning: Step, auto or inverse scanning with fully configurable scan speed.
- Completely usable via a single switch (and up to 4 switches) with auto-scan or reverse-scan. That means, no switch gestures required (e.g. double click, press and hold, timed sequences).

- Any switch event from Tecla Shield wakes up and unlocks the device (no need for someone to swipe the lock for you before being able to use independently).
- Any switch event from Tecla Shield answers an incoming call.
- Full-screen switch mode: Use the entire screen as a single switch.

3.3.1.4 *Supportive Technologies on Android ICS 4.0.x*

People with visual impairments are known to avoid using smartphones, mainly due to the lack of physical buttons that provide tactile feedback, which they need. Google tried to address this issue with new accessibility features incorporated to Android Ice Cream Sandwich (ver. 4.0.x).

The supportive experience begins at first setup of the device. A simple touch gesture during setup (clockwise square from upper left) activates all accessibility features and loads a setup tutorial. Once accessibility features are active, everything visible on the screen can be spoken aloud by the standard screen reader.

Android ICS has the Talk Back, Sound Back, and Kick Back accessibility features, which were also present in previous Android operating system versions.

The most important feature is the **explore-by-touch** mode that lets the user navigate without having to watch the screen. Touching the screen once, triggers a continuous audible feedback that identifies any UI component (e.g. an application shortcut) below. It actually reads out the name of the icon or whatever text the user's finger is resting on. A second touch (tap on the screen) on the same component launches the application with a full touch event. **Scrolling up and down** lists will require two fingers (since one-finger sliding is for identifying items).

The embedded Android Web browser supports a script-based screen reader for reading favourite web content and navigating sites. For improved readability, increasing the default font size to be used across the system is also available.

Android ICS pops-up the device's software (onscreen) QWERTY keyboard when the user taps on an input field, and if assistive technology functionality is enabled, Talk Back identifies each key as we move our finger around the keyboard. For selecting / activating a specific letter the user has just to lift his/her finger off the key.

Source: <http://support.google.com/ics/nexus/?hl=en&topic=1632130#topic=2492340&rd=1>

3.3.1.5 *Supportive Technologies add-ons in Android*

Eyes-Free Keyboard is a free app from the Android market (now known as Google Play) (<https://play.google.com/store/apps/details?id=com.googlecode.eyesfree.inputmethod.latin>) that you can download to help with this problem. Although we found significantly less inconsistency when typing with Eyes-Free Keyboard, the process was still not 100-percent accurate. The free app also includes a **virtual D-pad** that can help with general navigation and with activating icons and buttons. When you are not in an edit field for typing, the bottom portion of the screen contains the D-pad, the use of which allows you to swipe up, down, right, or left to move from icon to icon or among other

screen elements. Simply tap anywhere on the D-pad portion of the screen to activate an icon or button. Another alternative is Full Keyboard (<https://play.google.com/store/apps/details?id=com.hmw.android.fullkeyboard>) which also combines a keyboard with a working d-pad.

It would be useful also to mention that the 3rd party Ideal **Android Vox** browser (renamed in January 2012 back to its initial name, IDEAL Web Reader <https://play.google.com/store/apps/details?id=com.ideal.androidvox2>) as an alternative to the built-in browser. Vox browser greatly improves the supportive browsing experience, with enhanced tools for navigating by a variety of elements such as heading, table, form, sentence, word, and character. In order to use this functionality, User must have a phone with a QWERTY keyboard or use an external wireless keyboard.

3.3.2 Using the accessibility features in Android ViPi app

The ViPi mobile application takes full advantage of the accessibility API features of Android ICS 4.0.x (i.e. explore by touch, tap twice for shortcut activation, scroll down/up using two fingers, Text-to-Speech narration, etc.) as well as, follows the accessibility features that the user may have selected in the general settings of his mobile device or tablet (e.g. screen contrast, font size, etc.)

3.3.3 Registering with ViPi

Registration takes place at the main ViPi integrated platform, so that user inputs all necessary information (language, type of disability, etc.), while mobile version offers access to ViPi information the moment the user is mobile. Through his/her device, the user can login with his/her own credentials in order to acquire the functionality provided, further to just reading the postings (i.e. make comments, rate articles, subscribe to content, etc.)

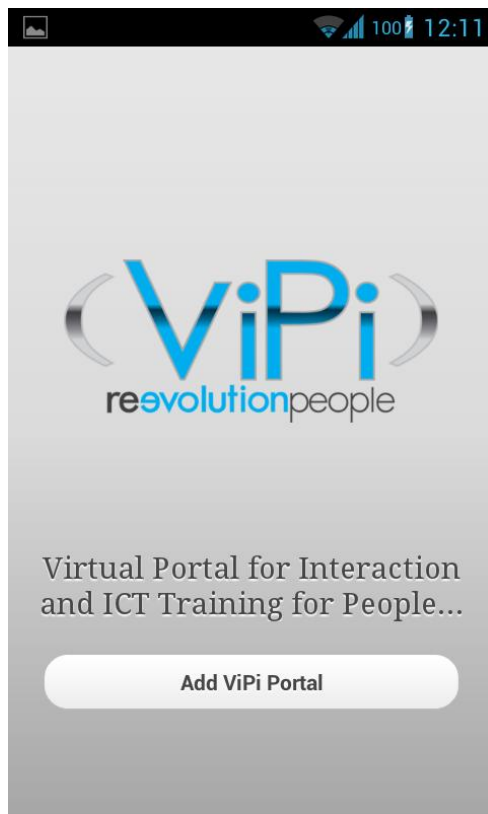


Figure 16: ViPi mobile client splash screen

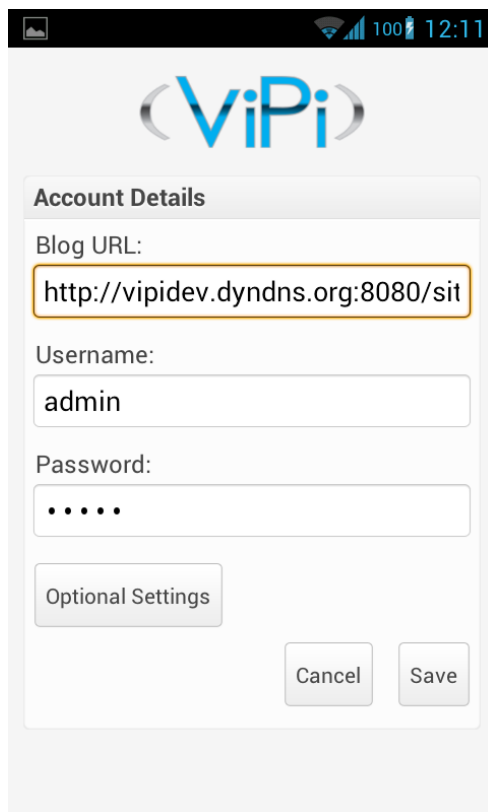


Figure 17: Login by input of credentials

3.3.4 Reading news and subscribing to content

As long as the User has not used his/her credentials to login to the ViPi service the only available functionality is to read news / content /postings. In order for the User to be able to interact and use the social functionality of ViPi platform, he/she must login.

After User has logged-in to the ViPi service has all interactive functionality available, comprising making comments to posted material, rating articles, subscribing to content, etc.

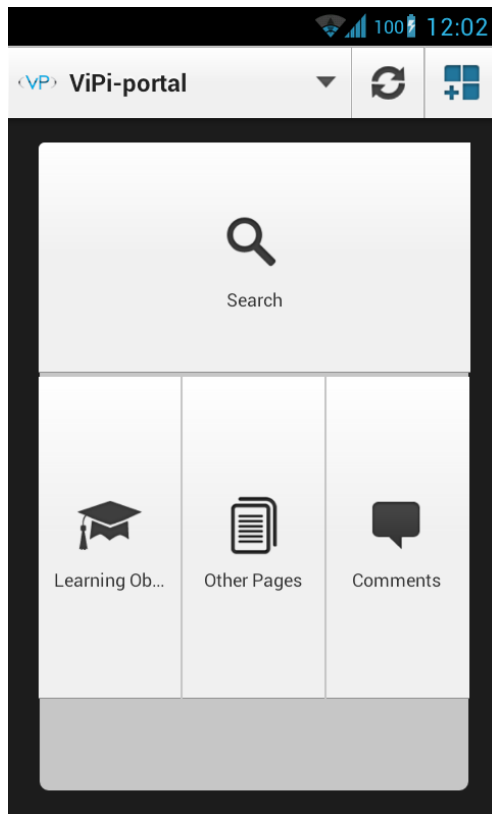
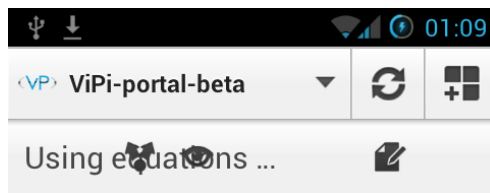


Figure 18: Selections on main mobile ViPi screen (search, browse Learning Objects, see comments and other pages)



1. You are ready to build your own function (an equation). There is a single keystroke that informs Excel of your intention. Press the equal key (=). If you can write the equation, Excel can perform the calculation. This module will deal with four simple functions; add, subtract, multiply and divide.

	A	B	C	D	E	F	G	H	I
1		add		subtract		multiply		divide	
2		6		6		6		6	
3		3		3		3		3	
4									

2. If you were to state the process for adding the numbers in column B it would be "six plus

Figure 19: Reading an article / posting on mobile ViPi client

3.3.5 Finding appropriate content

The User has the ability to find the content s/he prefers either by browsing among posted material or by using the searching functionalities available by the ViPi mobile client.

There is a "simple search" functionality available, which carries out searches to all ViPi posted information, except Learning Objects. Specifically for such (learning) content search a step-by-step searching mechanism exists, which uses semantic keyword searching throughout the ViPi ontology. Both functionalities are presented in the following section (3.3.6)

3.3.6 Performing a simple and advanced search

As it was mentioned in the previous paragraph there is a "simple search" functionality available in the mobile ViPi client, which performs search to the whole ViPi posted information, except Learning Objects. The User by pressing the search icon is presented with a pop-up input box where he / she can enter the search keyword. In the case of a successful search, a list of results is presented to the User for further selection of the subjects of interest.

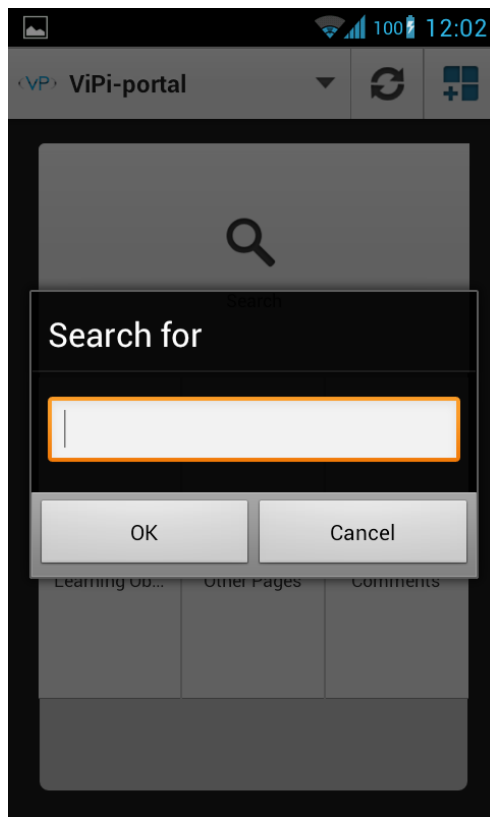


Figure 20: Simple search functionality of ViPi mobile client

A second searching mechanism is also available, namely the “advanced search”, which carries out step-by-step searching (and uses semantic keyword searching throughout the ViPi ontology) by following the “narrow down” of results paradigm. With this advanced search functionality, the User is able to find subjects of interest among all posted Learning objects.

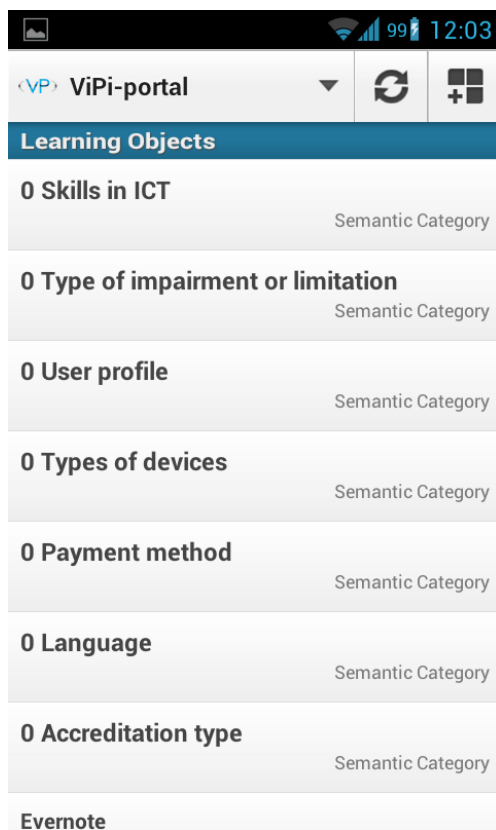


Figure 21: Semantic step-by-step search (advanced search) throughout ViPi ontology

3.3.7 Using the ViPi mobile social network

The mobile ViPi client has the ability to take advantage of the social networking nature of the ViPi platform comprising:

- Sharing with the Community (Facebook, Twitter, etc. depending on which social networking applications the User has already installed on his / her mobile)
- Commenting on postings: The User has the ability (but always depending on the access level of his / her profile) to comment on the posted to ViPi platform information, creating in this way a social discussion on relevant to ViPi scope subjects
- Rating postings

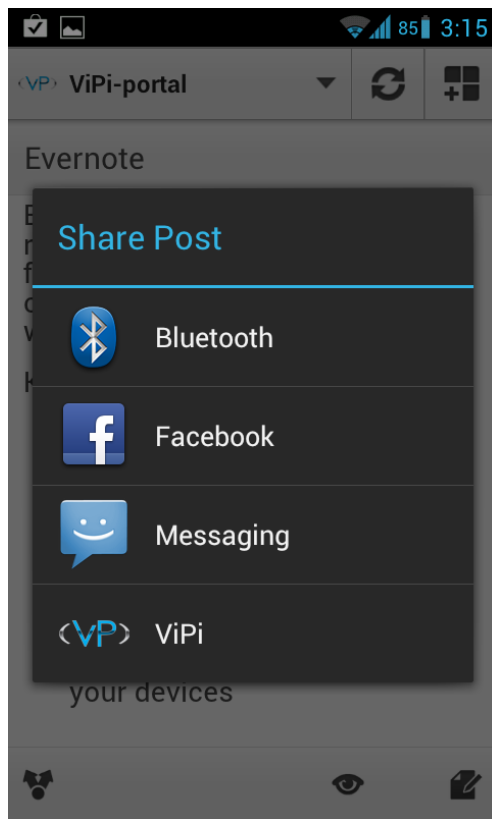


Figure 22: Ability to share a ViPi posted information with the Community

3.3.8 Playing serious games (mobile versions)

The users will have the opportunity to download Learning material from the ViPi platform, either through the main (desktop) site or through the mobile ViPi client. Serious games constitute a major type of Learning Objects, and as such can be either installed and played as native Android applications, or through the integrated browser as flash games.

4 Description of ViPi Games

A number of serious games for desktop have already been made ready in a beta version (true false ICT, Escapology ICT and Rob the Mob ICT), while final mobile games will be released end of September 2012. By the end of 2012, following games will be ready in all partner languages:

- Desktop based
 - True False ICT Quiz
 - Escapology ICT
 - Rob the Mob ICT
 - A role playing game on internet security/safety issues (as yet unnamed)
- Mobile based
 - Matching Computer Pairs
 - Computer beginner Quiz
 - Input devices Quiz



Figure 23: Screenshots of 1st mobile game (Android based)

4.1 Memobile game

Memobile is a collection of 3 games designed and realized to help people with difficulties in memorizing the simple functions or components of computers. Memobile is a program for mobile touch phones and is developed for Android (APK package file).

It requires Adobe Air (available for free on Android Market).

The games are composed of:

- learn
- play and memorize
- discover

The interface is simple and friendly:



Figure 24: Memo, the little boy, is a tutor for the users.



Figure 25: Startscreen.

To install, connect your USB cable to the PC and to the mobile. Depending on your operating system in your pc you will have a different view. You can copy the mobile file under preferred folder, e.g. to "Games". Then open your mobile and go in the main menu. Then click on "Applications". Your game

will be there. Click on Memobile.APK file and open it. You will find the main page, click on “PLAY and LEARN” and play your game.

At his stage you have 3 choices to click on:

- “back”: will come back to the main page;
- “play game”: will start the game from the beginning;
- “next”: will guide you through the game components.

After clicking on “next” you will be guided through the game components, instructions and game play.



Figure 26: The different game components.

4.2 Escapology – ICT

4.2.1 The Escapology engine

This Flash game allows the user to play a hangman style game where they must guess words relating to a certain topic. The topic and sub-topic can be selected by the user so that they can work on a specific subject area. Navigation can always be achieved through use of the keyboard or by use of the mouse.

Content is added in the form of xml files which may be created manually or with the help of the Escapology game editor (a Shockwave application developed to create correctly formatted xml files from a simple and intuitive interface). Feedback is given after each question, and every question word has an associated clue that hints at the answer to the hangman game.

The materials provided cover aspects of Basic ICT Skills in English, and will be translated to cover also Greek, Dutch and Lithuanian.

4.2.2 Playing the game

On starting Escapology the user is presented with a language selection screen (Figure 27). This can be selected using the mouse or keyboard, and localises the content for the rest of the game.



Figure 27 : Language selection screen

Following this the user enters the category selection screens. There are three initial categories (Figure 28), with sub categories appearing as a new menu (see example in Figure 29) as follows:

- **Computers**
 - Computer parts (11 words)
 - Using the computer (35 words)
 - Assistive technology (14 words)
- **Going Online**
 - Web browsing (22 words)
 - Safety (17 words)
 - Email (17 words)
 - Communication software (13 words)
 - Mobile phones (18 words)
- **Software**
 - Presentations (10 words)
 - Spreadsheets (15 words)
 - Windows (30 words)
 - Word processing (19 words)

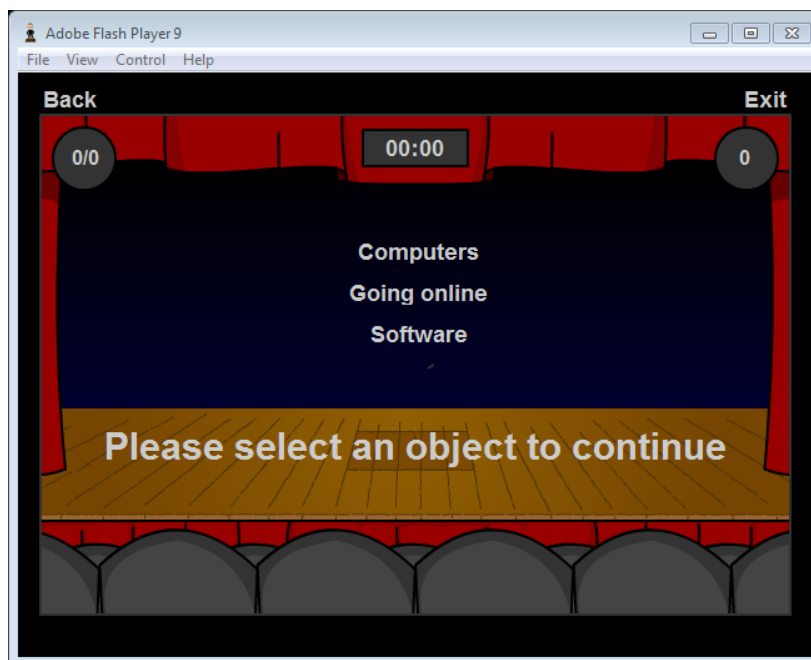


Figure 28 : Category selection

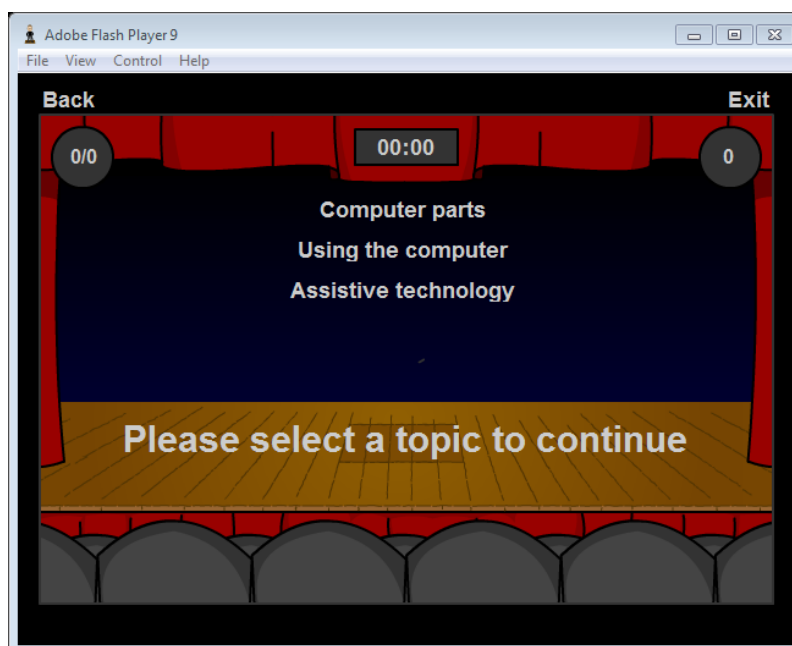


Figure 29 : Sub-category selection

Finally a game-play level must be chosen (see the capture in Figure 30). This determines the amount of time available for the user to guess the word. The options are:

- Easy (2minutes)
- Normal (1minute)
- Hard (30 seconds)

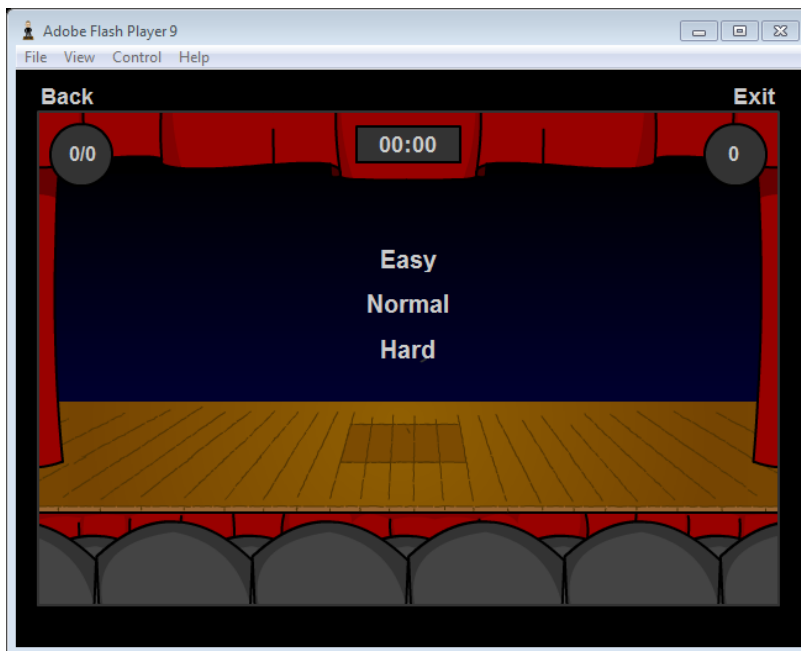


Figure 30 : Level selection

Once a category and sub category and level have been selected, the game engine selects a word from that database at random and presents it as a 'hangman' style word game. The user must guess letters that are in the word. Incorrect guesses waste time. The gameplay screen is shown in Figure 31. The word is represented by asterisks for each letter. The letters of the alphabet are displayed below. The sub-category is displayed as a title. The question number in that category is displayed at the top left of the screen. Finally a 'clue' button is available. Pressing this displays a hint or clue as to the word the user is guessing. An example of this is shown in Figure 32. Again using the clue wastes some question answering time.

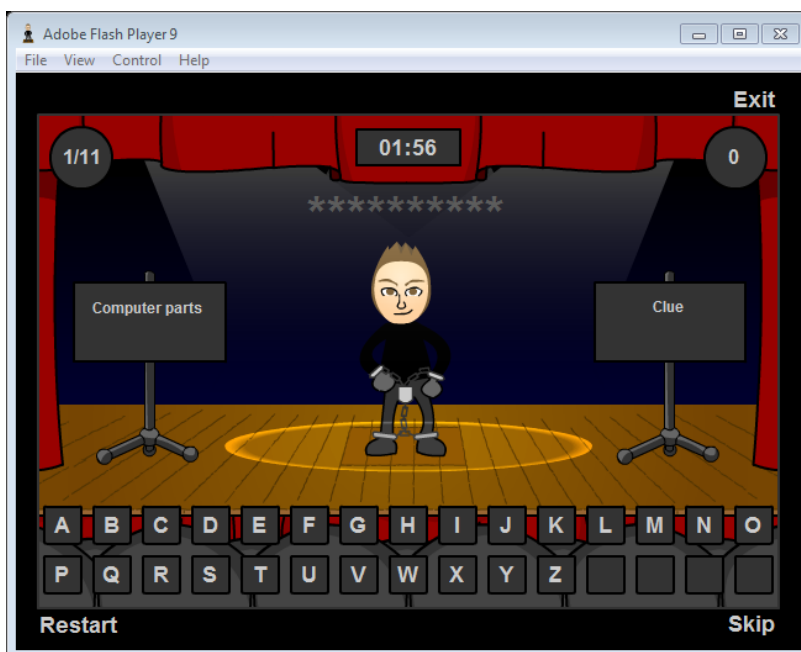


Figure 31 : Gameplay screen

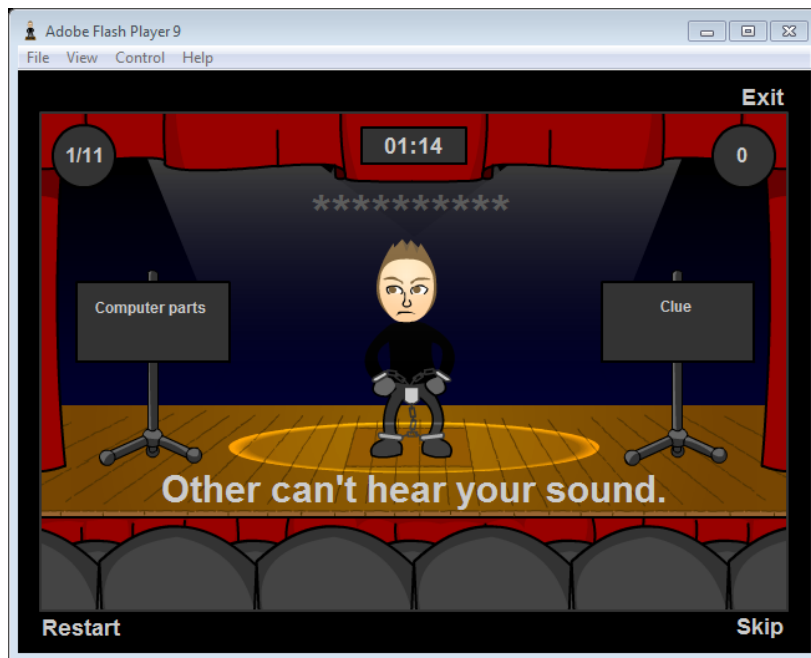


Figure 32 : An example of using the clue

As game-play continues, correctly guessed letters are displayed in the word replacing the asterisks, while letters that have been correctly guessed are greyed out from the letter list (see Figure 33). The round ends when either:

1. The word is guessed correctly
2. The time runs out

Either way the feedback screen then displays (see the example in Figure 34). This provides a little more information about the subject word. The game progresses to offer the user the next word puzzle to solve.

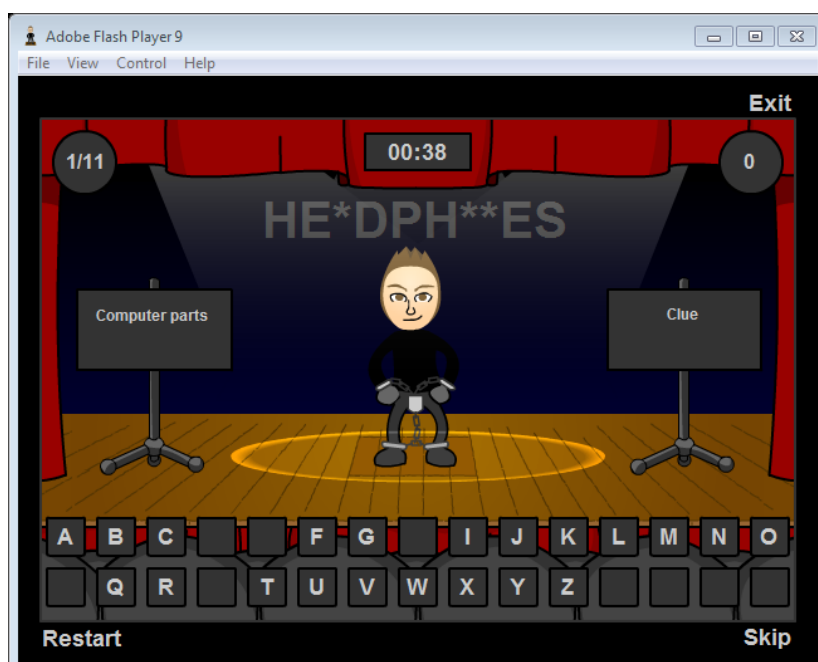


Figure 33 : Gameplay continues – correctly guessed letters appear in the word and the time counts down

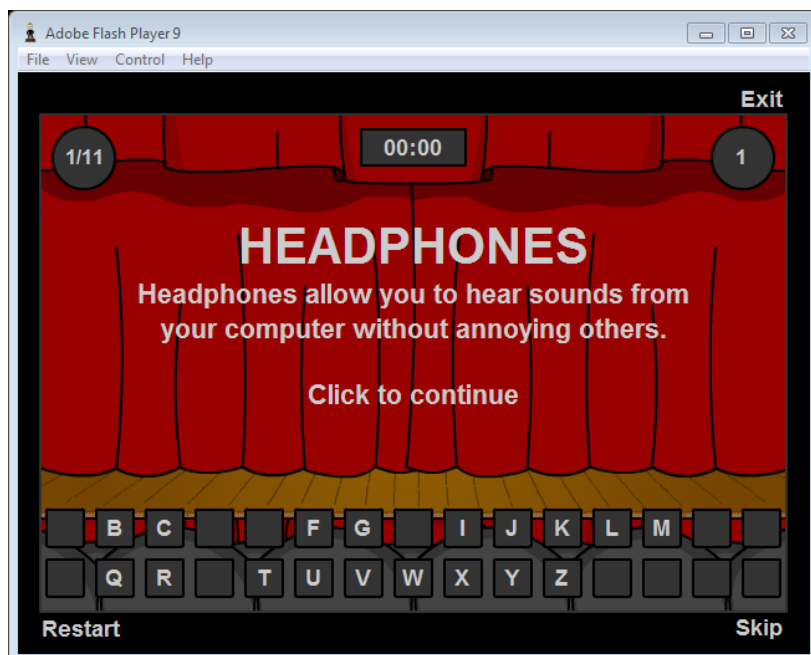


Figure 34 : Feedback screen

4.3 Rob the Mob - ICT

4.3.1 The Rob the Mob engine

This Flash game template presents multiple choice quiz content in the form of a betting card game. The content is drawn from an xml page to be presented by the game format. The user can select which subject they want to answer questions on before betting. The idea of the game is to 'break the house' – i.e. get all the money from the gangster. The user starts with \$1000 and the bank with \$9000. To play the game, the user places bets on their ability to answer questions on a particular subject. If the user chooses the right answer card, they win the bet and take money from the house. If not the house takes the user's stake. Navigation can always be achieved through use of the keyboard or by use of the mouse.

Content is added in the form of xml files which may be created manually or with the help of the Rob the Mob game editor (a Shockwave application developed to create correctly formatted xml files from a simple and intuitive interface). Feedback is given after each question has been answered – giving the correct answer and sometimes a little more information about the subject.

The materials provided cover aspects of Basic ICT Skills in English, and will be translated to cover also Greek, Dutch and Lithuanian.

4.3.2 Playing the game

The game begins with the splash screen shown in Figure 35. This shows the available quizzes. In this case the only quiz is called Basic ICT. It also shows the available languages, and the user may select

their own language by pressing on the appropriate flag icon at the bottom right of this screen. Languages available are English, Dutch, Lithuanian and Greek.



Figure 35 : The Rob the Mob start screen

On selecting the quiz Basics of ICT, the splash screen changes to show the available question subjects for the game. Each set has a number in brackets denoting the number of questions available on that subject (see Figure 36)



Figure 36 : The sub menu showing the question topics and the number of available questions for each

On selection of a topic, the game begins. At the top of the initial screen (Figure 37), the display shows the player's total money on the left, the mob's total money on the right, and the stake in the centre. To place a bet, the user clicks on their pile of money. The question and bet dialogue opens (Figure 38) and allows the user to place a bet of either \$1000, \$500, \$250, \$100 or \$50. The user may read the question at this point and decide how much they want to bet on getting the correct answer. On selecting a stake amount, the stake options disappear and the stake amount is transferred to the stake box (top centre in Figure 39).

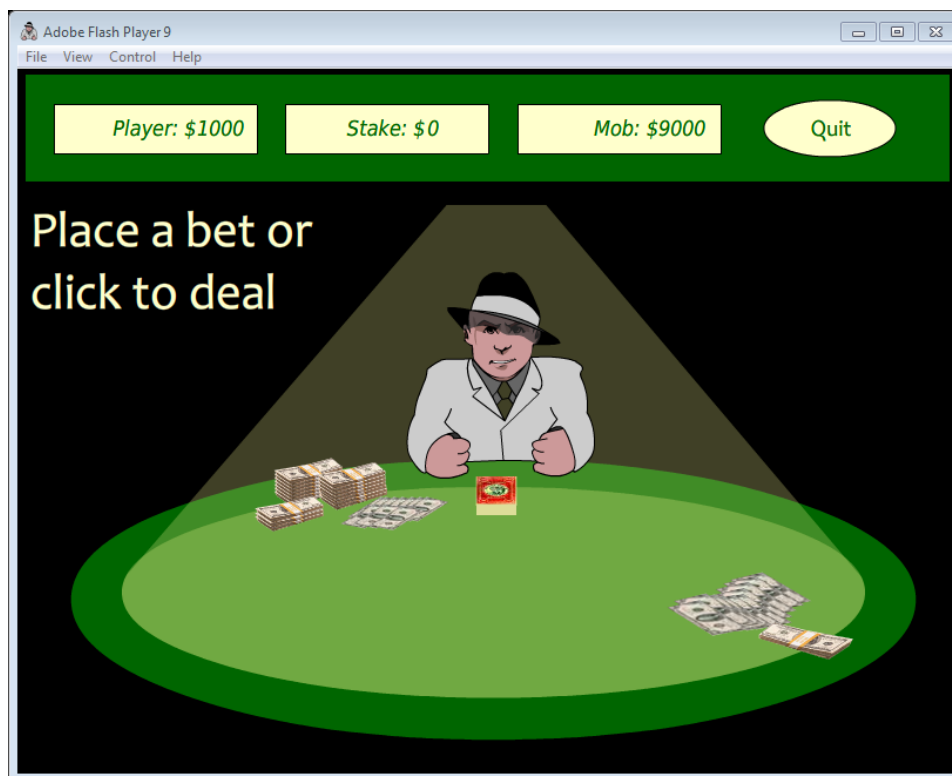


Figure 37 : The initial game screen. Click on the money to place a bet.



Figure 38 : The question and bet dialogue



Figure 39 : The screen after stake selection

The user then selects an answer to the question. If it is right the user wins (as in Figure 40). If the answer is wrong the user loses (as in Figure 41). The money transfers from player to mob or vice versa until the bet is settled. If a wrong answer was given a little feedback is given to the player.



Figure 40 : A winning answer



Figure 41 : A losing answer

The game continues in this vein until all questions on the subject have been exhausted. The player then selects a new category subject for the questions, and the game proceeds. The idea of the game is to get all the mob's money and not to lose all yours, before the questions have been used up.

4.4 ICT - True or False

4.4.1 The True/False Quiz engine

This Flash game template can present graphic, and text content as the means to present information, and challenge players using questions of a true or false nature. The navigation is carried out with standardised menus and controls. All content and layout is dynamic and editable, at present this must be done by manually editing xml files. It is hoped that functionality will be added to the Rob the Mob and Escapology editor to allow creation of True False quizzes.

The materials provided cover aspects of Basic ICT Skills in English, and will be translated to cover also Greek, Dutch and Lithuanian. Navigation can always be achieved through use of the keyboard (arrow keys to move and space to select) or by use of the mouse.

Feedback is given after each question, after each round, and at the end of the quiz. The final screen allows the user to save all feedback in the form of a pdf file.

4.4.2 Playing the game

The game begins with the splash screen shown in Figure 42. This highlights the funding routes under which the game was created and displays the project logos for them. The engine was originally developed under the Goal and Game On projects. The ICT content was developed under ViPi with an addition of an editor program to allow stakeholders to create their own quiz content. An audio introduction also plays and guides the user with the appropriate keypress to continue.



Figure 42 : The splash screen for the ICT True or False quiz

The splash screen is followed after a user input by an instruction screen (as seen in Figure 43). The instructions are presented in both audio and text format, and are further enhanced by the use of an animation.

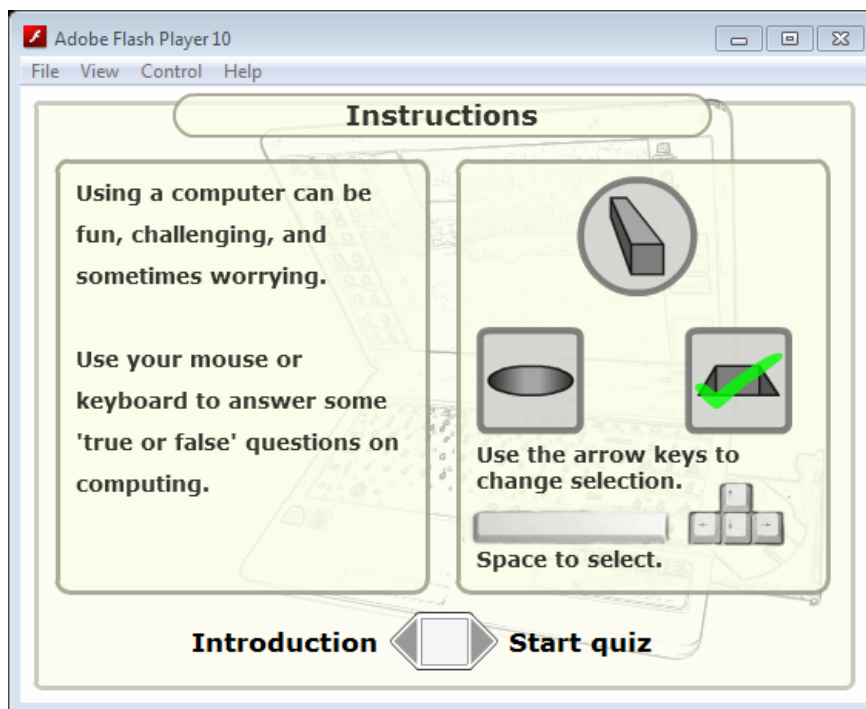


Figure 43 : The instruction screen

Following the instruction screen, the quiz begins. It has four rounds, each of which is introduced with a title screen (see Figure 44), follows on with the questions (one per page), and ends with a feedback screen. The rounds follow on one after the other, and the subjects covered are:

- Using your computer
- Using the internet
- Using email
- Staying safe

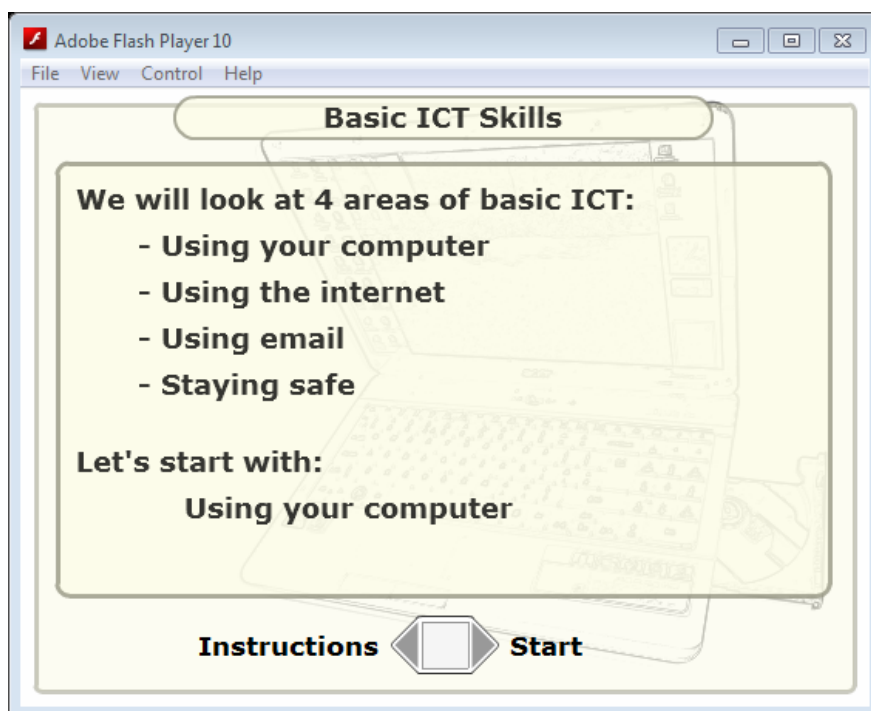


Figure 44 : The first section introduction screen

The question screens (see Figure 45) show the question number and how many questions there are in total (e.g. question 1 of 7). It also displays the question category heading, the question itself, and the answer boxes – True or False. The question is read aloud (this is done through pre-recorded and encoded mp3 sound files). When the user hovers the mouse over an answer it is read aloud, or if the user switches between highlighting the answers with the keyboard controls, the answer box selected is also read aloud.

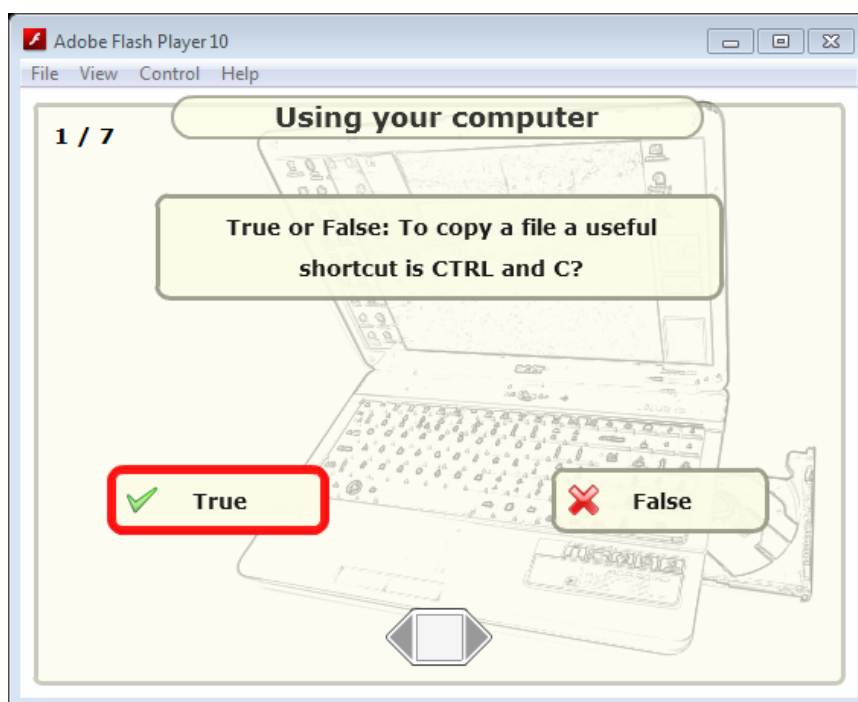


Figure 45 : An example question screen

On selection of an answer (using space bar or a mouse click) the user is instantly provided with feedback (see Figure 46). This is in the form of a happy or sad face, accompanying positive or negative sound and the display and reading of a feedback statement giving the user further information about the question subject.

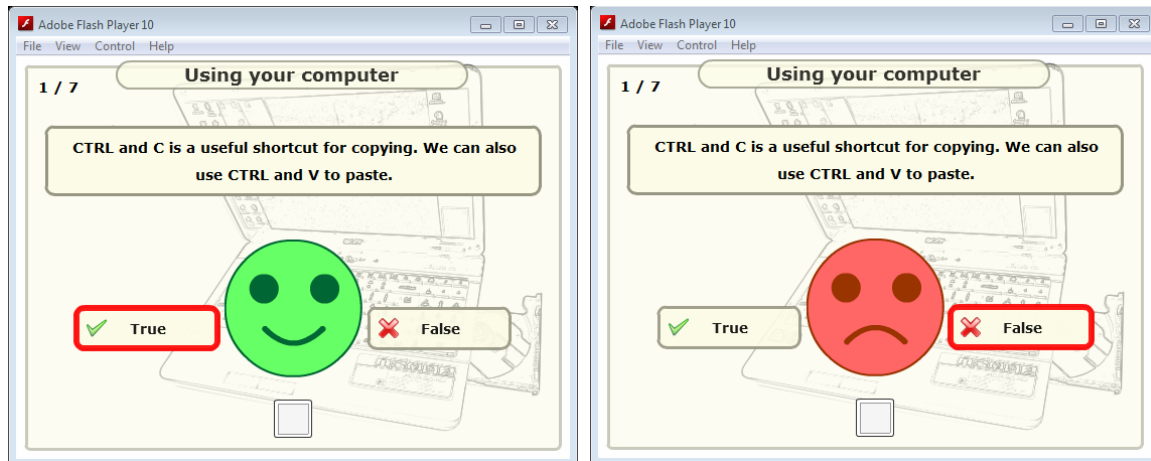


Figure 46 : Examples of positive and negative feedback for a question

When the question set is completed, there is a round feedback screen which displays the user's results in that round (see Figure 47).

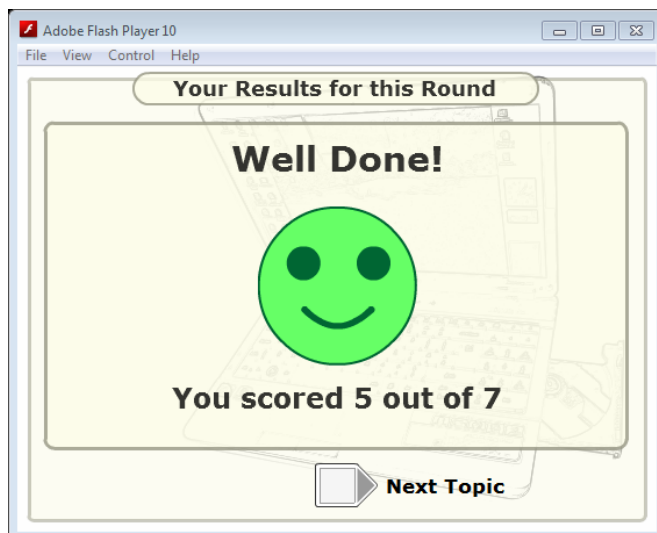


Figure 47 : Round feedback page

On completion, a summary screen is displayed (Figure 48), showing the number scored out of the number possible, and the derived percentage value.

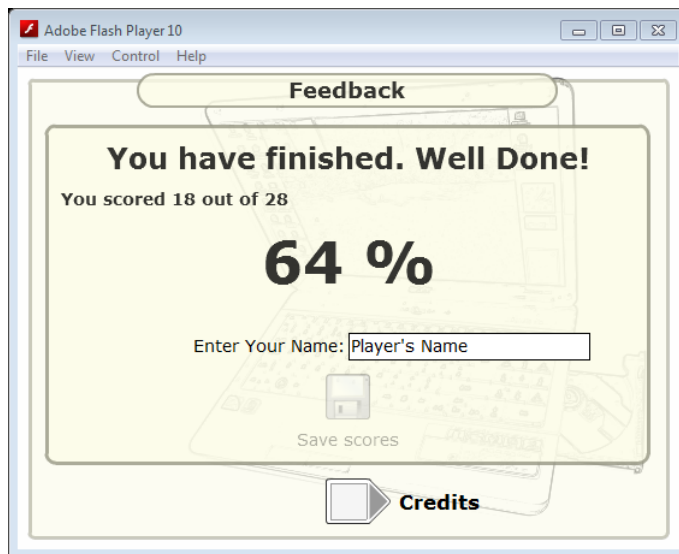


Figure 48 : The final feedback screen

The player's responses may be saved as a PDF. The first pages gives a summary of results, and the subsequent page(s) show a screen shot of each question, the statement associated with that screen shot, and a tick or cross, indicating whether the player answered correctly or not (as seen in Figure 49).

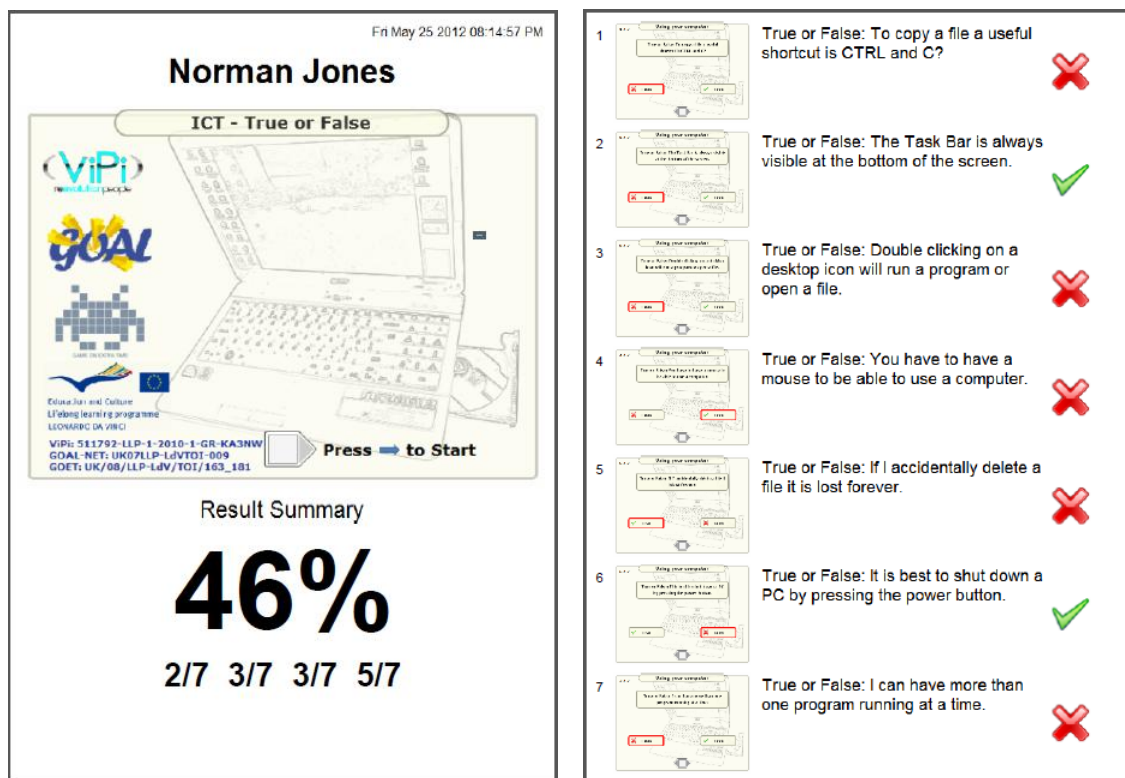


Figure 49 : Some captures from the automatically produced PDF file

5 The ViPi Curriculum and course content

In addition to this handbook, there are other accompanying documents that stakeholders will require:

5.1 The ViPi Curriculum

The course curriculum is available (see <http://www.vipi-project.eu/download/>) and allows participation in 3 separate units at differing levels.

- Unit 1 is the most basic level for complete beginners to computing to be introduced to ICT. It introduces users to the parts of a computer and the different types of computers. It explains about input technologies, output technologies and how they are used. It also introduces the basics of interacting with the Windows operating system.
- Unit 2 is the Basics of ICT course which is a little more detailed and contains further content relating to creating documents and spreadsheets, using email, using the internet, and being safe online.
- Unit 3 has a more detailed approach and introduces specific software packages for creating documents, presentations and spreadsheets. It also contains some hands on exercises to experience various aspects of using ICT in the real world.

5.2 The ViPi Course Content

The developers of the curriculum have also put together full content for the course which is available as a document download (see <http://www.vipi-project.eu/download/>). The document contains full content for each section of the course along with suitable self-test questions and exercises for students to try.

5.3 The ViPi Games

The games (both mobile and desktop) as described previously in this document refer directly to the course content and can support the learning of students on the course.

5.4 External learning resources

The ViPi consortium has compiled an extensive list of externally available materials that may be useful to help teach different aspects of this course. These are available as the learning objects listed on the ViPi platform. Finding suitable content from this repository to help with teaching is supported by a semantic search system allowing users to hone their searches by disability, content, accessibility, target age group, etc, to provide a targeted search.

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