



Virtual Portal for Interaction and ICT Training for People with Disabilities

ViPi Handbook

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Table of Content

ViPi Handbook	1
Version History table	2
Table of Content	3
1 Overview	6
2 Combining the ViPi curriculum and desktop/online/mobile applications – a blended learning approach	7
2.1 Introduction.....	7
2.2 The ViPi Educational and Pedagogical Framework.....	8
2.2.1 Educational	8
2.2.2 Social	8
2.2.3 Organisational.....	10
2.2.4 Technological.....	10
3 How to access the ViPi portal via the internet or on your smartphone	11
3.1 Minimum requirements.....	12
3.2 Desktop environment.....	13
3.2.1 Registering with ViPi.....	13
3.2.2 Browsing through the portal and finding appropriate content	14
3.2.3 The ViPi learning object repository	15
3.2.3.1 Rating and commenting on content	17
3.2.4 Using the ViPi social network.....	17
3.2.5 Playing serious games	18
3.2.6 Contributing to ViPi - Creating and uploading content	20
3.2.7 Discovering and downloading content using simple and advanced search capabilities	23
3.2.8 Using the ViPi online training environment--.....	26
3.2.8.1 Trainees	26
3.2.8.2 Trainers	27
3.2.8.3 Administrators (ViPi staff)	31
3.3 Smartphone / Tablets	32
3.3.1 Suggested mobile supportive technologies	33

3.3.1.1	Basic Supportive Technologies on Android OS	33
3.3.1.2	TalkBack, Kickback, and SoundBack	33
3.3.1.3	Tecla	34
3.3.1.4	Supportive Technologies on Android ICS 4.0.x	35
3.3.1.5	Supportive Technologies add-ons in Android.....	35
3.3.2	Using the accessibility features in Android ViPi app	36
3.3.3	Registering with ViPi mobile.....	36
3.3.4	Reading news and subscribing to content	37
3.3.5	Finding appropriate content.....	39
3.3.6	Performing a simple and advanced search.....	39
3.3.7	Using the ViPi mobile social network.....	40
3.3.8	Playing serious games (mobile versions).....	41
4	Description of ViPi Games	42
4.1	Memobile game	43
4.1.1	About the games	43
4.1.2	Installation	44
4.1.3	Playing the games	45
	Matching pairs	45
	Starter kit.....	46
	Press and... action!:	46
4.2	Escapology – ICT	47
4.2.1	The Escapology engine.....	47
4.2.2	Playing the game	47
4.2.3	Game Editor.....	51
4.3	Rob the Mob - ICT.....	52
4.3.1	The Rob the Mob engine	52
4.3.2	Playing the game	52
4.3.3	Game Editor.....	56
4.4	ICT - True or False.....	59
4.4.1	The True/False and Yes/No Quiz engine.....	59
4.4.2	Playing the game	60
4.5	Stay Safe	65

4.5.1	The Stay Safe Engine	65
4.5.2	Playing the Game.....	65
4.6	Fly Swat	69
4.6.1	Justification	69
4.6.2	Technology.....	69
4.6.3	Concept	69
5	The ViPi Curriculum and course content	72
5.1	The ViPi Curriculum	72
5.2	The ViPi Course Content	73
5.3	The ViPi Games	73
5.4	External learning resources.....	73



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

2.1 Introduction

One of the core values of ViPi is to recognise and respect people's diversity and provide an effective educational environment that works for a wide range of abilities. This means that a more customised teaching approach has to be adopted according to the individual profile of abilities and needs. To do this, 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 experience (Web and mobile access to e-learning facilities and platforms). This combination allows the trainer to identify what is the most appropriate entry level for each trainee 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 trainer to create a personalised learning pathway for each trainee. Flexibility is further enhanced by the facility to access and deliver materials via either desktop computers or mobile devices with Internet access.

With all the options ViPi provides, trainers will need some guidance to enable them to get the best out of the ViPi platform, its tools, Web and mobile 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 trainees. Additionally, adopting computer delivered materials may necessitate trainers re-examining their traditional didactic role and taking a different stance: that of a facilitator who initiates and guides the knowledge construction process. This might include new ways of conducting group work, creating a shared area for collecting resources or for sharing work and collaboratively developing a new resource (Choy and Ng, 2007), with access anytime and from anywhere. Kozma & McGhee (2003) described one of the new roles that ICT has created for the trainer as "Instructional designer" where the trainer takes into account all the resources available to meet the variety of needs his or her trainees have and implements well designed activities to address those needs.

The role of the educational and pedagogical framework is to provide trainers with a blue print on how to optimally use the ViPi platform (Web and mobile) and resources, making use of the provided learning objects to create customized e-portfolios and how to integrate in current training practices.

Objectives of the framework:

- To secure the implementation of ViPi, i.e. to make sure people use it and use it appropriately
- To provide guidelines that could allow implementation for a wide group of clients

The trainees or 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, for example "the organisation must be supportive of the introduction of

ViPi and possess an appropriate pedagogic culture”. Directives are made 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, the framework provides prompts with questions such as “What are realistic training goals for this trainee?” The diagrammatic representation of the framework in Annex 1 gives questions and directives for each dimension. Although questions are posed for the trainer to answer in the way they know best fits their environments and trainees, some of the questions have directives provided to assist trainers to answer those questions. In the text below, questions and directives are shown in bold.

2.2 The ViPi Educational and Pedagogical Framework

There are four dimensions to the ViPi blended educational and pedagogical framework taken from Minocha (2009): Educational, social, organisational and technical. While for ease of use, the dimensions are presented as being independent of each other, in practice there are clear relationships between them. For example, the technical dimension includes a directive that the machines and computers are usable for practical exercises. Obviously for this to be in place the organisation needs to check whether sufficient technical support is in place first and rectify it if there are shortcomings.

2.2.1 Educational

This dimension encompasses the factors that are most directly concerned with the individual’s learning.

In tailoring ViPi to each trainee, this dimension prompts trainers to answer the following questions and provides directives informed either by existing research or by partners’ observations during piloting:

1. **How would the users benefit from improved basic ICT skills?** When answering this, **the trainer should take into account not just what they already know about the trainees’ capabilities and achievements so far but they should also involve trainees in discussions about what they would like to learn during the training sessions.** Possible benefits might include:
 - To enhance employability, get employment or remain employed
 - To increase independence and confidence
 - To have chance to experiment with something innovative
 - To improve social communication skills
 - To improve quality of life
2. **How motivated are they?** Some might already be keen, others may not be aware of all the things a computer could do for them and would therefore need some overview of what basic ICT involves. Ways of engaging those who might not understand what they could use IT for might include starting with a game (like fly swat) which would indicate what keyboard or mouse skills might be useful or showing them what they might achieve with basic ICT skills (e.g. taking a photo) or looking for material relevant to them when web browsing .
3. **What are their capabilities?** This information is useful to answer two further questions:
 - a. **What is the appropriate entry level for the trainee?** Answering this will depend on the trainer’s knowledge of the current activities of the trainee and their achievements as well as the information gained from completing the user data log. If the trainer is unsure of

the appropriate level it is best to err on the side of caution and enter at a slightly lower level in order to minimise the chances of challenge outweighing achievement. What this means is that a certain degree of challenge is required to keep the trainee interested but too much without achieving a goal, and they will become despondent.

- b. **What are realistic training goals?** These might include learning to use a mouse and keyboard, format documents, learning how to make and edit videos. Once these questions have been answered a searchable database allows users and trainers to search for learning objects of specific relevance to them and their training requirements.

Although this question about capabilities needs answering right at the beginning of the trainee's involvement with the platform, **it is important that the trainer is prepared to reassess the trainee if their observations on progress or feedback received suggests adjustments need to be made.**

4. **How can I help them to be able to do these things?** In answering this not only does the trainer need to identify the appropriate learning materials provided by ViPi but identify how to combine and present them in other words, select the right blend of material. In achieving this, **the trainer needs to ensure the balance between challenge and achievement is right for each person** as described above. One of the beneficiaries piloting ViPi in the UK lost interest when trying a game that was too difficult. The point of balance will differ between individuals.
 - a. **Recognise the need for assistance from the trainer** while many of the groups for whom ViPi has been designed may be able to work with it independently, the trainer should always be prepared to offer assistance. Those trainees with high levels of intellectual disabilities may need a lot of assistance before starting to use educational material independently. Even after several sessions a trainee might be failing at a task because they need reminding how to do it. The trainer's involvement should be guided by the principle above about balance challenge and achievement.
 - b. **Select a range of different activities** (e.g. games, online learning materials, classroom discussion) so that a different activity can be undertaken when the trainee's attention flags. For some trainees who are having problems with the e-learning content, practical, gaming or paper-based materials can be interspersed with more didactic activities to bring the trainee's focus back onto the material. As games are popular with everyone they can be used as a reward for either completing something or having tried hard.
 - c. **Select the most appropriate games.** Some games rely on the trainee having reading or numeracy skills, so choose those that match trainees' abilities. Some of the ViPi games have not been specifically designed for visually impaired users, but these games can still be usefully included if the trainer plays the games with the user, while giving a verbal commentary. Games have their own built in reward system which some trainees find motivating especially if they haven't experienced much success in their routine learning sessions. There are a range of publications which can provide further reading for trainers on the use of games for trainees with disabilities (Brown et al, 2009; Brown et al, 2013).
 - d. **Let the trainee determine their own learning speed.** Results from the pilots suggested that it was very important that the teaching and learning took place at the trainees' own speed.

- e. **Make sure the trainee receives appropriate feedback.** Trainees are not always sure whether they have learned something new, or are doing well in understanding new material, so the trainer must make sure they have been rewarded verbally.

2.2.2 Social

This dimension incorporates issues related to collaboration and group working. Online learning is often described as having the advantage of being able to take place anywhere at any time but this can also mean that the trainee learns in social isolation. Many young people with disabilities can already be experiencing too much social isolation. Thus the right balance must be found between different strands of blended learning to reduce their feelings of isolation. On the other hand an online community of trainees may actually help those who have difficulties in face-to-face environments. In deciding the best arrangement of social factors to enhance learning, the trainer has to ask them self:

1. **What is the best balance between individual and group learning?** Piloting with the most intellectually disabled beneficiaries found that training on a one to one basis was necessary as this allowed the ability and needs of each participant to be assessed and the training tailored to work at an appropriate level using appropriate tools and assistive technologies for each participant. Training strategies could also then be adapted on an ad-hoc basis to increase trainee engagement. On the other hand, it should be remembered that group sessions can be popular with trainees enjoying working in a classroom with the physical presence of the trainer/teacher and classmates rather than working alone and remotely. Group sessions probably work best for stimulating discussion (for example, identifying topics that trainees want to learn about) and reinforcing material learnt through individual sessions. Some trainees might enjoy playing some of the games as a group and discussing why some answers are better than others. In answering this question the trainer might discover that the requirement for a high level of one to one learning requires more teaching support to be in place. **Therefore, if starting skill levels vary widely between trainees, ensure there is enough teaching support.**
2. **Can trainees help each other to learn and can some peers act as tutors?** Trainers should explore the possibility of exploiting peer tutoring as research has emphasised its role in engaging trainees and enhancing learning. The positive effect of peers can take place in a group where the enthusiasm of one can stimulate the entire group, but also trainees can be encouraged to form informal support pairings where one trainee helps another trainee or where one encourages the other or they even set up some friendly competition. This spontaneous occurrence was reported in the Belgian pilot.

2.2.3 Organisational

This dimension refers to the way in which the training centres deal with the introduction and use of ViPi. Organisational factors can often be the biggest barrier to implementation therefore the directive associated with this dimension is that:

- **the school or training centre must be supportive of the introduction of ViPi and possess an appropriate pedagogic culture.** Before engaging with ViPi it is important to determine where ViPi's approach and content fit in with current practices. It is also important to ensure that training centres and the organisations that are responsible for them are happy to adopt this

approach. For example an NGO responsible for a training centre might need to approve the incorporation of ViPi outcomes in its current activities.

For most trainers, dealing with these aspects may be outside their remit but three questions that might be useful for them to answer are:

1. **Is there sufficient technical support for the initiative inside the organisation?** The right level of technical support will ensure that the appropriate assistive technology is available, access to the internet is maintained and the equipment is reliably working to ensure trainees are not frustrated by the technology. If utilising the materials online it must also be ensured that the machines (desktop or mobile devices) made available by the organisation have access to the online ViPi sites including the ATutor e-learning environment, the vipi-skills.eu portal and also the vipi-project website and the mobile application. There is some crossover with the technological dimension here also as each organisation may have its own technological restrictions, such as locked down PC installation access which needs to be addressed at an organisational level to get all ViPi materials available to trainers and trainees.
2. **Do the trainers themselves feel confident using the ViPi tools?** 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'. It is therefore important to ensure trainers have been trained to a level of familiarity with the ICT and AT required by the platform, have received the ViPi handbook and are trained in ViPi outcomes. They should be happy with the initial training sessions and be able to receive ongoing support if they feel they need it.
3. **How will using ViPi fit in with the rest of the trainer's work and the current curriculum?** Does the trainer have sufficient time to devote to this learning? Do they need extra support to ensure that trainees have enough one to one support? Can links be formed to other parts of the curriculum, for example language learning, so that ViPi's activities can be integrated and seen to support learning that the trainees do in other parts of their education? An example of where this might work would be to learn how to create and format a document and include images, for an assignment as part of some other coursework.

2.2.4 Technological

This dimension includes factors related to access, accessibility, implementation and maintenance of the tools and services. For ViPi to be able to run and be available for the trainees who need it, there are important directives that need to be followed:

1. The organisation's current hardware and operating system must support the ViPi software
2. Web permissions must be set to allow access to the web material required to use ViPi for example vipi-skills.eu, vipi-project.eu, and isrg.org.uk
3. Machines/computers must have write access so that they are usable for ViPi practical exercises
4. The organisation must offer a sufficient number and type of mobile devices if the mobile application and mobile games of ViPi are to be adopted. Alternatively, the trainer needs to make

sure all trainees have their own mobile devices that are compatible with the needs of ViPi applications.

The two questions relevant for this dimension are:

1. **What assistive technology do they need and is it available?** Trainees must have access to the assistive devices they require to access the platform. They may already be using such devices but those who have not previously used such devices may now need to be assessed to ensure they can utilise them where necessary. The piloting found that trainees also had personal preferences, for example touchscreen or laptop but some often wanted to try something new and more challenging.
2. **What adjustments do they need in the software platform options** such as setting games at the right speed, size of fonts used, using a text -to-speech translator. The guiding principle here is to remember to get the challenge/achievement balance right for each trainee. There are useful accessibility options at an operating system level which should be explored at an early stage with every trainee to improve their experience of using ViPi. This could be the accessibility settings in Android-based mobile devices, or the Ease of Access Centre in Windows. There may also be adjustments that can be made within individual programs such as font sizes or high contrast modes that may enhance the user experience.

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 10.0, Opera 12.0, Safari 5.0, etc.).

In order to access the ViPi Portal with a mobile device (Smartphone or Tablet), we recommend the 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 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

Registration on the ViPi portal is essential for every user that wants to have a more customised access to the ViPi content (e.g. profile-enhanced search in the Learning Objects' repository). This can be performed through the main page of the portal (<http://vipi-skills.eu>) as shown in Figure 1:

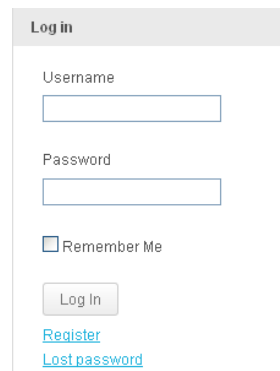


Figure 1: The registration and login panel of the ViPi portal

If the “Register” option is selected, then the user is redirected to the page shown in Figure 2, where he/she is prompted to enter the required data. These are, a username, a password, a valid email address and the name of the user.

Register

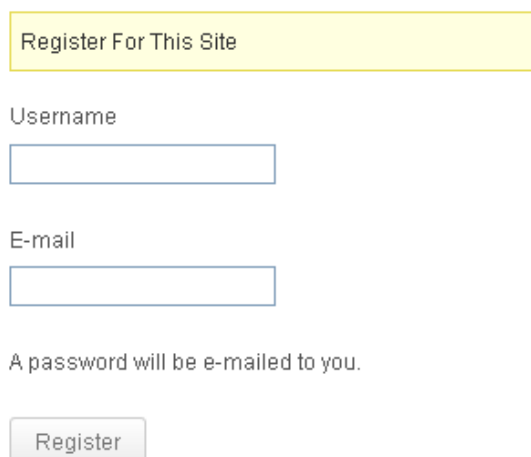


Figure 2: User fills-in all required registration data

Once submitted, the user password will be emailed to the registered account, and then the user will be able to access the full functionality of the portal. A real and active email account is therefore required for registration.

After registration, the user may log-in to the portal from the same panel on the right column of the main page. This will enable the “Profile” tab on the main menu to appear, as shown in Figure 3

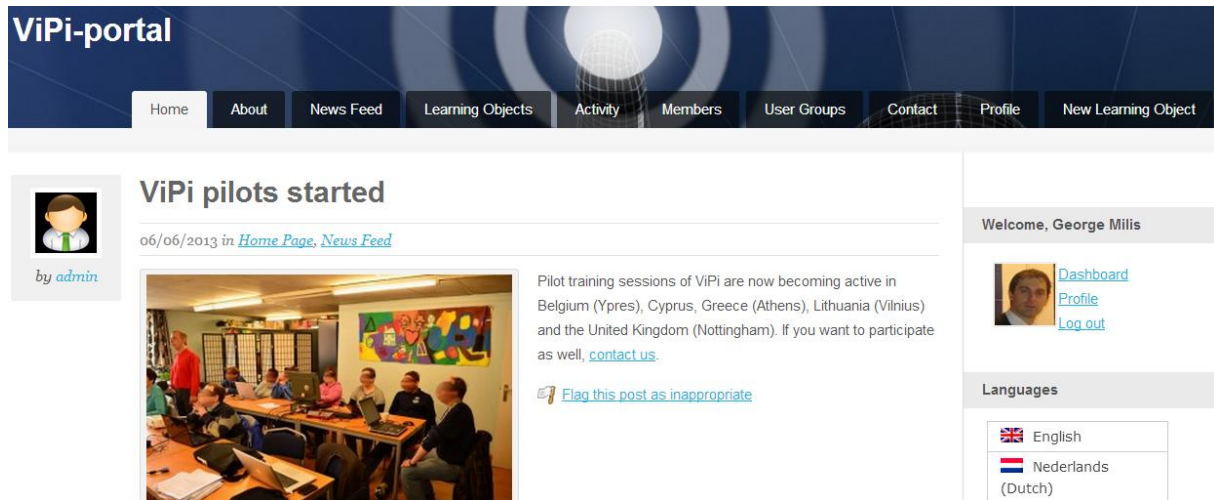


Figure 3: The portal page after logging-in

It is recommended that the user visits the “Profile” page and updates all information therein. This is an important part of the registration process, since, beyond other details that will help the portal to customise its service to the user, it allows the user to his/her interests/preferences for learning objects, thus facilitating the interaction with the LOs repository through the guided search. To define these preferences, drag and drop options which apply to you from left to the right (Figure 4). This provides you with the ability to personalize your experience in the ViPi platform, mainly in terms of the LO search.

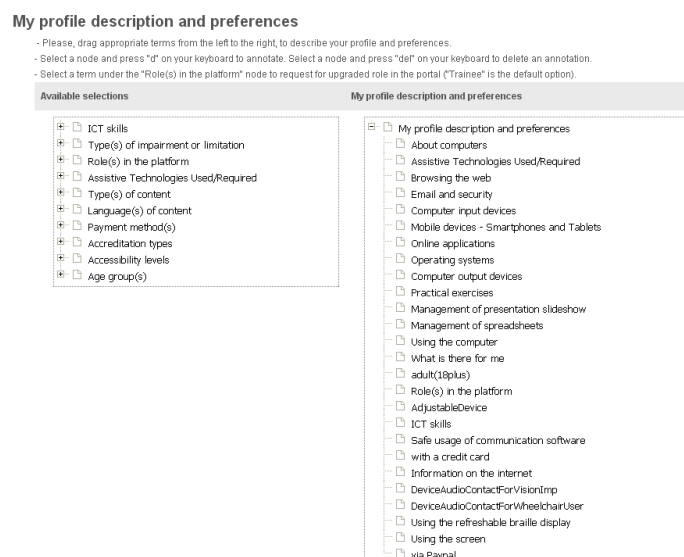


Figure 4: User profile annotation

3.2.2 Browsing through the portal and finding appropriate content

The content of the ViPi portal is available through its main Web page (Figure 5)

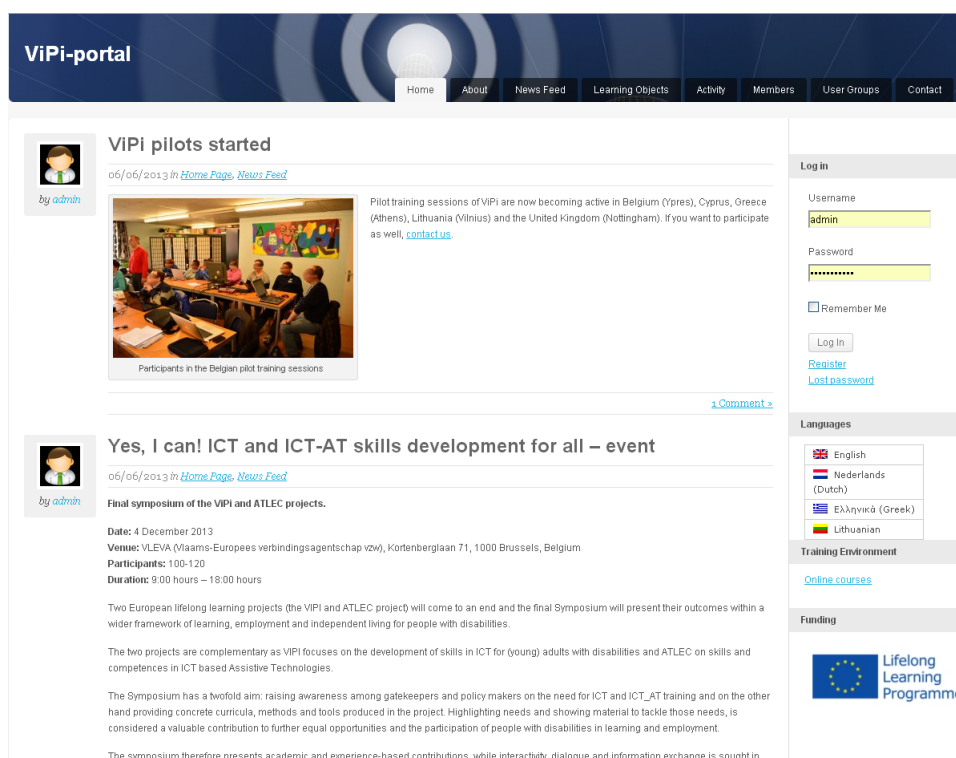
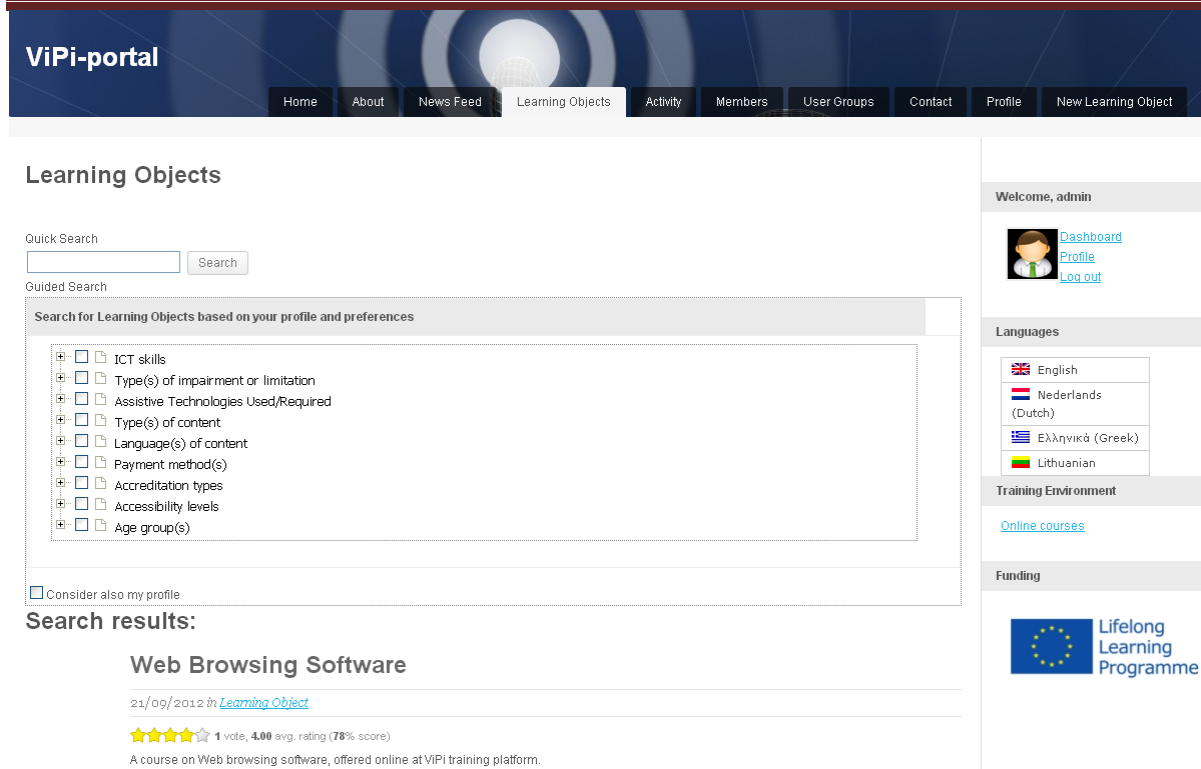


Figure 5: The main page of ViPi portal

Users can navigate through the available pages of the portal. These are: Home, About, News Feed, Learning objects, Activity, Members, User Groups and Contact. The home page contains all posts that have been submitted in Home Page category by a user with sufficient access rights (usually this will be administrators), as in Figure 5. The About page contains some general information about the ViPi platform, while the News Feed page contains content posts that have been submitted by a user with sufficient access rights into the News Feed category. The Learning Objects page includes all published learning objects of the ViPi portal, submitted by users with the Content Provider role. The Activity page provides information about the activity of the registered users in the platform, whereas the Members page contains information about registered users. the User Groups page contains information about created user groups within the ViPi platform, and finally the Contact page has a form for contacting the administrators of the ViPi portal (more details are given in Section 3.2.4 about the functionality supported by these pages). Two additional pages named Profile and New Learning Object are visible for logged in users with sufficient access rights. The Profile page allows the update of a user's profile, while the New Learning Object provides the interface for submitting content to be used as new Learning Objects in the portal. The submitted content is not published immediately but it undergoes an evaluation procedure by the portal's administration team, to ensure that the format, quality and type comply with the specifications set in the project for learning objects.

3.2.3 The ViPi learning object repository

The most important part of the ViPi portal is the Learning Objects (LO) repository that can be accessed through a dedicated web page provided as a tab on the portal's homepage (Figure 6).



The screenshot shows the ViPi portal interface. At the top, there's a navigation bar with links: Home, About, News Feed, Learning Objects (active), Activity, Members, User Groups, Contact, Profile, and New Learning Object. Below this, the 'Learning Objects' section is highlighted. It includes a 'Quick Search' box and a 'Guided Search' section with various filters like ICT skills, Type(s) of impairment or limitation, Assistive Technologies Used/Required, Type(s) of content, Language(s) of content, Payment method(s), Accreditation types, Accessibility levels, and Age group(s). A checkbox 'Consider also my profile' is also present. The 'Search results:' section displays a result for 'Web Browsing Software', dated 21/09/2012, with a 4.00 average rating (78% score) based on 1 vote. A description below states: 'A course on Web browsing software, offered online at ViPi training platform.' On the right sidebar, there's a user welcome message for 'admin' with links to Dashboard, Profile, and Log out. Below this, there's a 'Languages' section with flags and names for English, Nederlands (Dutch), Ελληνικά (Greek), and Lithuanian. Further down are sections for 'Training Environment' (with a link to Online courses) and 'Funding' (with the Lifelong Learning Programme logo).

Figure 6: Accessing the LO repository from the ViPi portal homepage

The repository is also accessible through ViPi's dedicated 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 with different themes in the future.

'Learning Object' is the term 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 language, as long as the content provider 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 are seeking. 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 students that want to find material on specific topics and suggest these to their trainers or study 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 amount of training content entities/material and offers an easy-to-use search mechanism to facilitate the efficient discovery of exactly what the user is looking for.

3.2.3.1 Rating and commenting on content

Rating in the ViPi portal is only allowed for learning objects, as depicted in Figure 7:

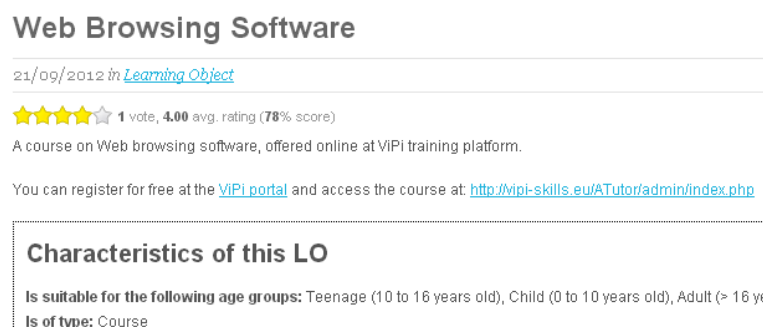


Figure 7: Rating of learning objects

Each user is only allowed to rate a learning object once, and the average rating of each learning object 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 ratings are expected to be preferable by others and this is a mechanism that helps in 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 (Figure 8), where the user can write his/her comment about the original post.



Figure 8: 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 themselves. This system enables users to give honest appraisals and suggestions for use of learning objects for others.

3.2.4 Using the ViPi social network

The ViPi platform features an integrated social network for interaction between portal users. The social network of the 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

The social network functionality is accessible through the “Activity”, “Members” and “User Groups” pages of the ViPi portal (Figure 9).

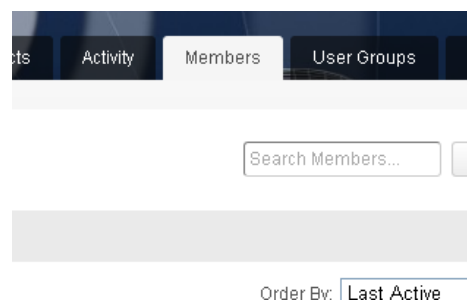


Figure 9: ViPi portal social networking

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 uses serious games as part of the blended educational and pedagogic framework in order to enable delivery of parts of the course content in both novel and engaging ways.

For people with intellectual disabilities, computer based learning could make a big difference. Hawkrigide & 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.

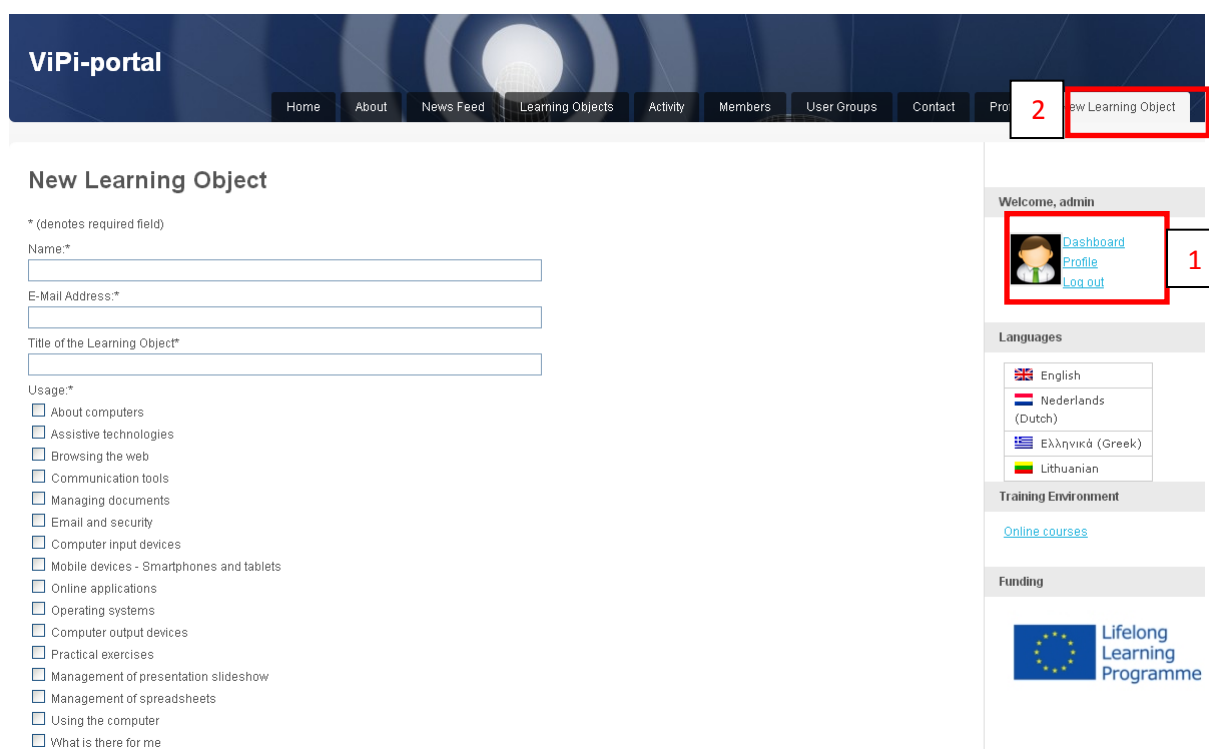
The fact that the games themselves are being played using the ICT, will serve to reinforce parts of the ViPi curriculum content regarding input and output technologies, and using the computer. Being able to use a computer or smart phone is necessary for independent use of the game elements of ViPi, and 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 4 describes the games created by the ViPi project.

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 with training content submitted by persons outside 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 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, and possibly come back to you asking for further authentication information. Your account will then be activated as a content provider on the ViPi platform. Once you have been ‘activated’ and when you are logged in, you will be able to see and access the “New Learning Object” page on the ViPi portal, as shown in Figure 10, in red-box with number 2.



ViPi-portal

Home About News Feed Learning Objects Activity Members User Groups Contact Pro **2** New Learning Object

New Learning Object

*(denotes required field)

Name:*


E-Mail Address:*

Title of the Learning Object*





Usage:*

- ☐ About computers
- ☐ Assistive technologies
- ☐ Browsing the web
- ☐ Communication tools
- ☐ Managing documents
- ☐ Email and security
- ☐ Computer input devices
- ☐ Mobile devices - Smartphones and tablets
- ☐ Online applications
- ☐ Operating systems
- ☐ Computer output devices
- ☐ Practical exercises
- ☐ Management of presentation slideshow
- ☐ Management of spreadsheets
- ☐ Using the computer
- ☐ What is there for me

Welcome, admin

 [Dashboard](#) [Profile](#) [Log out](#) **1**

Languages

-  English
-  Nederlands (Dutch)
-  Ελληνικά (Greek)
-  Lithuanian

Training Environment

[Online courses](#)

Funding


 Lifelong Learning Programme

Figure 10: Showing the “Submit training content” functionality

If you have content ready to be uploaded and shared within the ViPi LO repository, you can click on the “New Learning Object” page and follow the steps to upload it (see numbered indications in Figure 11). You will be asked to provide the following information:

- Name: The name of the content provider that proposes the Learning Object
- E-Mail Address: a valid email address of the content provider
- Title of the Learning Object: a title for the piece of content, that will describe the content in short and be visible to the users in search results
- Usage: a categorization of the content using a pre-defined set of categories and tags.
 - The categorization is very important in order to support the later discovery of the content through the guided search engine. 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 possibly others that will be added in the future.
- Short description: a short description about the learning object that is to be proposed
- Detailed explanation: You can write or copy-past here your content, provide links to documents and other Internet resources.
- Target groups: the type of impairment that the learning object is targeting to. Again, this selection is significant for the later discovery of the content through the guided search engine
- Operating systems: a mandatory field that indicates the supported operating system of the learning object
- Price: the price (if it exists) of the learning object
- Download link(s): the URL of the learning object

The content provider may also upload any file of the supported extension (doc, docx, pdf, txt, gif, jpg, jpeg, png) with maximum file size of 2mb.



New Learning Object

* (All notes required fields)

Name:*

E-Mail Address:*

Title of the Learning Object:*

Usage:*

- ☐ About computers
- ☐ Assistive technologies
- ☐ Browsing the web
- ☐ Communication tools
- ☐ Managing documents
- ☐ Email and security
- ☐ Computer input devices

1

4

3a

- ☐ Mobile devices - Smartphones and Tablets
- ☐ Online applications
- ☐ Systems
- ☐ Input devices
- ☐ Exercises
- ☐ Management of presentation slides how
- ☐ Management of spreadsheets
- ☐ Using the computer
- ☐ What is there for me

Short description:*

Detailed explanation:*

2a

Target groups:*

- ☐ Communication impairment
- ☐ Hearing impairment
- ☐ Learning difficulties
- ☐ Mobility limitation
- ☐ Upper limb impairment
- ☐ Vision impairment
- ☐ Wheelchair user

Operating systems:*

- ☐ Mac
- ☐ Ubuntu
- ☐ Microsoft Vista
- ☐ Microsoft XP
- ☐ Microsoft 7
- ☐ Microsoft 8
- ☐ Android
- ☐ IOS
- ☐ Symbian
- ☐ Windows Mobile

3b

Price

Download link(s)

Upload file

No file chosen

Acceptable file types: doc, docx, pdf, txt, ppt, pptx, jpeg, png.

Maximum file size: 2mb.

Figure 11: The LO submit page and functionality

After completing the information, you will be able to “Submit” the content. 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 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.

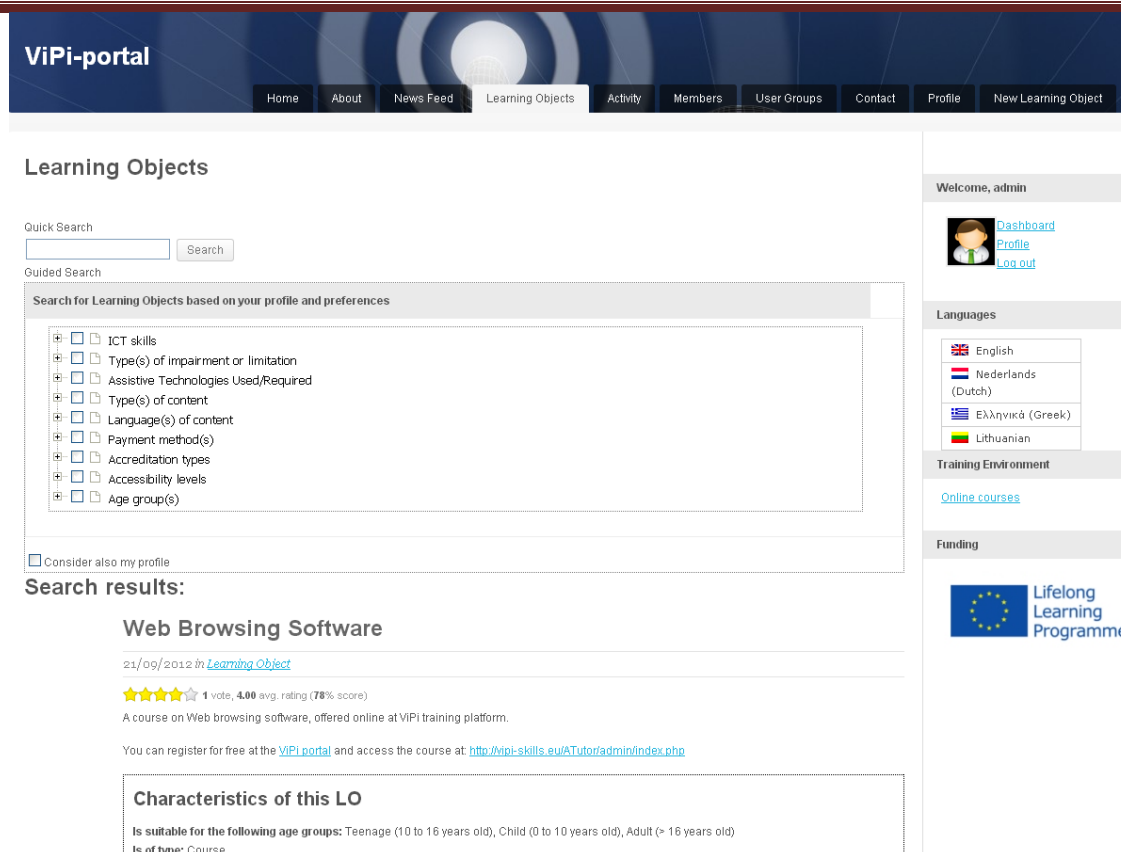
To edit or delete previously uploaded content, you need to contact the ViPi administrators and pass your request. They will then guide you through the process.

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, and a custom search functionality has been implemented.

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 “Quick” and the “Guided” search options, as shown in **Error! Reference source not found..**



The screenshot shows the ViPi-portal interface. At the top is a navigation bar with links: Home, About, News Feed, Learning Objects (active), Activity, Members, User Groups, Contact, Profile, and New Learning Object. Below the navigation bar is a header section with the text 'ViPi-portal' and a background image of a globe. The main content area is titled 'Learning Objects'. It features a 'Quick Search' section with a text input field and a 'Search' button. Below this is a 'Guided Search' section with a heading 'Search for Learning Objects based on your profile and preferences'. This section contains a list of search criteria, each with a checkbox and a plus icon: ICT skills, Type(s) of impairment or limitation, Assistive Technologies Used/Required, Type(s) of content, Language(s) of content, Payment method(s), Accreditation types, Accessibility levels, and Age group(s). Below the list is a checkbox labeled 'Consider also my profile'. The 'Search results:' section displays a result for 'Web Browsing Software'. It includes the date '21/09/2012 in Learning Object', a star rating of 4.00 (78% score) based on 1 vote, and a description: 'A course on Web browsing software, offered online at ViPi training platform.' It also provides a registration link: 'You can register for free at the ViPi portal and access the course at: http://vpi-skills.eu/ATutor/admin/index.php'. Below the result is a section titled 'Characteristics of this LO' which states: 'Is suitable for the following age groups: Teenage (10 to 16 years old), Child (0 to 10 years old), Adult (> 16 years old)' and 'Is of type: Course'. On the right side of the page is a sidebar with a 'Welcome, admin' message, a user profile picture, and links for 'Dashboard', 'Profile', and 'Log out'. Below this is a 'Languages' section with a list of languages: English, Nederlands (Dutch), Ελληνικά (Greek), and Lithuanian. Further down is a 'Training Environment' section with a link to 'Online courses'. At the bottom of the sidebar is a 'Funding' section with the European Union flag and the text 'Lifelong Learning Programme'.

Figure 12: LO search engine

The **Quick search option** operates specifically on the Learning Objects content category and it comprises a basic keyword search, just like a search engine. This engine 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. The Guided search uses direct navigation through the categorization information of the Learning Objects and the selection of well-defined search criteria (Figure 13). For instance, a user is able to define the language of the results and select 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 matches user preferences with high accuracy. Figure 14 illustrates an example of selections and the respective result set.

ViPi-portal

HomeAboutNews FeedLearning ObjectsActivityMembersUser GroupsContact

Learning Objects

Quick Search

Guided Search

Search for Learning Objects based on your profile and preferences

☐ ICT skills

☐ Type(s) of impairment or limitation

☐ Assistive Technologies Used/Required

☐ Type(s) of content

☐ Language(s) of content

☐ Payment method(s)

☐ Accreditation types

☐ Accessibility levels

☒ Age group(s)

☒ Adult (> 16 years old)

☐ Child (0 to 10 years old)

☐ Teenage (10 to 16 years old)

☐ Consider also my profile

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

Learning Objects

Learning Objects

Quick Search

Guided Search

Search for Learning Objects based on your profile and preferences

☐ ICT skills

☐ Type(s) of impairment or limitation

☐ Assistive Technologies Used/Required

☐ Type(s) of content

☐ Language(s) of content

☒ Payment method(s)

☐ with cash

☐ with a credit card

☒ Free

☐ via Paypal

☐ Accreditation types

☐ Accessibility levels

☒ Age group(s)

☒ Adult (> 16 years old)

☐ Child (0 to 10 years old)

☐ Teenage (10 to 16 years old)

☐ Consider also my profile

Search results:

Fly Swat Game

08/07/2013 in [Learning Object](#)

☆☆☆☆ 0 votes, 0.00 avg. rating (0% score)

The Game

Swat the flies using mouse, keyboard – or your assistive technology! Swat as many flies as you can in one minute.

Justification

Fly swat has been developed to meet the needs of people with both physical and learning disabilities. It provides a means to develop and assess skills relating to awareness of ICT, understanding the concept of cause and effect within ICT, and provides also a means of

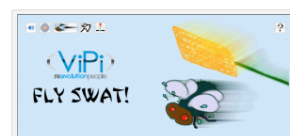


Figure 14: An example of results after searching for LOs related to “Free” “Adult (>16 years old)”

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 to the ViPi portal, 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.

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--

An online e-learning 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 by clicking on the provided [Online courses](#) link.

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

3.2.8.1 Trainees

- **Things Current:** When a trainee or 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/to 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

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

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.
- **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 a 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, 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 is 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 mobile

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



Figure 15: ViPi mobile client splash screen

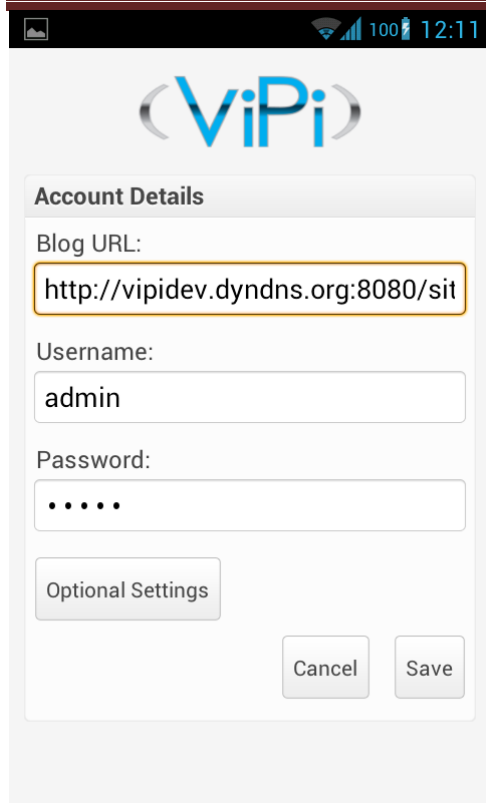


Figure 16: Login by input of credentials

3.3.4 Reading news and subscribing to content

Until the User has 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 the User has logged-in to the ViPi service it will have all interactive functionality available, including making comments to posted material, rating articles, subscribing to content, etc.

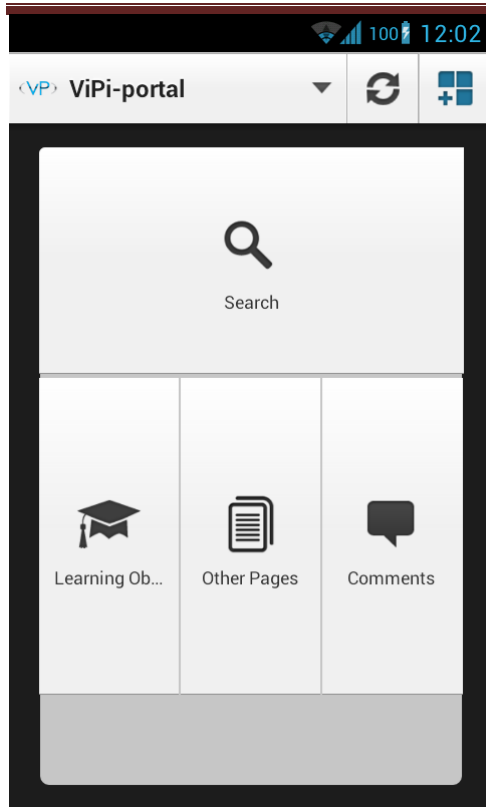
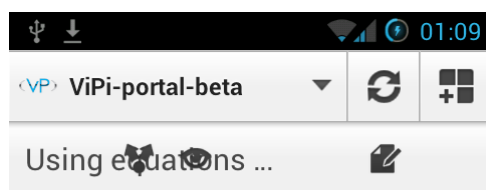


Figure 17: Selections on main mobile ViPi screen (search, browse Learning Objects, see comments and other pages)



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 18: 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 search functionalities available on the ViPi mobile client.

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

3.3.6 Performing a simple and advanced search

There is a “simple search” functionality available in the mobile ViPi client, which performs a search of all ViPi posted information, except Learning Objects. On pressing the search icon, the user is presented with a pop-up input box to 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.

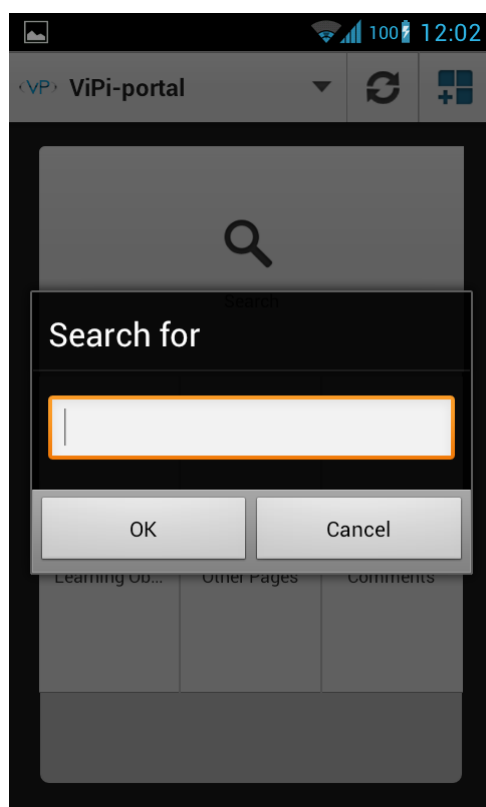


Figure 19: Simple search functionality of ViPi mobile client

A second “advanced search” mechanism is available, 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.

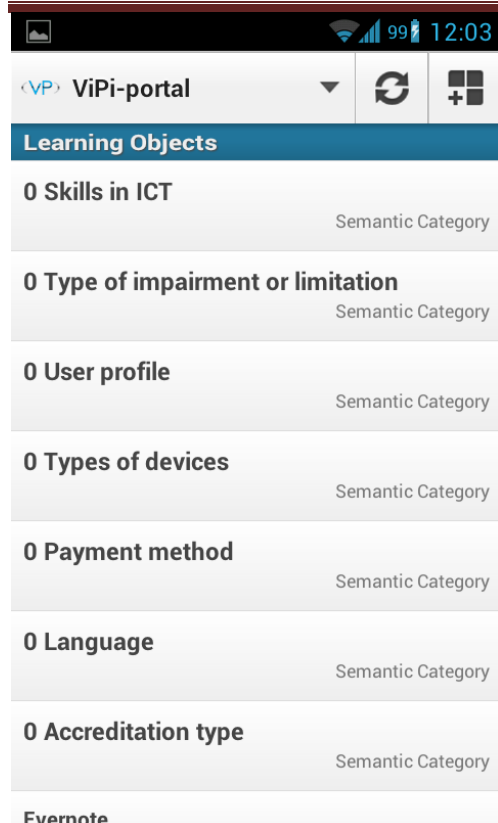


Figure 20: Semantic step-by-step search (advanced search) throughout ViPi ontology

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 other social networks (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 (depending on their access level) to comment on the information posted to the ViPi platform. In this way, they can create a social discussion on subjects relevant to ViPi.
- Rating posts

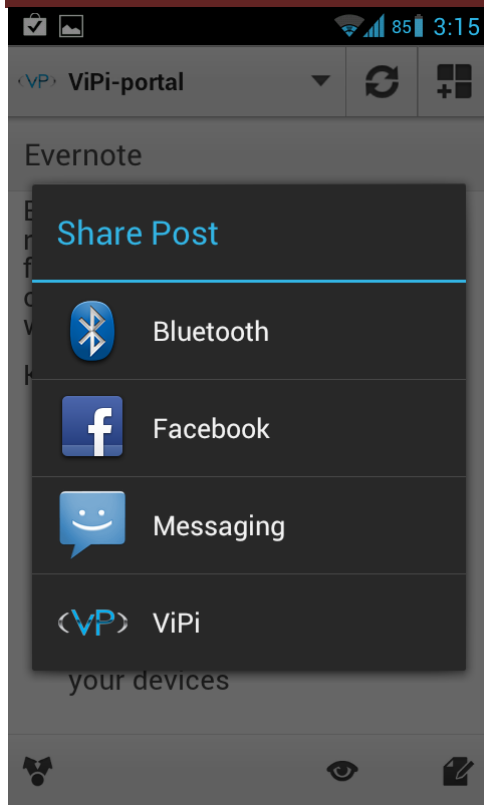


Figure 21: Ability to share a ViPi posted information with the Community

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 Object, and as such can be either installed and played as native Android applications, or played through a suitable browser where they are supported.

4 Description of ViPi Games

A number of serious games for desktop and mobile (Android) have been created.

Desktop based

- True False ICT Quiz
- Escapology ICT
- Rob the Mob ICT
- Yes No ICT Quiz
- Fly Swat
- Stay Safe

Mobile based (Memobile game suite)

- Matching Pairs
- Starter Kit
- Press and Action



Figure 22: Screenshots of 1st mobile game (Android based)

4.1 Memobile game

4.1.1 About the games

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 Play).

The games are composed of:

- learn
- play and memorize
- discover

The interface is simple and friendly:

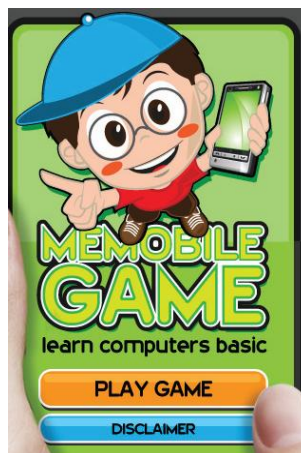


Figure 23: Memo, the little boy, is a tutor for the users.



Figure 24: 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 APK file into your 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.


4.1.2 Installation



MeMobile Game download from Google Play Store

You can download Memobile Game for Android to your device using the Google Play Store app or through your computer. You can also download content using your device's Internet connection, and in that case there's no need to connect your device to your computer via USB to download content on Google Play.

Download using the Google Play Store app

1. Open the  Google Play Store app.
2. Enter in the Google Play Store search field: **Memobile Game**
3. Click on the magnifying glass to start the search
4. Select **Memobile Game** English version to install.
5. To install the app on your device, touch **Install**.
6. Tap **Accept** to accept the app's permissions and start your download.

Download using your computer Google Play Store website

1. Visit [Google Play](http://play.google.com/) [http://play.google.com/] from your computer.
2. Enter in the Google Play Store search field: **Memobile Game**
3. Click on the magnifying glass to start the search
4. Select **Memobile Game** English version to install.

MeMobile Game installation from APK file

1. Download game installation file (*memobile.apk*) using internet browser on your mobile phone from here: <http://games.hiteco.eu/>
2. Game installation file will be saved to *Downloads* directory, open it and execute.
3. Before installing the game turn on the installation permission of non-Android market programs: go to Settings → Applications (on some device: Security) → Unknown sources → tick „Allow installation of non-Market apps“ → OK (newer Android versions: Security → Unknown sources → tick „Allow installation of non-Market apps“ → OK)
4. Go to "Downloads" directory, open *memobile.apk* and execute.

5. The installation will start automatically or you will be asked: *"Do you want to install this application?"*, click *Install* button, then click *Open*.
6. Then you will be prompted: *"This application requires Adobe AIR. To continue, install Adobe AIR on this device"*, click *Install* (the device must have access to internet)
7. *Android Market* will open, click *Install*, then *Accept and download*.
8. You are done.
9. Go to *Home* → *Applications*; find *Memobile game* icon and play.



4.1.3 Playing the games

When game has started, three options are shown:

- "PLAY GAME" will open the game list page;
- "DISCLAIMER" will show the disclaimer page;
- "HOW TO PLAY" shows the main game buttons.

Once the "PLAY GAME" has been selected, the game list will be presented. Tapping the name of the game will start it.

Matching pairs



The learning part of the game will teach the proper definition of computer system elements.

The button NEXT will proceed with the learning part, otherwise the button SKIP will start the game directly.

In this game the user has to select two numbered squares at the time. This will reveal computer parts – presented in icons - until all the matching pairs will be discovered.

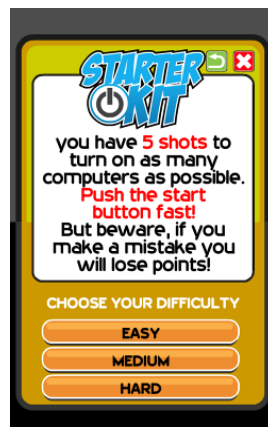
Starter kit



The game will teach how turn-on and turn-off the computer in the learning part of this game, the user will familiarize with the power button icons of the computer.

The button NEXT will proceed with the learning part, otherwise the button SKIP will start the game directly.

The user has the possibility to choose among three level of difficulty of the game EASY, MEDIUM, HARD.



In each level of the game, the user must hit as many power-on icons as possible. The levels are related to the number of the icons to touch in the round

Press and... action!:

In this game the user has to answer properly to the presented questions about computer keyboard shortcuts.

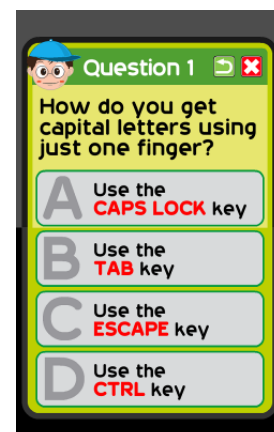
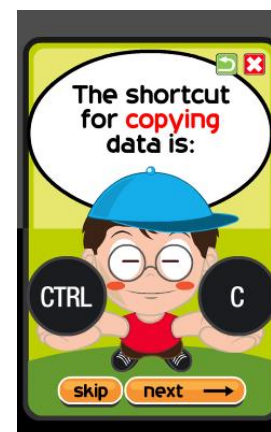


Figure 25: The different game components.

The button NEXT will proceed

with the learning part, otherwise the button SKIP will start the game directly.

When the game has started, the user can select the proper answer from the four listed.

The selected answer will show if the choice was correct or wrong.

If all the answers are correct, a bonus level of the game will be available.

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 26). This can be selected using the mouse or keyboard, and localises the content for the rest of the game.



Figure 26 : Language selection screen

Following this the user enters the category selection screens. There are three initial categories (Figure 27), with sub categories appearing as a new menu (see example in Figure 28) 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)

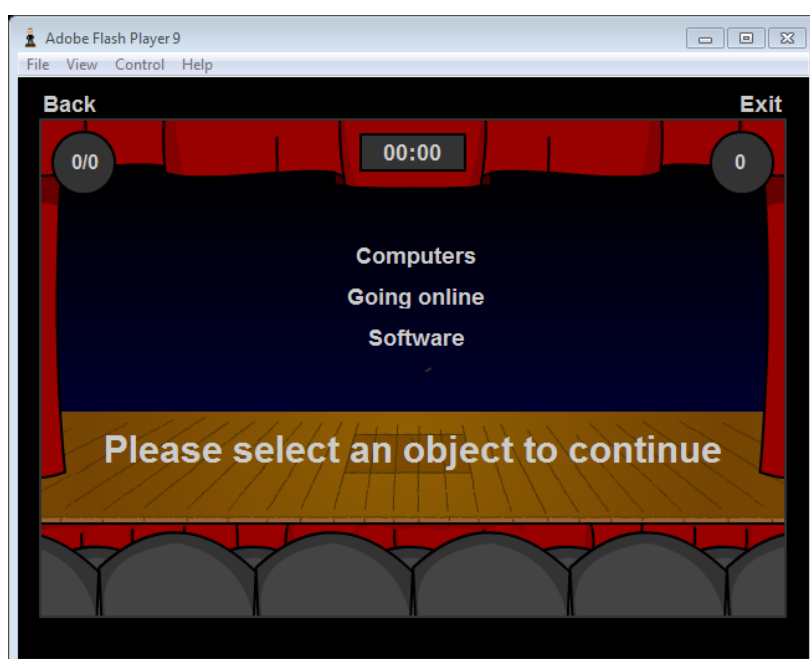


Figure 27 : Category selection

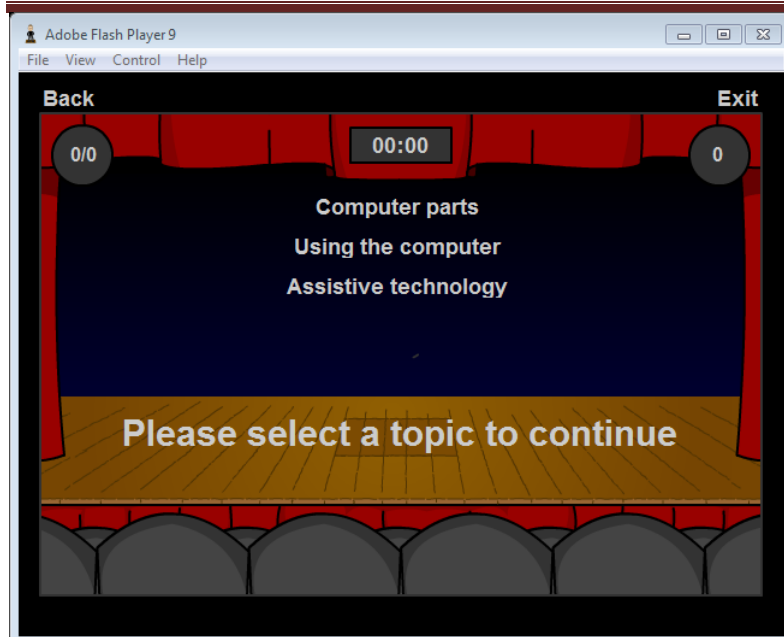


Figure 28 : Sub-category selection

Finally a game-play level must be chosen (see the capture in Figure 29). This determines the amount of time available for the user to guess the word. The options are:

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

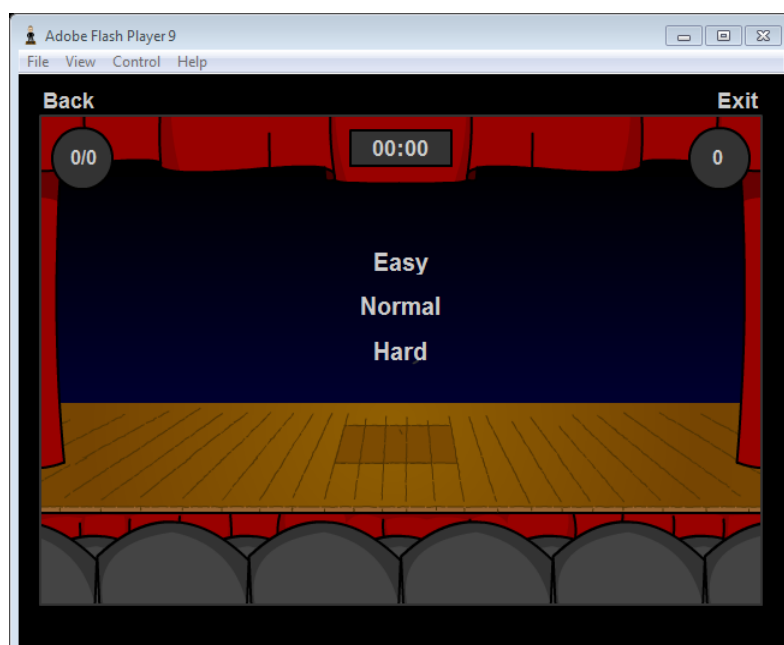


Figure 29 : Level selection

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 30. 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 31. Again using the clue wastes some question answering time.

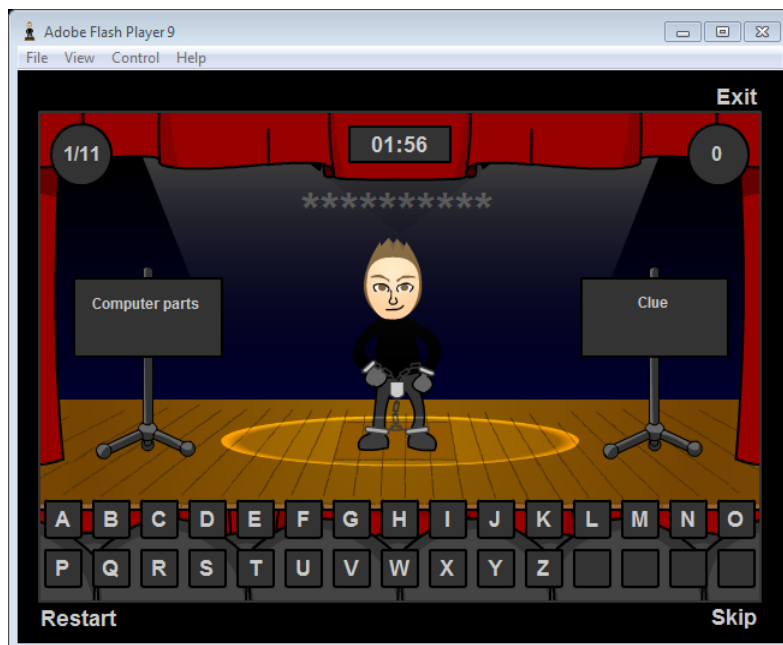


Figure 30 : Gameplay screen

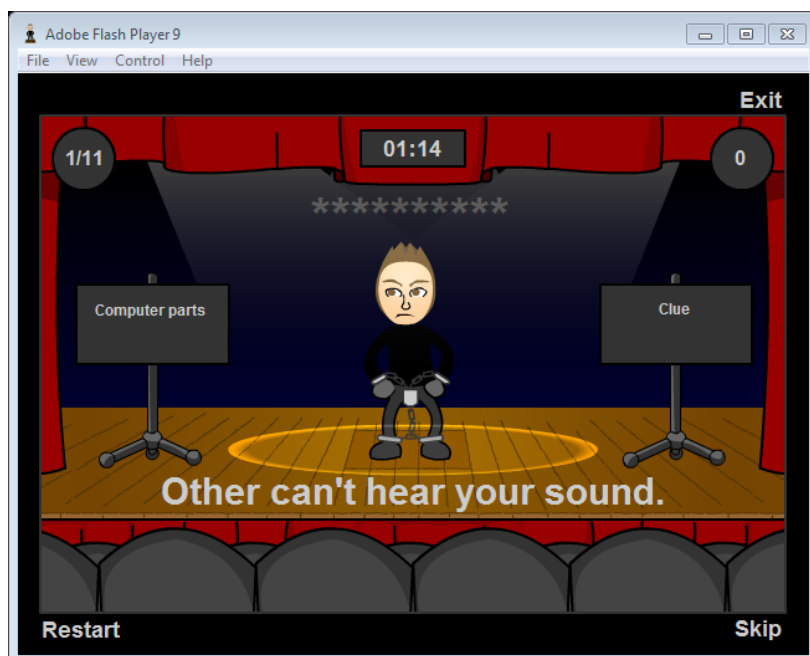


Figure 31 : An example of using the clue

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 32). 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 33). This provides a little more information about the subject word. The game progresses to offer the user the next word puzzle to solve.

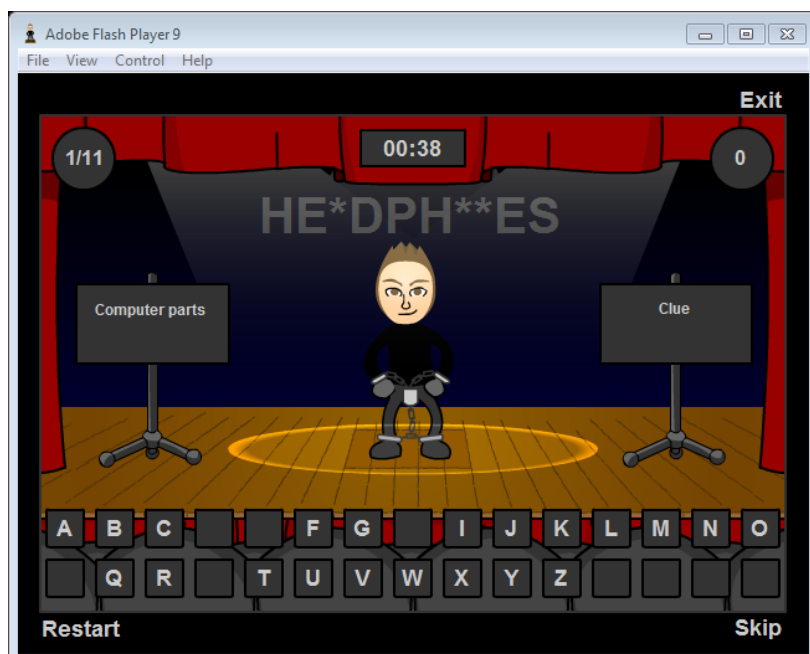


Figure 32 : Gameplay continues – correctly guessed letters appear in the word and the time counts down

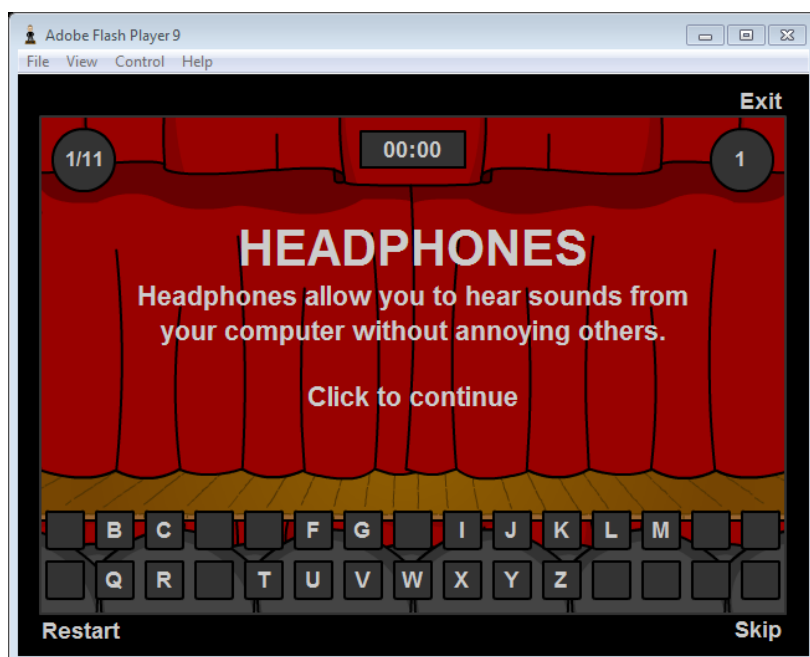


Figure 33 : Feedback screen

4.2.3 Game Editor

See section 4.3.3

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 34. 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 34 : 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 35)



Figure 35 : 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 36), 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 37) 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 38).

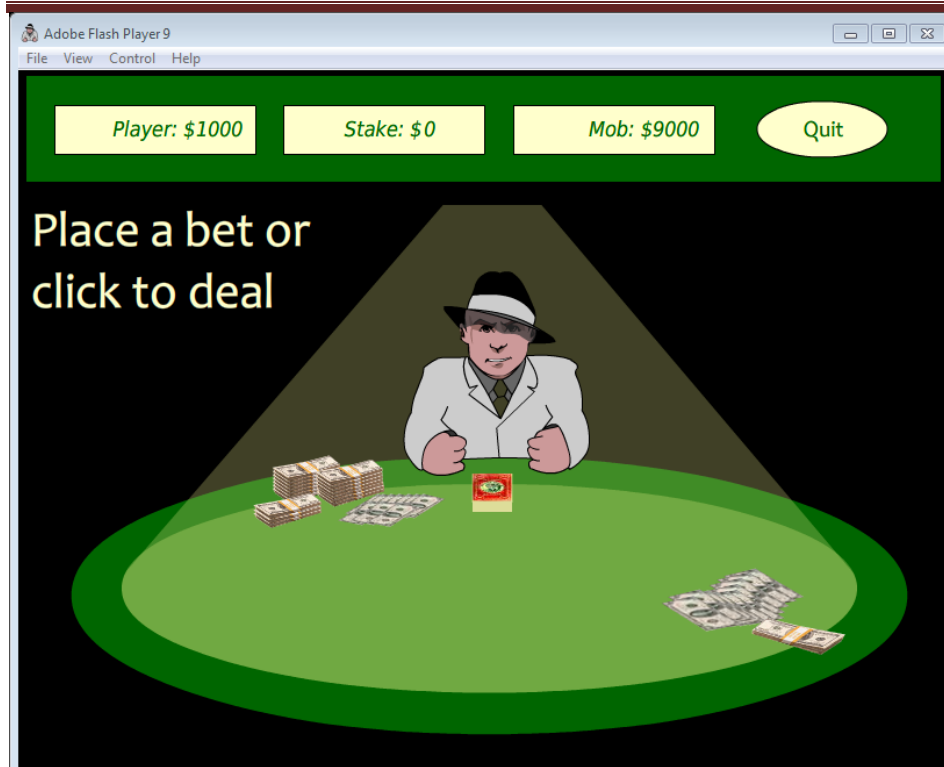


Figure 36 : The initial game screen. Click on the money to place a bet.



Figure 37 : The question and bet dialogue



Figure 38 : The screen after stake selection

The user then selects an answer to the question. If it is right the user wins (as in Figure 39). If the answer is wrong the user loses (as in Figure 40). 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 39 : A winning answer



Figure 40 : 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.

4.3.3 Game Editor

The game editor begins with the main screen which displays general instructions for the editor. The basic editor controls allow for switching language via the flag buttons, adding shortcuts to the desktop using the add shortcut buttons, and the game buttons to select which game is currently being edited.

On selection of a particular game, the editor then loads the xml question sets and displays the question set titles. These work slightly differently for the two games so we will describe each editor in turn.

Escapology Editor:

On selection of the Escapology button, the editor should display the main topic sets from the xml. Selecting one of these will open the relevant subheadings in the box below. Selecting one of these will then open up the first word in that question set. The editor will display which word it is out of how many words there are in the set (for example in Figure 42 the editor displays 1/35 – question word 1 from a list of 35). The arrow buttons may be used to step through the clue words. The word, its clue phrase, and the rationale (which is displayed when the word is revealed) are listed in editable boxes. Each of these may be edited for the current word. New words can be added using the plus button. Existing words can be removed using the Minus button. When edits have been made, the save button will become active. This must be clicked to save the changes made to the xml files.

NOTE: this will overwrite the old files so backups of the xml should be made prior to editing.



Figure 41 : Editor for the Escapology and Rob the Mob games

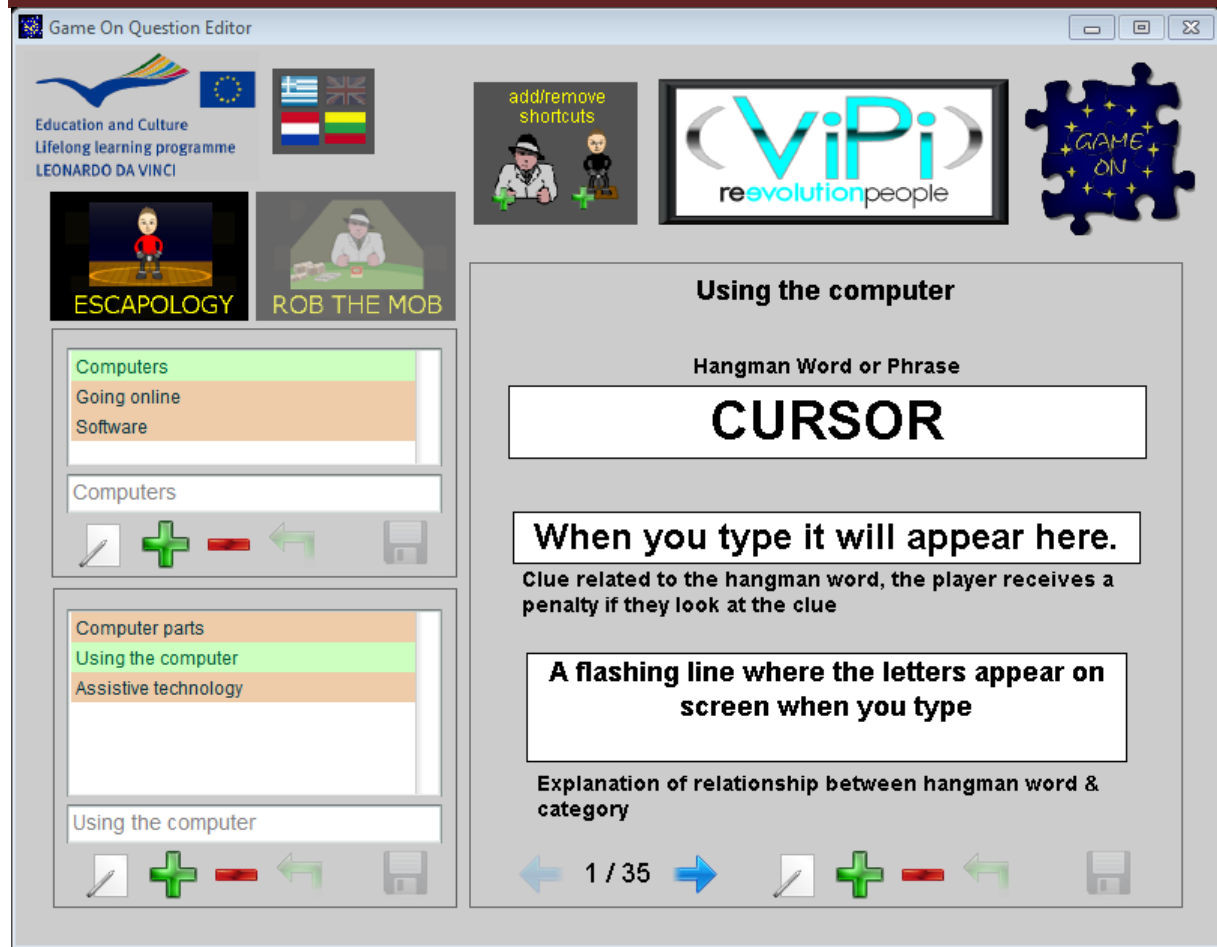


Figure 42 : Escapology editor

Rob the Mob Editor:

The main functionality of the Rob the Mob editor matches that of the Escapology editor. Selecting the Rob the Mob button opens the game's xml. The subject areas will then be visible in the top text box on the left. Selecting a subject area then opens that subjects sub headings in the box below. Selecting one of these opens the question set in the main window. The first question will be displayed first. Again the question number and total number of questions in the set are displayed at the bottom of the main screen (in Figure 43 this is displayed as 1/4) .

The text fields for each question here are the question, the four answers and also importantly the correct answer. Clicking on a cross will make that become the tick – i.e. the correct answer to the question. Again after any changes the save button becomes active and must be clicked to overwrite the question with the edited version.

NOTE: Again it is important to note that this will overwrite the old files - so backups of the xml should be made prior to editing.



Figure 43 : Rob the Mob editor

4.4 ICT - True or False

4.4.1 The True/False and Yes/No 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, which may be carried out by editing xml files.

The materials provided cover aspects of Basic ICT Skills in English, 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.

The content for the quizzes is developed at two level. The True/False quiz is aimed at the higher levels of the ViPi curriculum, whereas the Yes/No quiz covers the materials from the Unit 1 part of the curriculum and has been developed specifically for the target audience at Oak Field School in Nottingham.

4.4.2 Playing the game

The games begin with the splash screen shown in Figure 44. 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.

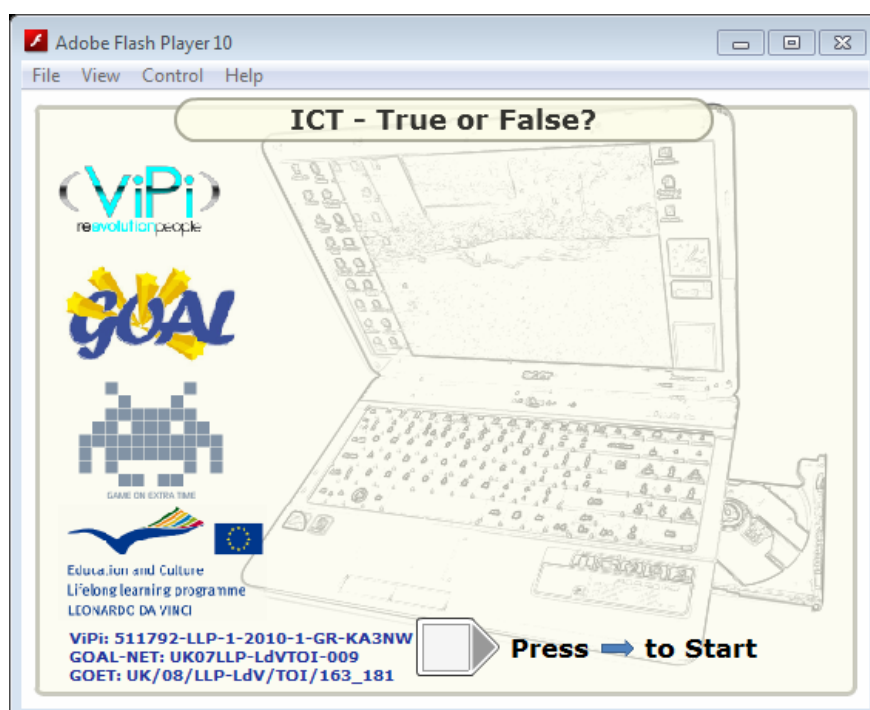


Figure 44 : The splash screen for the ICT True or False quiz

The splash screen is followed after a user input by an instruction screen (as seen in Figure 45). The instructions are presented in both audio and text format, and are further enhanced by the use of an animation.

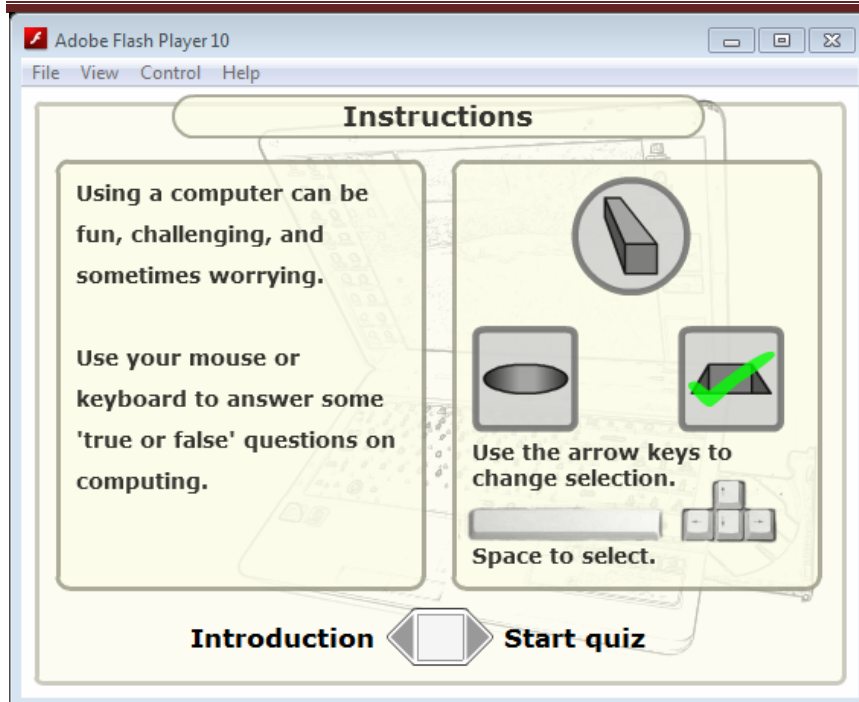


Figure 45 : The instruction screen

Following the instruction screen, the quiz begins. It has four rounds, each of which is introduced with a title screen (see Figure 46), 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

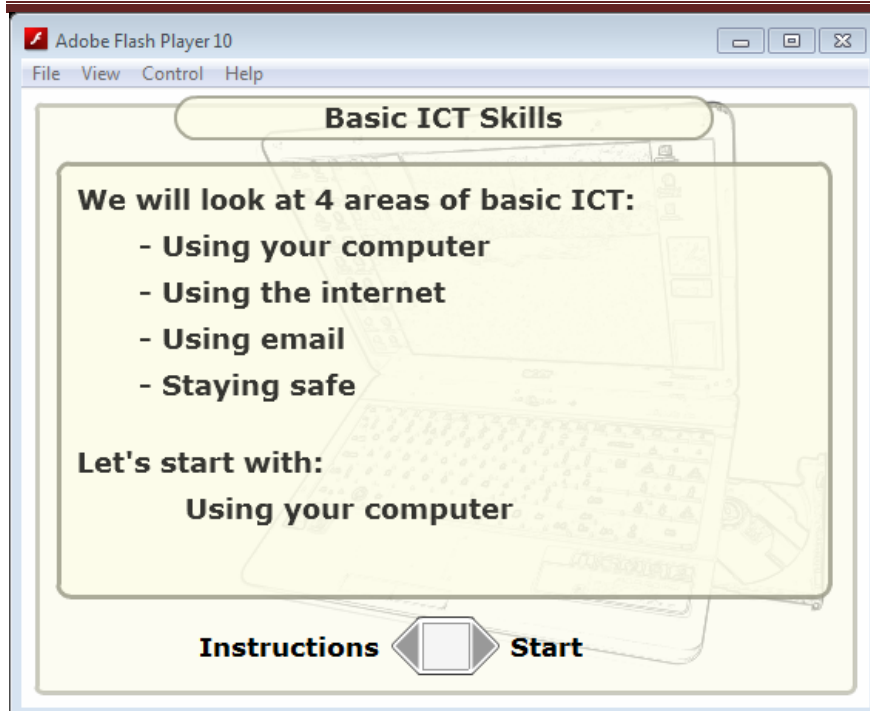


Figure 46 : The first section introduction screen

The question screens (see Figure 47) 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.

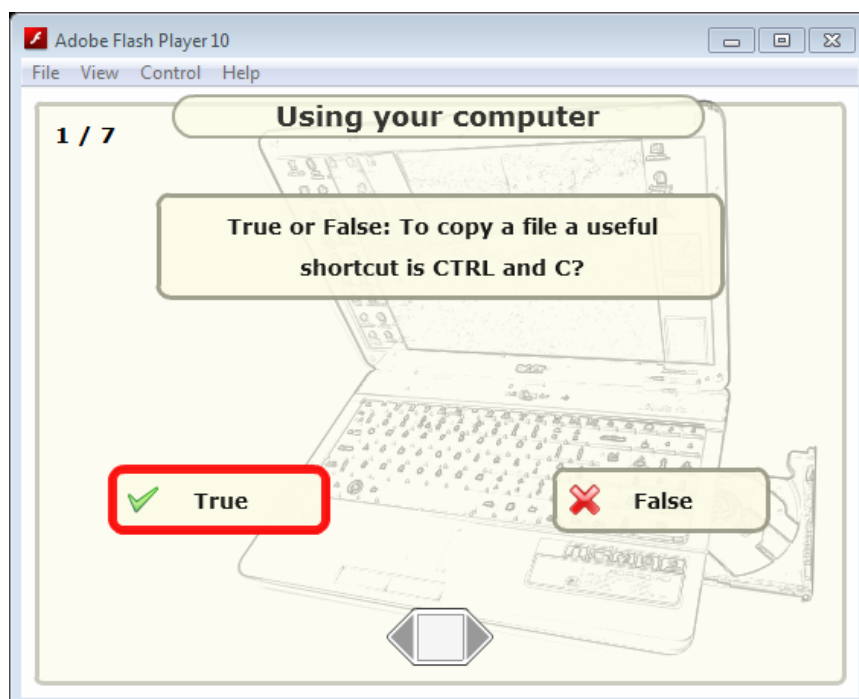


Figure 47 : An example question screen

On selection of an answer (using space bar or a mouse click) the user is instantly provided with feedback (see Figure 48). 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.

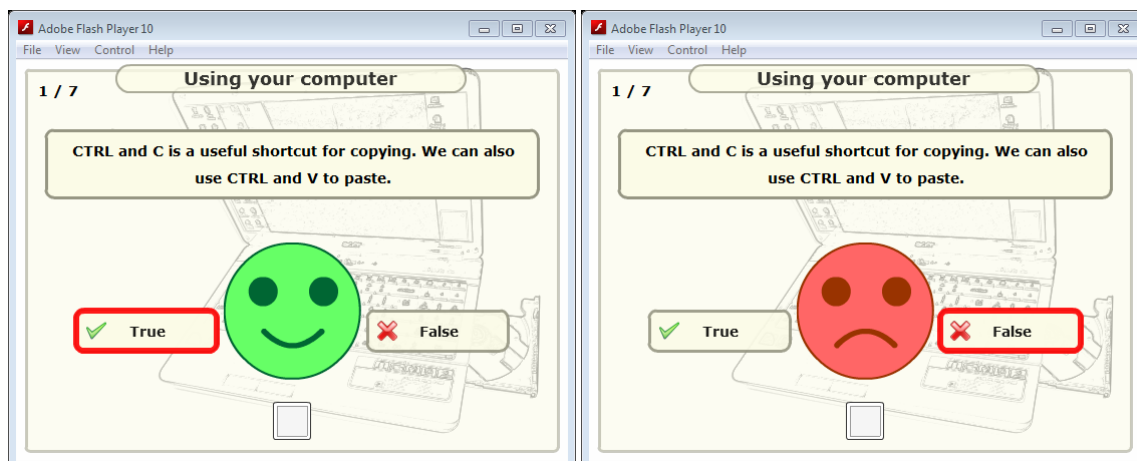


Figure 48 : Examples of positive and negative feedback for a question

When the question set is completed, there is a round feedback screen which displays the user's results in that round (see Figure 49).

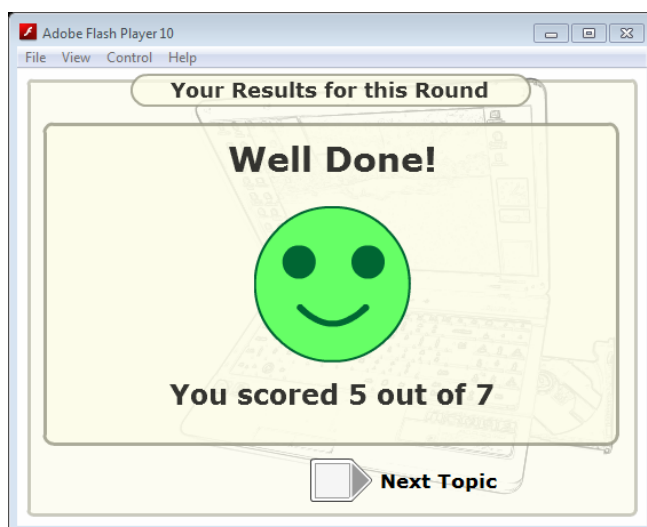


Figure 49 : Round feedback page

On completion, a summary screen is displayed (Figure 50), showing the number scored out of the number possible, and the derived percentage value.

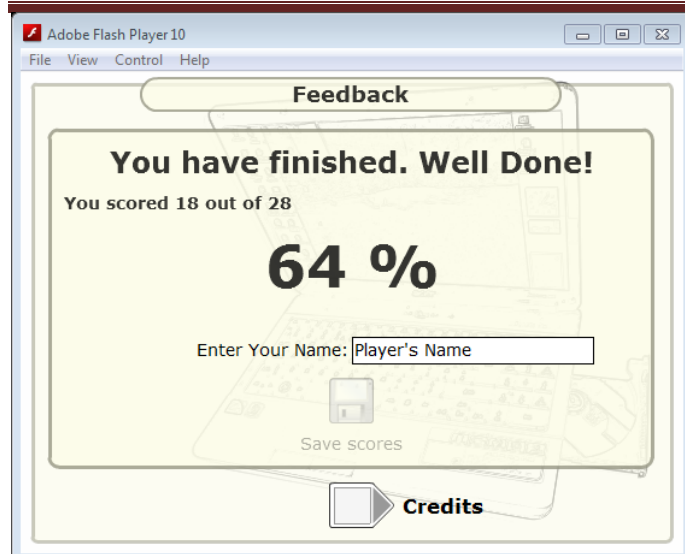


Figure 50 : The final feedback screen

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 51).

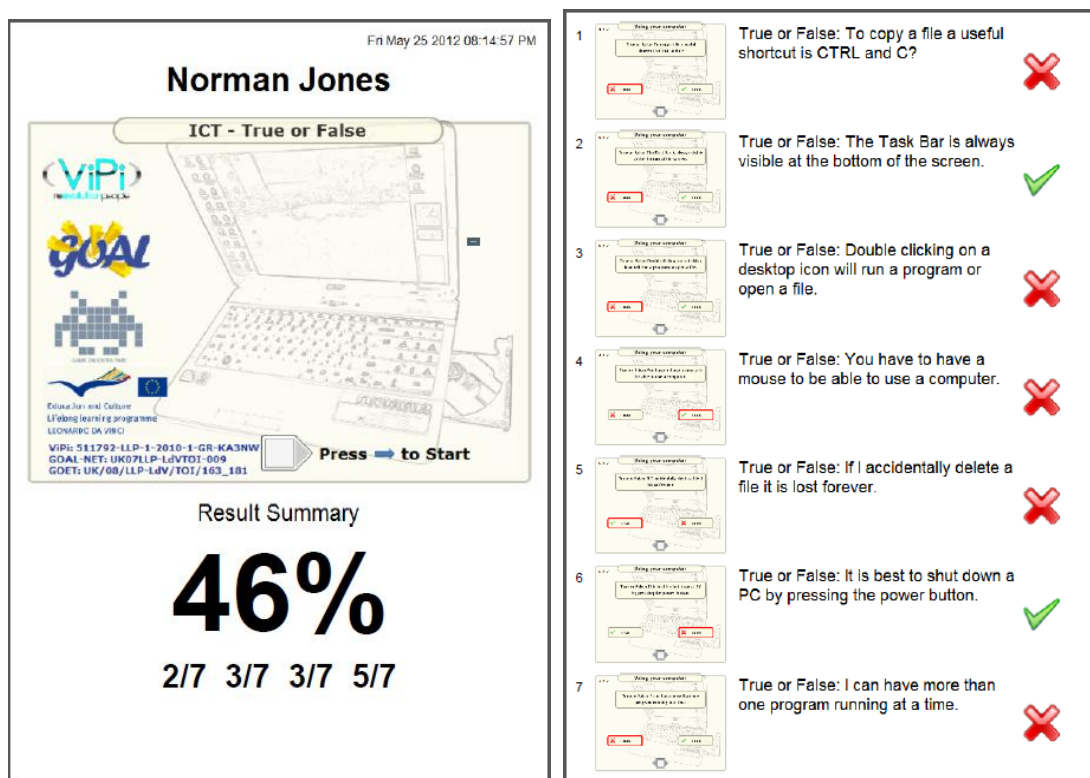


Figure 51 : Some captures from the automatically produced PDF file

4.5 Stay Safe

4.5.1 The Stay Safe Engine

Stay Safe has been developed using a game engine developed in house at the Interactive Systems Research Group at Nottingham Trent University. The game uses XNA for the graphics and is coded in C# calling game data from a set of editable XML files.

The content developed for Stay Safe is designed to highlight safety issues regarding email. It covers such topics as dangerous attachments, spoofing, scams, and chain email. The game situation involves a user checking his emails and going through the received mail with an experienced computer user stood behind them. The user must make decisions (based on multiple choice questions) over which course of action to take with each email. When wrong choices are made, the helper person will interject with advice about the way to proceed.

All on-screen content (displayed as textures on the 3D monitor model) is replicated in on screen question text which can be read by the built in screen reader.

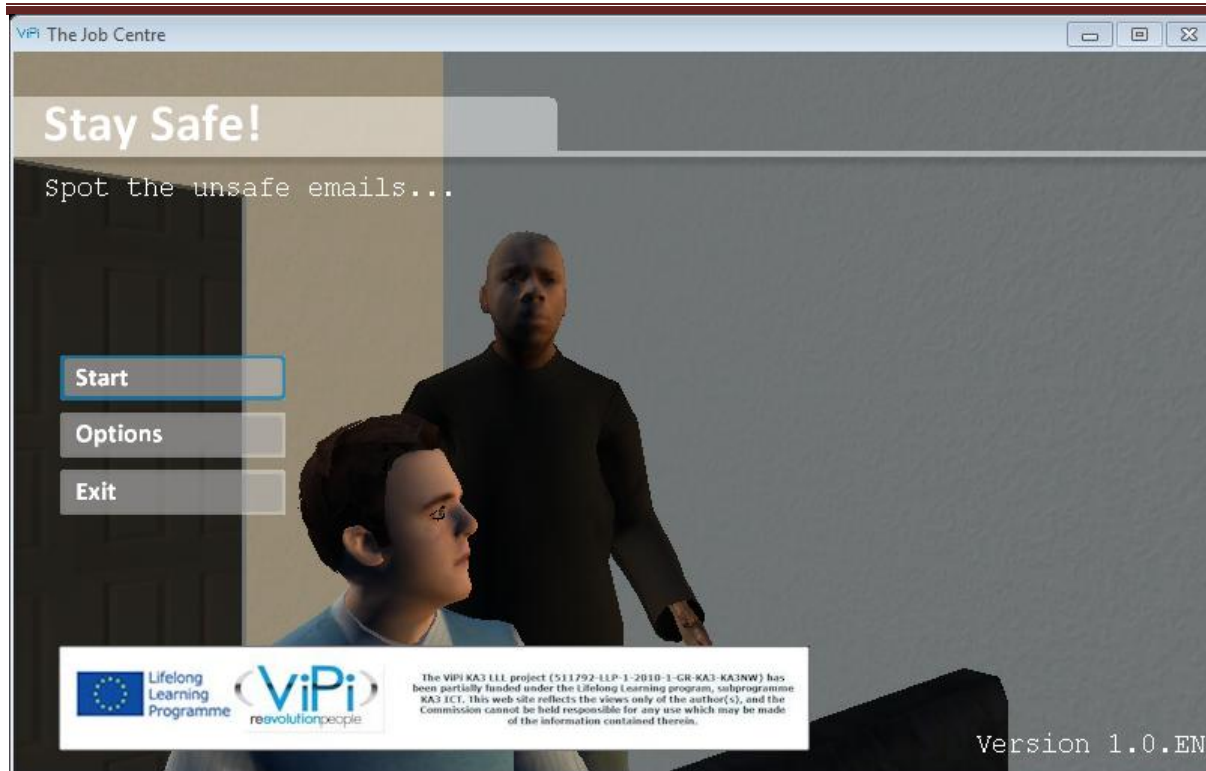
The editor package built into the game allows a trainer to edit the content of the text fields and save the xml back out, so the games can be changed to suit different materials. If a trainer wishes to create new screen grabs to upload to the screen this is also possible as the files are called from an external image folder.

The game is available in the four project languages. (currently only English and Greek – It and NL coming soon).

4.5.2 Playing the Game

Stay Safe is installed using the downloaded installer package. The installer places a shortcut on the desktop and in the Interactive Systems NTU folder on the Start Menu.

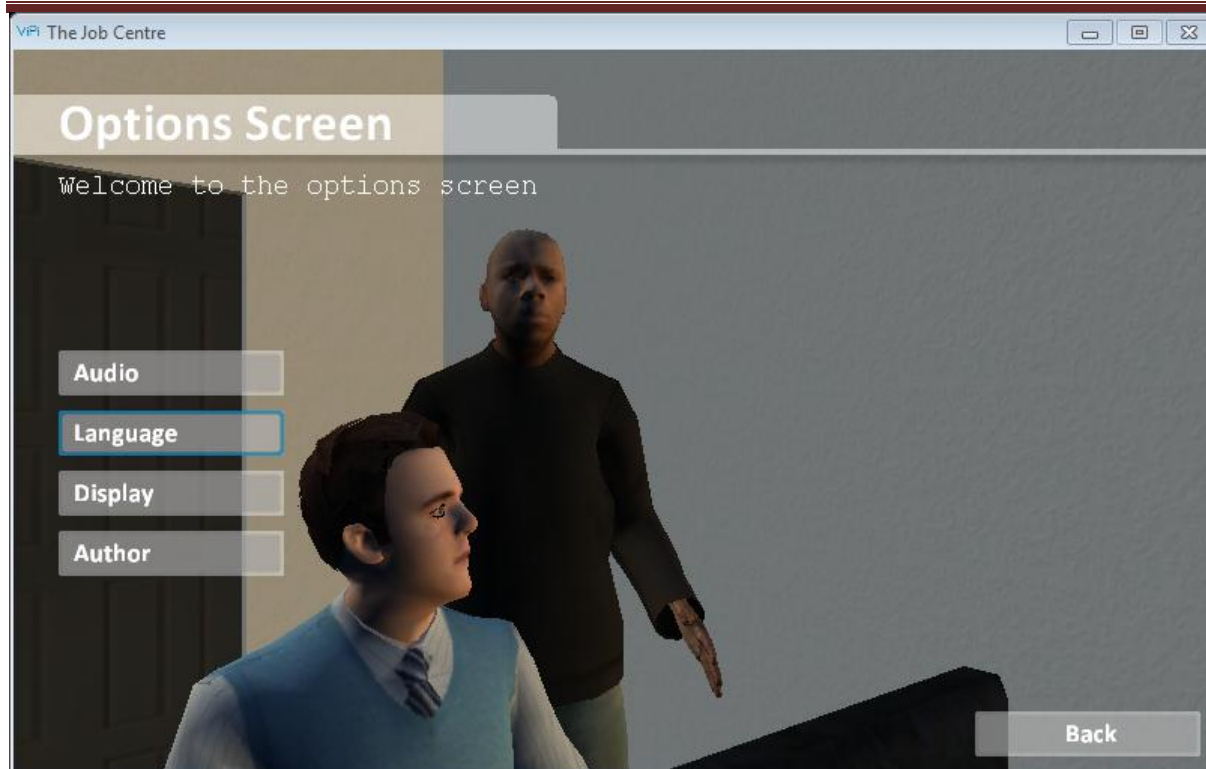
On starting the game the initial screen contains buttons to start the game, enter the options screen, or exit the application. This screen is shown in [Figure 52](#).



[Figure 52 : Stay Safe start screen](#)

The Stay Safe options screen (shown in [Figure 53](#)) contains access to the following options:

- audio - this menu gives access to turn on the game's text to speech
- language - allows selection of the correct language
- display - enables selection of full screen or minimised mode
- author - gives access to the game editor package to create new xml question files



[Figure 53 : Stay Safe Options Screen](#)

The controls to run the game are described on the first screen after clicking Start. The controls are:

- The right arrow moves to the next piece of dialogue.
- When reaching a decision point, the answers may be selected using either the mouse or the keyboard. The required keys are the arrow keys and the space bar to select.

Pressing the right arrow key then scrolls through the dialogues (which look like [Figure 54](#)) allowing the user to read through the game at their own pace (or using the text to speech functionality). On each decision node (question dialogue – and example of which is given in [Figure 55](#)), the user must make a selection. The answers usually consist of one best answer, one or two semi correct answers and a wrong answer. These are scored 2 points, 1 point or no points respectively.

The user progresses through the screens moving down the list or received emails until all of the emails have been looked at. Feedback is given to the player as they progress through the game from the helper avatar stood behind them. They will agree with correct decisions, or suggest correct answers when bad decision are taken. In all cases the correct response is given and justified so that the player learns from their experience. On the final screen ([Figure 56](#)) the user's score is displayed.

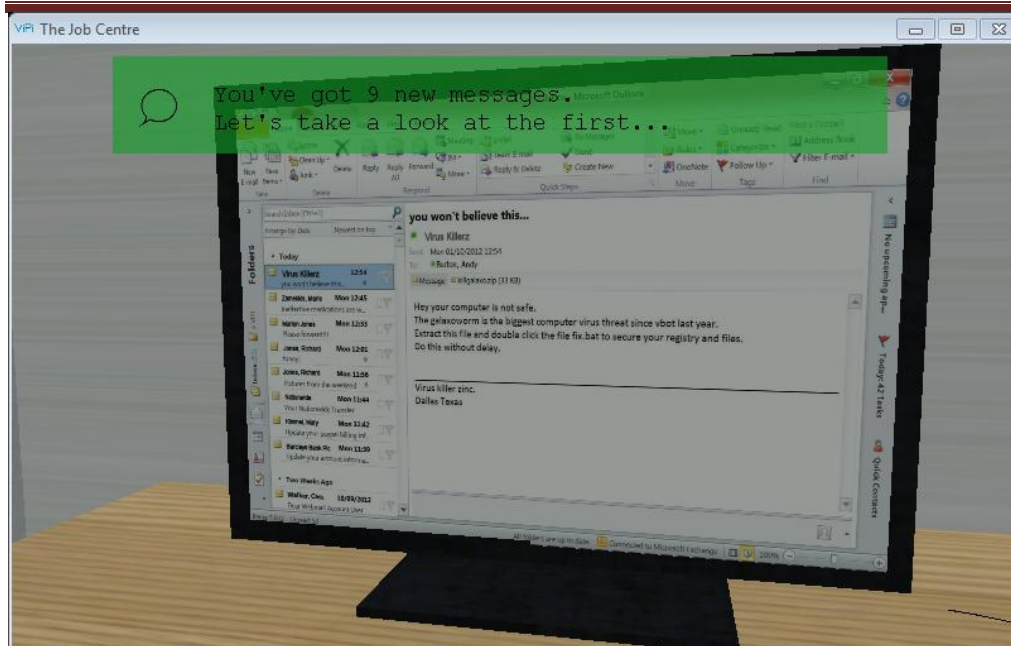


Figure 54 : Stay Safe example dialogue screen

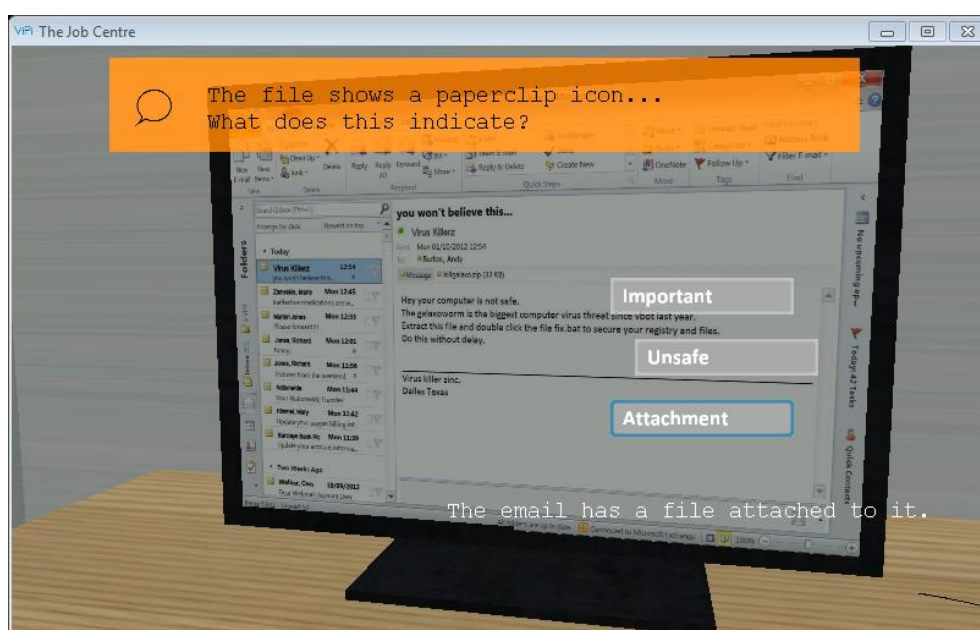


Figure 55 : An example question screen from Stay Safe

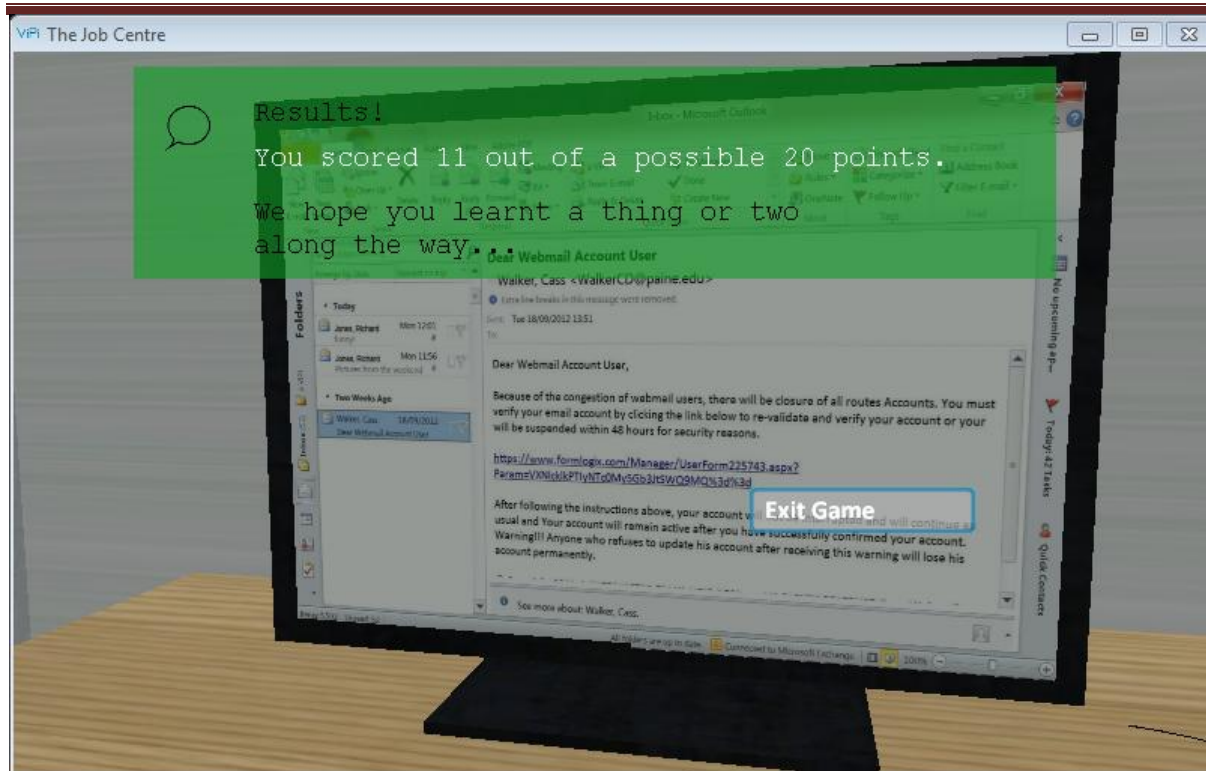


Figure 56 : The end screen from Stay Safe

4.6 Fly Swat

4.6.1 Justification

Fly swat has been developed to meet the needs of the user group at the Oak Field School, where a number of the students have multiple and profound disabilities. Their teaching is broken down into a set of p-levels which are taught throughout the school to students who are not yet achieving the standard required to do work relating to a mainstream curriculum.

It provides a means to develop and assess skills relating to awareness of ICT, understanding the concept of cause and effect within ICT, and provides also a means of practicing skills with input technologies (mouse and keyboard, and other assistive devices which may be used), and improving timing and co-ordination with the ICT technology.

4.6.2 Technology

The game is developed in JavaScript and HTML5 running in a web browser. It is available to play online at <http://software.isrg.org.uk/vipi/flyswat/FlySwatIndex.html>.

4.6.3 Concept

Fly swat is a game based around the principle of watching and swatting a fly. The fly has several modes of movement to map to tracking modes that are required by the p-levels, including horizontal, vertical, following an expected route, and random. The swat also has several movement modes. It can be stationary, auto track the fly in one axis (to allow one key/one click gameplay) or be moved left and right by either following the mouse or by key presses. These are described as either 'user control' or 'one'

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

touch' mode. In 'user control' mode the swat is moved manually by mouse or keyboard. In 'one-touch' mode the swat either moves automatically or is fixed and the gameplay is about timing of swatting the fly at the right moment.

Swat activation is by either mouse click or keypress. These inputs can also be mapped with external software to allow gameplay using assistive technologies such as switches, eye-tracking or brain control interfaces.

The game is visually stimulating and also contains audio (which may be muted). It records the high score during a session to provide additional stimulation to play more. The object of the game is to swat as many flies as possible in the 60 seconds available. At the end of the game the user sees their score and the highest score obtained during the current session (as in Figure 60).

A target can be shown to give the user a better indication of where the swat will fall (see Figure 59).

Controls – these can be selected as buttons on screen (see their locations in the start screen capture in Figure 57 and during gameplay in Figure 58) or with the keyboard shortcuts listed below:

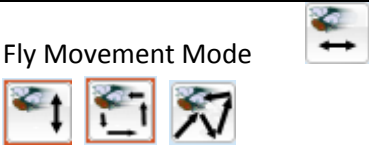



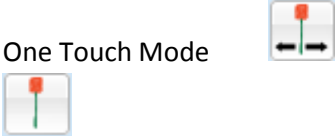

Control		Key	Mouse
Move Left		Left arrow	Move mouse left over game canvas
Move Right		Right arrow	Move mouse right over game canvas
Swat		Space bar	Left click over game canvas
Fly Movement Mode		'M' key	Left click the button to switch between fly movement modes – of horizontal, vertical, predictable or random
Sound on/off		'N' key	Left click on sound on/off button during gameplay or on the title screen
Show/hide Target		'T' key	Click on target button during gameplay or at the title screen
Fly Speed		'S' key	Click on fly speed button to change fly speed between slow, medium and fast
One Touch Mode		'O' key	Click on one touch mode button to switch between manual and automatic swat movement (only available in random fly movement mode)
Help		'H' key	Available on the start screen this displays the instructions
Restart game at end		Space bar	Left click over game canvas



Figure 57 : Fly Swat start screen showing at the top left buttons to alter (from left to right) sound on/off, target on/off, fly speed, fly direction, one touch mode, and at the top right the help button

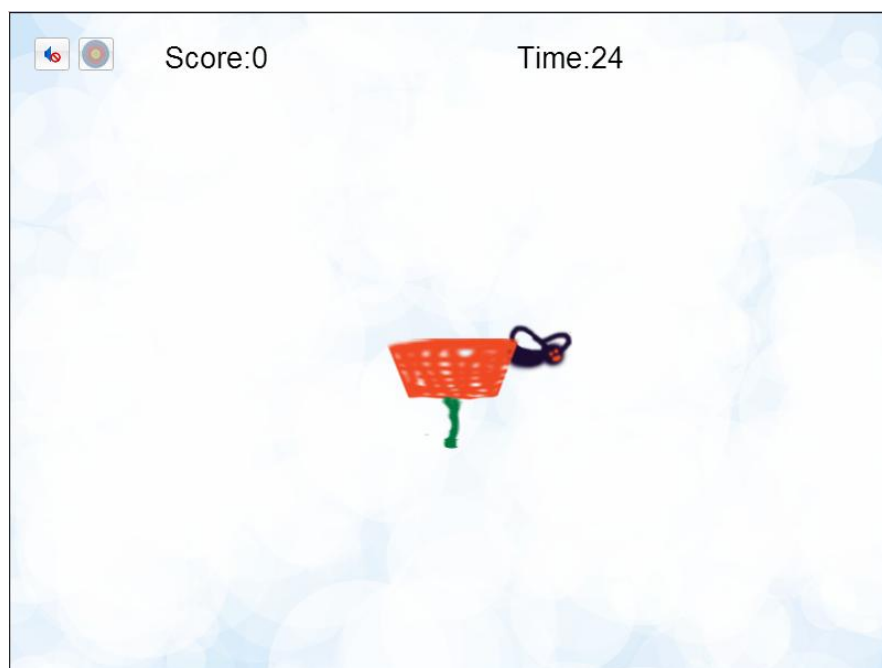


Figure 58 : The game in play

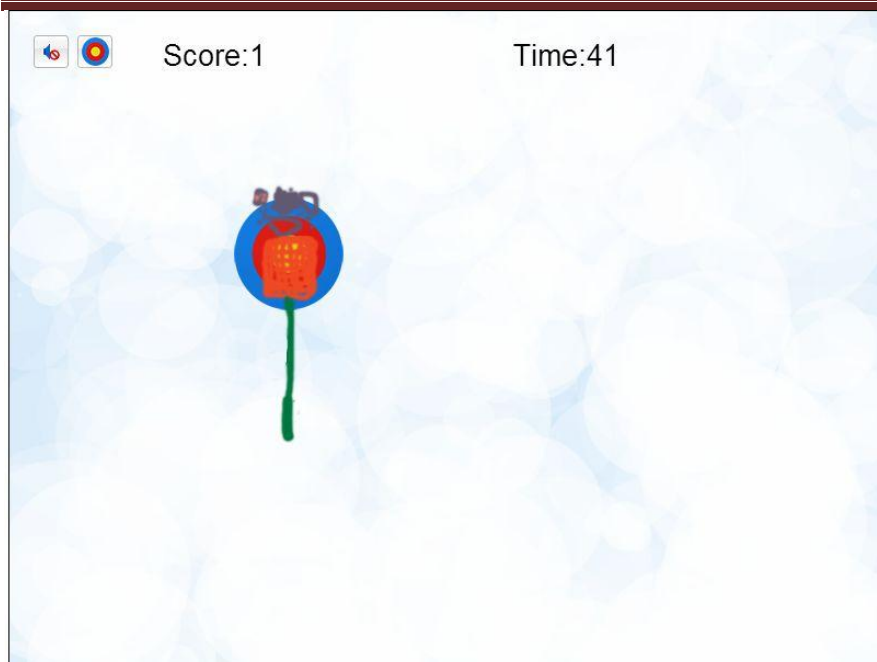


Figure 59 : A fly being splatted, this shows the target on to help the player to swat flies more easily

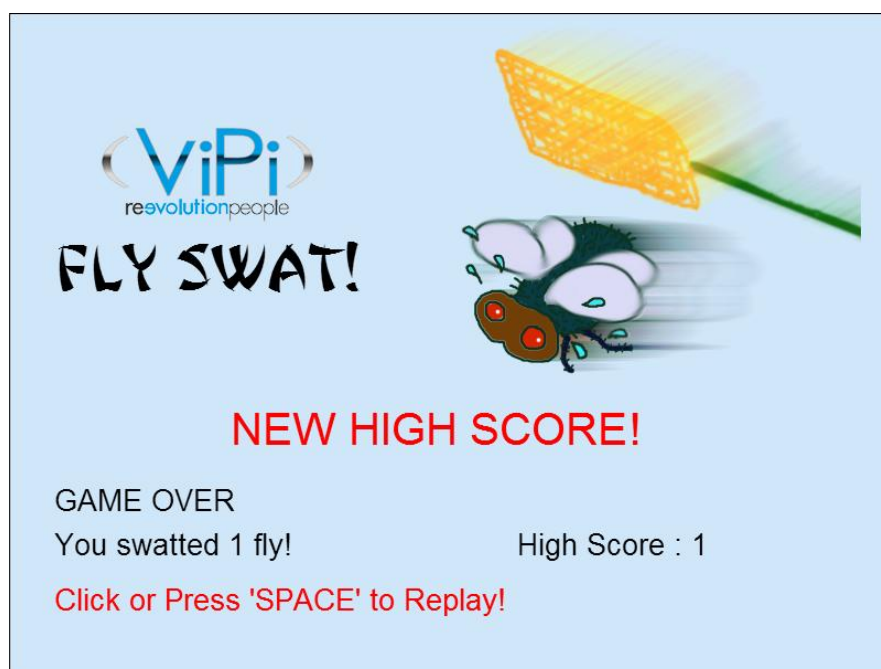


Figure 60 : The feedback screen showing the player's score, and the highest score achieved (since browser refresh)

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

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

Annex 1 – A Visual Representation of the ViPi Educational and Pedagogical Framework

This diagram is not intended to replace, but to complement and to help to summarise the textual information given in the document

Educational questions	Educational directives
How would the user benefit from improved basic ICT skills?	Take into account knowledge of trainee's capabilities and achievements so far but involve trainees in discussions about what they would like to learn.
How motivated are they?	
What are their capabilities? • What is the appropriate entry level for them? What are realistic training goals?	Be prepared to reassess if trainee observation and feedback indicate problems
How can I help them to do these things?	Ensure the balance between challenge and achievement is right for each person <ul style="list-style-type: none"> • Recognise the need for assistance from the trainer • Select a range of different activities • Select the most appropriate games and other learning objects • Let trainee determine their own learning speed Make sure the trainee receives appropriate feedback

Social Questions	Social directives
What is the best balance between individual and group learning?	If starting skill levels vary widely between trainees, ensure there is enough teaching support
Can trainees help each other to learn and can some peers act as tutors?	

Organisational questions	Organisational directives
	The organisation must be supportive of the introduction of ViPi and possess an appropriate pedagogic culture.
Is there sufficient technical support for the initiative inside the organisation?	
Do the trainers feel confident using the platform (Web and mobile)?	Train trainers in ICT and AT Ensure trainers have received the ViPi handbook and are trained in ViPi outcomes
How will ViPi fit in with the rest of the trainer's work and the current curriculum?	

Technological questions	Technological directives
	Ensure any programs required work on hardware and operating system available
	Ensure vipi-skills.eu, vipi-project.eu and isrg.org.uk can be assessed
	Ensure machines (desktop and mobile) are usable for practical exercises eg have write access
	Ensure all trainees have access to any required mobile technologies.
What ICT/AT do they need and is it available?	
What adjustments do they need in the software platform options and mobile devices?	Ensure ease of access settings are enabled