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Content and Language Integrated Learning with ICT using the Interactive Whiteboard

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Teachers of General Subjects at Lower and Higher Secondary Schools
English Language – Information and Communication Technologies

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Declaration:

I hereby declare that I worked on my thesis on my own and used only the sources listed in the Works Cited section.

I agree that the thesis be deposited in the library of the Faculty of Education of Charles University in Prague and made accessible for study purposes.

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Abstrakt:

Diplomová práce „Content and Language Integrated Learning with ICT using the Interactive Whiteboard“ si klade za cíl pokusit se vymezit potenciál pro využití metodiky CLIL při výuce informačních a komunikačních technologií. Práce zkoumá vývoj a oficiální podporu metodiky CLIL ze strany Evropské unie a zamýšlí se nad tím, jaké CLIL přináší výhody a proč o této metodice uvažovat. Kromě toho mapuje základní otázky, které si učitel klade, uvažuje-li o zavedení metodiky CLIL. V praktické části je práce zaměřena na tvorbu aktivit, které mohou sloužit jako příklad využití metodiky CLIL při výuce předmětu informační a komunikační technologie s využitím interaktivní tabule, což je nový moderní prostředek, kterým disponuje stále více škol. Praktická část zahrnuje soubory pro spuštění na interaktivní tabuli, vymezení žáků pro každou aktivitu, kontextu každé aktivity, jejích výukových cílů a očekávaných výstupů žáků. Zahrnuty jsou rovněž druhy úkolů a očekávané problémy.

Klíčová slova: CLIL, informační a komunikační technologie, cizí jazyk, obsahový předmět, obsahově a jazykově integrované učení

Abstract:

The main goal of the diploma thesis “Content and Language Integrated Learning with ICT using the Interactive Whiteboard” is to provide a comprehensible assessment of the potential benefits of employing CLIL during ICT lessons. The thesis focuses on the recent history of CLIL and its roots as well as the official support it receives from the European Union. This work also takes a look at the advantages CLIL has to offer and why anybody should consider using it. This work goes on to suggest some basic questions a teacher should ask him/herself when considering whether to employ CLIL or not. The Practical Part is focused on creating a series of activities that may serve as an example of using CLIL during ICT lessons while making use of the Interactive Whiteboard, one of the new tools that is available to an increasing number of schools. The Practical Part also includes sample files to be opened on the Interactive Whiteboard, the age range of learners for whom the activity is intended, their learning context, aims and expected learning outcomes for each activity as well as the kinds of tasks included in each activity and the expected problems.

Key Words: CLIL, Content and Language Integrated Learning, ICT, Information and Communication Technology, IWB, Interactive Whiteboard, second language, non-language subject

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1 Introduction

Over the last decades, language learning has become widespread and grown in importance in formal education in Europe. Certainly, with the blooming of modern technologies and increasing ease of communication with other people, regardless of national or natural boundaries, it is both understandable and prudent to provide the means to understand each other to as wide a group of learners as possible. Seeing as language is one of the defining traits of a nation, then in the interest of “cooperation and peaceful integration while protecting the language diversity” (European Commission), as declared by the European Commission, it only makes sense to put emphasis on teaching languages. Those stated goals put multilingualism as an integral part of European identity, not to mention that multilingual pupils are in a better position to take advantage of educational, economic and professional opportunities created by an integrated Europe. The aim of European Language policy is to achieve such a state when every citizen is capable of communicating in at least “two other languages” beside his mother tongue (European Commission). However, this aim is not yet being reached. At the same time, the importance of this aim is such that the existing language barriers should be overcome.

Among the methods that are supposed to help learners reach such a lofty goal is also language tuition integrated into another subject. This is called Content and Language Integrated Learning (CLIL for short). This is not exactly a new idea, but it grows steadily more popular. The general interest in improving the language competencies of the people helped support the relative spread of this approach. The readily available newly developed technologies also influenced the way both learners and teachers view learning, giving rise to e-learning and blended learning. It is generally argued that with CLIL it is possible to achieve good results in fostering language acquisition, content learning and improvement of learning skills (Marsh, *Using Languages*, 8). One of the more important traits of CLIL is the exposure to the foreign language being taught. Contrary to expectations, it is not the quantity of exposure that matters, but the quality (Pavesi et al. 78). This approach is supported by projects funded by the European Union and is spreading steadily (Eurydice, 13–34). The advantages this approach should bring to the table are various. First among them, according to Marsh, are “greater individual economic opportunities and benefits, providing greater overall economic return on investment in language education” (Marsh, *Relevance*). These are accompanied by additional issues such as:

- enhancing social inclusion and supporting egalitarianism through providing a greater range of learners with alternative platforms for learning languages

- recognizing and capitalizing on the relevance of limited and domain-specific competencies in languages
 - making learners linguistically prepared to take up their rights to study in other countries.
- (Marsh, *Relevance*)

CLIL also helps to provide opportunities to nurture “self-confidence and motivation” in learners (Pavesi et al. 85), even those who have not responded favorably to formal language instruction in general education and helps with “improving cognitive strategies” (Hlaváčová et al. 38, as translated and paraphrased by Drápalík). Thus even learners perceived as “weaker” could improve at both the language and non-language subjects.

For CLIL to function properly, another subject is required. In this case, ICT was chosen. The reason for such a choice is simple. Information and communication technologies are a fact of life in modern world. Entertainment involves new media, employers increasingly often ask for computer literacy and communication is now dependent on the World Wide Web, with information exchange being critical for today’s society. European policies include “the promotion of multilingualism in the emerging landscape of and through media and information and communications technology” and invoke initiatives such as “the European Community’s 7th Framework Programme for Research and Technological Development and the eContent and eContentplus Programmes” (Stevens and Shield, *Final Report*, 8)

At a European level, there have been several studies investigating education, media and new technologies and their interaction in ICT-supported environment. Their shared goal was to find the benefits of using ICT and new media in education, including language learning, and to map trends for the future, as evidenced by Holmes in his report (Holmes, 9). Furthermore, learners are being offered new options when it comes to study materials and supplements, ranging from self-help books and video pronunciation guides to specialized language learning applications (Duffy). However, that alone is not enough. Being equipped with the best of our current technologies would be for naught, if the user does not know how to effectively use the new technologies for maximum benefit. Additionally, learning language unassisted through self-help can take any learner only so far. There is the need for teachers fully qualified to teach languages, well-versed in pedagogy and cognizant of the options new technologies have to offer and confident in their use (Mishra, 1026–1028). Learners themselves too require a certain level of technological savvy to make full use of these new products.

That those needs have not been met is suggested by the following. Most people tend to use ICT more frequently for “socializing, communicating, working, seeking out various pieces of information or

for entertainment than for learning or study” (Stevens and Shields, *Annexe II*, 21). The survey further shows that the “frequency of learning or study with the use of ICT compares with that of using online facilities for banking, taxes or contacting officials” (Stevens and Shields, *Annexe II*, 21). However, “learning or studying with the use of ICT is more frequent than online shopping”, as evidenced by Stevens and Shield (Stevens and Shield, *Final Report*, 28).

Many professional language teachers are still reluctant to incorporate new technologies into their lessons, showing a certain degree of conservatism in this regard. It requires additional education to realize the full potential of new technologies and it is important to consider whether this additional training is worth the effort it takes. This choice can have somewhat unpleasant consequences, considering McLuhan’s famous quote: “Medium is the message” (McLuhan, 7). The implication of this statement is that media influence how messages are perceived and are able to influence the way the audience thinks. In this way, teachers will have to cope with the influence of new technologies whether they wish or not.

Regarding informal language learning, it is possible, with the use of ICT and new media, to maximize the learner’s exposure to the target language. This use of new technologies is in fact quite common, as suggested by a survey (Stevens and Shield, *Annexe II*, 23). In this ICT and new media can be very helpful, providing both much more abundant opportunities to come into contact with the target language and make learning more accessible and possible to tailor it to a particular learner’s needs, regarding pacing and choice, giving every user the option create his own “personal learning environment” (Chatti). Not to mention the fact, that for many learners, especially young learners, just the fact that they get to work with modern technology is motivating in itself.

It is the above mentioned fact which helped with the decision to write this work, to try and combine ICT with CLIL. While English and ICT are being taught as separate subjects, many learners themselves form a connection between those two. Creating such a connection in school seems only logical from a teacher’s point of view. It gives teachers the chance to assist their learners and help prepare them for a world that is interconnected by ICT and new media, allowing for rapid and multilingual communication. As one of the most feared possible factors capable of barring the uptake of technologies in language learning is age (Stevens and Shield, *Final Report*, 31), it should be only logical to help learners start getting used to this process as soon as possible and in a safe and controlled environment provided by the school. However, people must be prepared to use ICT and new media in language learning. And to do this, they must cope with a fast changing way of life, which obviously entails the ability to adapt quickly. Yet language learning still often appears to include just the textbook, notebook, handouts and listening. Again, school should set up an example

and prepare learners for a lifetime of adaptation, not stick to older behaviour patterns merely for the sake of tradition. This is especially important due to the fact that teachers nowadays do not have the comfort of knowing how the future will look like. In fact, as David Warlick said, one of the most significant problems of teachers today is that they have to prepare their learners to live in a future they cannot possibly envision. Considering the recent upsurge in the development speed of mobile computers, the uncertainty of the shape our future will take occurs in the range of decades. In face of this fact, the importance of preparing the learners for a lifetime of learning and adaptation must take priority.

The reasons to include interactive whiteboards are manifold. As mentioned above, the fact that learners will get to work with this new piece of technology will alone serve as further motivation. There are also further advantages, such as allowing the learners a greater degree of interaction with the subject matter and also the ease with which more teachers can cooperate and share the fruits of their labor. Another undeniable advantage is the ability of interactive whiteboards to bring media into the classroom. While computers nowadays enable teachers to play video and audio to their students, interactive whiteboards enable students to directly interact with the multimedia material and bind these audio and video segments directly to elements of the lesson. In addition to this, there is also an advantage from the teacher's point of view, and that is a gallery of pictures already included in the package with the interactive whiteboard, well supplemented by many online repositories, where teachers from all around the globe can participate and share. In the theoretical part of this work the concept of CLIL is laid out with its context and history of the development of bilingual teaching, accompanied by an analysis of challenges and decisions one must face when deciding to make use of CLIL and finally the scope CLIL encompasses, which brings its own advantages. Following that is an analysis of the impact of ICT on the process of learning, including the new options and problems this development brings to the table. The practical part involves a few basic tenets to keep in mind when using an Interactive Whiteboard and a series of CLIL activities thematically oriented at ICT, making use of the options an Interactive Whiteboard offers to make an ICT lesson more interactive. These activities are based on elements of the writer's ICT teaching practice where English was used to facilitate a better understanding of the subject matter or where it was commented by the local ICT teacher that more interactivity would prove a boon.

2 Theoretical Part

2.1 Historical overview

As mentioned before, the idea of integrating language and other content is not exactly new. The practice of teaching several subjects in a different language has been taking place in some European schools for some time. As a part of reconciliation efforts in post-WW2 Europe between France and Germany, bilingual education was implemented. After the Franco-German Treaty of 1963, bilingual programmes were introduced in Western Germany to foster international understanding (Breidbach and Viebrock, 5).

During the 1970s and 1980s, they tried immersion teaching in Canada. This influenced the development of this kind of education. At first, English-speaking parents living around the province of Quebec who considered proficiency in French vital when living in a French-speaking environment were the initiators of the idea. Their goal was to give their children an education that would also enable them to acquire the sought after language skills. Immersion teaching programmes proved to be remarkably successful in Canada and it was the involvement of parents and the support from the education authorities which contributed to their success (Eurydice, 8).

The acronym CLIL (Content and Language Integrated Learning) was coined by David Marsh in 1994. It is an “umbrella term” (Frigols) for teaching a non-language subject through the medium of a foreign language. Coyle cites Grin to the effect of there being 216 variants of CLIL being used (Grin) (Coyle, *Agenda*). CLIL is supported on an international level as a part of language teaching. The Lingua programme of 1990 declared the importance of: “promoting innovation in methods of foreign language training and in the exploitation of the communications technologies used” (Decision of the Council). Then in 1995 came The Resolution of the European Council referring to “the promotion of innovative methods and to the teaching of classes in a foreign language for disciplines other than languages, providing bilingual teaching” (Council Resolution of 31 March 1995 on improving and diversifying language learning and teaching within the education systems of the European Union). Among other things it proposed:

Improving the language teacher training quality by encouraging the exchange with Member States of higher education students working as language assistants in schools, endeavouring to give priority to prospective language teachers or those called upon to teach their subject in a language other than their own. (Council Resolution of 31 March 1995 on improving and diversifying language learning and teaching within the education systems of the European Union).

That same year the European Commission published its White Paper on Education and Training – Towards the Learning society in which the emphasis was put on the importance of innovative ideas and the most effective practices that can be used to assist all European Union citizens in becoming proficient in three European Languages. In light of these aims, the European Commission proclaimed that “it could even be argued that secondary school pupils should study certain subjects in the first foreign language learned, as is the case in the European schools” (Teaching and Learning – Towards the Learning Society, 47). These recommendations had a positive effect on the development of different approaches to language teaching. In fact, the Socrates Programme from 2000–2006 directly helped create a base of support for CLIL type teaching, as shown by the study by Maiworm et al.: “the LINGUA Assistantships became part of the Comenius programme and were supported under Action 2.2.b as Comenius Language Assistantships” (Maiworm et al. 1). For example the Comenius Action of Socrates offered a pool of financial support for teacher training, school partnerships and networks development (*Comenius*), while the Erasmus Action offered financial support to be awarded to joint programmes and aiming “to enhance the quality of European higher education and to promote dialogue and understanding between people and cultures through cooperation with Third-Countries” (*Erasmus*). Teaching of subjects in other languages also falls under that category. The European Year of Languages of 2001 again underscored the fact that it is very well possible to achieve the goal of promoting language learning and linguistic diversity through a diversified array of approaches, with emphasis on “disseminating information on modern and innovative language learning methods” (*Year*). In addition to this, the Barcelona European Council 2002 issued a call for more efforts “to improve the mastery of basic skills, in particular by teaching at least two foreign languages from a very early age” (*Barcelona*). The following year the European Commission introduced its Action Plan 2004–2006, which among others included a statement to the effect of CLIL being “a major contribution to make the European Union’s language learning goals a reality” (Action Plan 2004–2006, 8). The Luxembourg presidency hosted the symposium called ‘The Changing European Classroom: The Potential of Plurilingual Education,’ held in March 2005. Mentioned in the resulting report was: “Specific CLIL training for teachers and educational administrators should be encouraged, including a period of work or study in a country where the target language is generally spoken.” and “Ways of acknowledging CLIL participation of learners at different educational levels are to be investigated” (Education, Youth and Culture).

In addition to these reports and resolutions, actual effort to assist teachers in receiving CLIL training and developing CLIL methodology also takes place, for example, the European Commission helps fund the European EuroCLIC network.

In Czech Republic, CLIL was tested with the blessing of the Ministry of Education since the 1990's in the form of a five-year study programme on four schools, with the language chosen being French. Since 1996, the programme was expanded to take six years. In addition, in February 2000 the Faculty of Education of Charles University of Prague started an optional seminar headed by the Department of English Language and Literature and by the Department of Mathematics and Mathematical Education. The University thus cooperated with the international project SOCRATES – LINGUA A, TIE CLIL (Trans-Language in Europe: Content and Language Integrated Learning) (Hoffmannová and Novotná. 5–6, as translated and paraphrased by Drápalík). In 2010 a cooperation between the European Social Fund and the Czech Ministry of Education, Youth and Sports, within the Education for Competitiveness Operational Programme Period 2007–2013, in accordance to its stated aims (Operační program Vzdělávání pro konkurenceschopnost období 2007–2013, as translated and paraphrased by Drápalík), gave rise, among others, to a project called CLIL for Secondary Education (Šmídová, as translated and paraphrased by Drápalík). This project was in fact the fruit of the labors of several institutions working together, including the National Institute for Further Education, The Research Institute of Education in Prague and the Association of Teacher Educators. This project ran for over one year and its declared goal was to raise the awareness of CLIL methodology among teachers and to offer support to teachers trying to implement CLIL into their lessons in the form of conferences and courses for teachers, led by qualified instructors as well as offering a rich supply of supplemental materials, DVDs and worksheets to be distributed to schools (Baťková, as translated and paraphrased by Drápalík).

Activities concerning CLIL in Czech Republic helped to make teachers aware of CLIL and its possibilities and introduce the basic methodological concepts of integrated learning and offered the chance to try CLIL out during numerous workshops and courses. In addition to that, many supplemental materials have been produced, with some of them being available online (Šmídová, as translated and paraphrased by Drápalík).

2.2 What is CLIL?

Content and Language Integrated Learning (CLIL) is a teaching philosophy consisting of teaching a curricular subject through the medium of a language other than that which is normally used (Marsh, *Using Languages*, 6). As mentioned above, the roots of this approach run deep, being very much inspired by bilingual teaching.

CLIL and other forms of bilingual teaching have some things in common. CLIL allows for an intense basis of language teaching without overstepping the boundaries set by the timetable. It also

recognizes the well established and acknowledged need to expose learners to situations which induce true and genuine communication.

In a CLIL classroom there should occur a natural situation for language acquisition, which works in concert with other forms of learning. For this reason, CLIL is also called a “dual-focused education” (Marsh, *Using Languages*, 6).

“CLIL takes many forms, from involving eight year old learners participating in language showers, taking at most thirty minutes per week to older students learning more than half of their subjects in the target language” (Marsh, *Using Languages*, 6). Whatever the chosen form, it is most helpful to be mindful of the four C’s of CLIL as defined by Coyle:

1. Content: At the heart of the learning process lie successful content or thematic learning and the acquisition of knowledge, skills and understanding. Content is the subject or the project theme.
2. Communication: Language is a conduit for communication and for learning. The formula learning to use language and using language to learn is applicable here. Communication goes beyond the grammar system. It involves learners in language using in a way which is different from language learning lessons (of course CLIL does involve learners in learning language too but in a different way).
3. Cognition: For CLIL to be effective, it must challenge learners to think and review and engage in higher order thinking skills. CLIL is not about the transfer of knowledge from an expert to a novice. CLIL is about allowing individuals to construct their own understanding and be challenged – whatever their age or ability. A useful taxonomy to use as a guide for thinking skills is that of Bloom. He has created two categories of thinking skills: lower order and higher order. Take Bloom’s taxonomy for a well-defined range of thinking skills. It serves as an excellent checklist.
4. Culture: For our pluricultural and plurilingual world to be celebrated and its potential realised, this demands tolerance and understanding. Studying through a foreign language is fundamental to fostering international understanding. ‘Otherness’ is a vital concept and holds the key for discovering self. Culture can have wide interpretation – e.g. through pluricultural citizenship. (Coyle, CLIL Planning, 5)

The realization of these four principles should put Content and Language Integrated Learning into a position of a major and significant contribution to the efforts to make the goals of the European Commission’s Language Policy into reality. They offer an alternative for a time when the authorities start revisioning learning in general and language learning in particular.

CLIL offers a chance to gain pleasant experience of language usage in a low-anxiety environment and boost their self-confidence (Pavesi et al. 85). With an increased number of successful language learners, it is possible to consider it a step closer to reaching the goals of the European Commission's Language Policy and having matured as a plurilingual and pluricultural society.

Aside from authentic interactions, which are so essential for learning how to communicate, CLIL also offers the authenticity of purpose, which is lacking in the Communicative Approach (Coyle et al. 5). Unlike in a traditional foreign language lesson, learners will come into contact with authentic contents of the non-language subject in a CLIL lesson and interact in the target language with each other and the teacher about the real world surrounding them.

Learners' experience with CLIL should also help them come to understand the significance and relevance of the various forms of cooperation and collaboration, which are more emphasized in a CLIL classroom (Hlaváčová et al. 25, as translated and paraphrased by Drápalík). However, these forms of social learning are highly relevant in today's world and are regarded as highly successful in language learning as well.

CLIL helps to create bridges between subjects, which are otherwise kept arbitrarily separated in school. This too helps prepare learners for life outside of school, where context runs roughshod over subject boundaries.

2.3 Challenges of CLIL

Should one accept Beardsmore's claims, Mackey stated that there are up to three thousand variables to consider that influence the nature of a bilingual classroom (Beardsmore, 137). Unraveling them all would be a herculean task, however, it is possible to break down these variables and ask some essential questions, derived from the entities of the triangle in Anderson's Interaction Equivalency Theorem, namely: "the learners, the teacher and the content" (Anderson). The first question is concerned with the age of the learners.

2.3.1 When to start?

According to the notion of a "critical period", the best circumstances for second language acquisition include a certain age of the learner, namely that learners should start on second language acquisition as soon as possible, the younger the better (Lenneberg). As children learn to use language through interactions, a teacher providing the interactions must take care to keep them natural and of high enough quality. Short but regular "language showers" can lead to positive results. But just an early

start is not a guarantee of success, as suggested by Blondin (Blondin et al. 1) and supported by Johnstone supports this with: "Age is never a factor that operates alone" (Johnstone, 9).

Perhaps fortunately, CLIL aims to create learning situations where learners and teacher interact naturally and language acquisition happens through genuine interactions, dealing with realia and real information.

However, a learner facing exposure to the target language through CLIL still faces a shortened exposure time to his/her mother tongue. This means that a teacher wanting to implement CLIL in his classroom has to very carefully consider the level of exposure to the target language of his learners.

Learners at the third level of ISCED range are more prepared to face high exposure CLIL lessons than their younger colleagues, provided their target language competency level is fairly homogeneous and advanced enough. Otherwise the learners would find very little, if any, benefit in such lessons, as confirmed by Marsh. (Marsh et al. *Harvard*, 25)

As for younger learners, CLIL may serve the function of making language learning into both a linguistic and intercultural process. In CLIL, the target language functions as a vehicle of learning, a part of the process, thus learners would assign the language a different value compared to a traditional foreign language lesson. This is supported by de Lotbinière: "The report concludes that the best way to teach languages is to expose children to them early, not as the subject of lessons but as languages of instruction" (de Lotbinière).

Recent research also seems to support the notion of not only using CLIL, but starting with second language acquisition early, since a child's brain is better able to incorporate a second language, an adult brain keeps the first language and second language separated (Kim et al. 171–175). Further research will of course be critical in adapting CLIL and other methods to maximum possible efficiency.

There is no single ideal age when to start with CLIL, what is important, however, is to adjust the lessons to the learners. This leads to the next question.

2.3.2 Who will benefit the most?

Among the above mentioned variables influencing bilingual education, motivation can be counted as one of the most important for the CLIL teacher. And as CLIL is supposed to be applicable for a wide array of learners, a CLIL teacher must be ready to encounter all kinds of motivation and provide a language education with a minimum of anxiety for the learners. However, the European Commission sees multilingualism as a goal to be reached by every citizen and CLIL is yet to be proven

to have a detrimental effect even on the “below average” learners (Ting, 12). Therefore, no type of learners should be exposed to automatic exclusion.

There should not be any confusion between the problems a teacher must face when teaching a class of mixed language competencies. According to Genesee, lower academic or intellectual abilities should not pose any more of a handicap in CLIL education than they would pose in first language programs (Genesee, 562). In fact CLIL should be a clear benefit to such students, helping them get rid of anxiety and gain self-confidence in learning matters.

In short, CLIL lessons can be adapted to fit a very wide array of learners. And so the next question comes to mind.

2.3.3 How to teach?

Teachers using CLIL often choose to make use of low anxiety environment and natural interactions within pairs and groups, which lend themselves more for incidental learning, as opposed to instructed situations and intentional learning in accordance with Vygotsky’s school of thought, concerning the dependence of learning on social interactions between learners (Navés et al. 68). In such methods, language is only one part of the dual focus of CLIL. Learners acquire the language through genuine and meaningful interaction with others. As CLIL aims to cater to a wide array of learners and provide them opportunities to acquire the chosen target language, the choice makes sense, should one consider Reber’s hypothesis: “From an evolutionary perspective, unconscious, implicit functions must have developed in man well before conscious explicit functions” (Reber, 88). From this hypothesis and the experience with naturalistic situations during such as those during CLIL lessons, Reber made the following observations:

- Implicit learning and memory should not be altered by the disorders that affect explicit learning and memory.
- Implicit learning should be independent of age and level of development and last through time.
- Acquiring knowledge implicitly should not show significant individual variation. Implicit learning processes should be very similar across the population
- Different from explicit learning processes, implicit processes should show little agreement with the results of tests of ‘intelligence’, such as the commonly used IQ tests. (Reber, 88)

In view of these observations, it is important to keep in mind that to successfully acquire a language requires one to be exposed to that language and that the amount of practice with productive skills is limited by the amount of successful reception the learner can manage. A learner can receive

language from other learners, certainly, but it is the teacher's job to guarantee the quality of exposure. This leads to the need to carefully plan the contents, form and medium of the teacher's input and for the learners' activities. When about to enter a new topic or area of vocabulary, offering the learners scaffolding in the form of pre-teaching is important (Hlaváčová et al. 15, as translated and paraphrased by Drápalík). With the focus on non-language content, learners are given much more chances to meaningfully interact with each other, increasing the amount of language they both receive and produce. This should allow CLIL to work well with a wide and colorful array of learners. Even those considered to be "below average" can very much benefit from participation in an implicit learning environment of a CLIL classroom. This nicely leads to another question to consider.

2.3.4 High or Low Exposure?

Any approach to CLIL will guarantee an increased duration of exposure to the target language for the learners. Which they of course need to successfully acquire a second language. In this way, CLIL offers a chance to improve the standards of language learning in Europe (Pavesi et al. 79). But CLIL should also offer a chance to increase the quality of learners' exposure to the target language, offering more chances to interact, produce the language and witness it being produced inauthentic situations. And CLIL's focus on content requires the learners to use the language to grasp abstract concepts, leading them to processing the content in the target language, thus improving their competencies (Pavesi et al. 79). In this way, quality and contents of exposure are more important than simply amount or duration.

2.3.5 What is Required of the Teacher?

CLIL is a methodology with specific requirements concerning language competency, professional skill and fluency in the non-language subject. The demands understandably vary between the various CLIL types, depending on learners' age range, exposure level and other variables. Bertaux mapped fifteen areas of competence of a CLIL teacher:

Programme Parameters, CLIL Policy, Target Language Competences for Teaching CLIL, Course Development, Partnerships in Supporting Student Learning, Integration, Implementation, Second Language Acquisition, Interculturality, Learning Environment Management, Learner Focus in CLIL Environment, Learning skills Focus on CLIL, Learning Assessment and Evaluation in CLIL, Lifelong Learning Modeling and Innovative Teaching and Learning Approaches (Bertaux et al.)

The competences outlined there include Defining CLIL, Adapting CLIL to the local context, Integrating CLIL into the curriculum, Using Basic Interpersonal Communication Skills, Cognitive Academic Language Proficiency, the language of classroom management, language of teaching and learning

activities, Designing a Course, Working with others, Building a constructive relationships with Learners, Lesson Planning, Applying SLA Knowledge and more. This suggests a whole complex of competences, which are not yet covered by teacher training, requiring the teachers to further educate themselves. Ideally, a CLIL teacher would be qualified to teach both the language and non-language subject, but that is not always possible.

2.3.6 Is CLIL to the Detriment of the Mother Tongue?

Some teachers at Czech bilingual schools have expressed their dissatisfaction with the performance of their learners and wondered about their chances of integrating themselves into further education, when compared with learners from traditional schools. However, others note an increase in the learners' performance. Marsh notes, that first languages would be in danger in "classrooms which comprise wide linguistic diversity in terms of first languages. But the first languages would be under threat in these cases, with or without CLIL" (Marsh, *Interview*). Not to mention that CLIL lessons are not necessarily monolingual and do not aim to neglect the first language (Marsh, *Using Languages*, 11). In fact, it is quite the opposite. CLIL teachers frequently make use of both the target language and the learners' mother tongue in the classroom.

2.4 Why choose CLIL?

The reasons why CLIL was introduced to European education are manifold and varied and translate quite well into reasons why to employ CLIL in our classrooms. Generally, the reasons are divided into dimensions and focuses (Marsh, *Compendium*), with dimensions being the major reasons and focuses being secondary. These categories are neither clearly defined nor discrete, just as CLIL includes a multitude of disciplines and competencies (Bertaux et al.). It is possible to reach multiple goals with CLIL, however, the multiple language proficiency should not come at a cost to other skills and competencies. This argument should be kept in mind in connection with the attempts to implement CLIL in school, because while enhanced language learning is an important factor, it should be kept in mind that CLIL is a *dual-focused education* (Marsh, *Using Languages*, 6). This is a strength of Content and Language Integrated Learning, but it also a daunting factor. CLIL gives teachers the means and opportunity to rethink how and when to teach certain subjects and language. To truly contemplate this requires one to adopt an interdisciplinary mindset within the educational profession – something quite difficult if one is an experienced teacher set in their ways. In this way CLIL may contribute towards the breaking of certain professional and educational barriers.

With the recent changes influenced by the rapid development of information/digital society and new technologies came also an effect on young people, creating a "learn as you use, use as you learn – not learn now, use later" mindset (Marsh, *Medium*, 35). CLIL meets this development with its

emphasis on needing the language for the current lesson, which the young people might just acknowledge positively.

To show the wide range of potential of Content and Language Learning, Marsh has identified five dimensions and eighteen focuses linked to learning and development outcomes regarding language, culture, environment, content and learning (Marsh, *Compendium*):

1. The Culture Dimension

- a. Building intercultural knowledge and understanding: There are various ways in which intercultural knowledge and understanding can be taught, however, in order for it to truly work, learners require genuine experience, not just a lecture from a teacher. CLIL can help in this by teaching about the countries in their own language.
- b. Developing intercultural communication skills: The previous focus requires learners to develop and use language and communication skills. In combination with projects such as eTwinning, learners can come into contact people of other cultures and communicate using their own language (*eTwinning*).
- c. Learning about specific neighbouring countries/regions and/or minority groups: Membership in the European Union means an increased contact between regions and communities, and with one of the main aims of the European Commission being integrated plurilingual citizenry, it is important to incorporate lessons on fellow Member States and minority group into mainstream education. CLIL can serve to make this happen.
- d. Introducing the wider cultural context: Living in the European Union means living with open borders and having more opportunities to freely travel. This leads to an increased need to be aware of the cultural diversity within Europe and be able to adapt to the differences. CLIL can serve as an effective tool in this regard.

2. The Environment Dimension

- a. Preparing for internationalization, specifically EU integration: The European Integration is already happening and schools must adapt to it. Implementing CLIL can be the start of the needed changes, especially if opportunities like funding from the European Social Fund.
- b. Accessing International Certification: Europe offers many different internationally acknowledged certificates, such as those offered by the University of Cambridge. It is possible to prepare learners for such examinations using CLIL (Teacher Zone – CLIL).

- c. Enhancing school profile: In recent years, with the use of criteria-based evaluation systems, schools started competing with each other for the top spots. And CLIL is a fresh and popular set of methodologies with which to enhance a school's profile.

3. The Language Dimension

- a. Improving overall target language competence: As language competence in general is one of the main foci of CLIL, and CLIL lessons should guarantee a certain degree of high quality of exposure to the second language, it should follow that overall language competence improves.
- b. Developing oral communication skills: CLIL lessons are often oriented towards interaction between participants. In today's world, the ability to meaningfully use the various available communication channels is quickly rising in importance. As effective use of language is still essential for communication, CLIL can be quite helpful in this regard.
- c. Deepening awareness of both mother tongue and target language: This happens when CLIL serves in a supplementary capacity to the main teaching. Learners are then able to compare how the concepts of content are delivered in both their mother tongue and the target language. Not to mention that CLIL teachers can support code switching to the mother tongue.
- d. Developing plurilingual interests and attitudes: The citizenry's ability to use a language other than their first language varies greatly across the European Union (Eurobarometer). This is to a large degree shaped by people's perception of the possible advantages the particular language skill can bring them. As English is for now the language of international business, it can be used to start CLIL lessons, due to its popularity among young learners due to the prevalence of English in our entertainment media, although Chinese may also prove of interest in the future. However, other languages should be included as well in teaching employing this approach and take one step further towards plurilingualism.
- e. Introducing a target language: An informal and enjoyable CLIL lesson may serve as an impetus for learners to develop an interest in a new language.

4. The Content Dimension

- a. Providing opportunities to study content through different perspectives: Through studying a foreign language it is possible to glimpse into the culture it belongs to. An example would be a system of honorifics and politeness or view of historical events through differing prisms. Learners in a CLIL lesson can be witness to these differing points of view.

- b. Accessing subject-specific target language terminology: In certain subjects one can encounter international terminology in significantly higher ratios, such as in ICT or economics. Such terminology may not necessarily be in the learners' mother tongue(s). CLIL can help learners understand the terminology and its underlying concepts.
- c. Preparing for future studies and/or working life: The need to develop one's language capabilities even further is almost an omnipresent one, related to many situations in life. CLIL can serve very well in regards to preparing learners for the increasing demands in linguistic competencies, as it can spark the interest in learning a new language.

5. The Learning Dimension

- a. Complementing individual learning strategies: CLIL offers new a chance to use new methods in teaching both the non-language and language subjects, thus allowing groups that could be seen as "weaker" in certain fields, such as girls in natural sciences or boys in languages, a chance to even the field, introducing a more interaction and task oriented learning into subjects, that perhaps relied more on rote learning, like history.
- b. Diversifying methods and forms of classroom practice: It is not needed to change the language of instruction to bring change into the classroom. The introduction of CLIL may serve to help further changes come into being.
- c. Increasing learner motivation: To develop and nurture learner motivation is among the most essential tasks of any teacher. CLIL can of course be used with this purpose in mind. For this, low-exposure non-formal activities may prove useful. Learners concentrated on interactions between themselves may relax more easily than those concentrating on the teacher. As CLIL is geared towards increasing learners' self-confidence, it can serve this focus quite well.

There are many variables at play when it comes to evaluating the various forms of CLIL and there is still no final verdict, no true consensus regarding CLIL and the methods to be used. However, a considerable amount of research on a respectable array of various situations is happening, concentrating on learning through the medium of a second language and publishing online, like at CLIL International Research Journal, CLIL Research Network and others. And much more research and, more importantly, time is required. This research draws both on the European experience with CLIL and others, which may not resemble the European model very much, including Canadian immersion teaching or teaching programmes in Hong Kong or teaching math and sciences in English

in Malaysian schools. The actual realization may, and often will, differ, however, there are close similarities in theoretical framework. It is after all only fitting that the research has numerous aspects, just as no child and classroom is truly alike.

2.5 Importance of Information and Communication Technology for Language Learning

As mentioned above, ICT is present in almost every walk of life in today's world. Ignoring this fact and the opportunities such technologies provide is unwise. Very often even before a teacher has a chance to exert any kind of influence over his/her learners, they have already encountered ICT in some form, be it personal computers, tablets or smart phones. And as such technologies are an unavoidable part of reality for European citizens, preparing the learners to use the technologies effectively and responsibly is only prudent. The fact that the technologies are used for communication and are therefore quite closely intertwined with language use should be considered as one of the reasons for using the technologies during language lessons. Another argument for their inclusion in language lessons can be made, in that teachers often try to support second language acquisition for their learners. To do this, they strive to minimize learners' anxiety, aiming to make their learners feel relaxed and safe, coincidentally also the aim of a CLIL teacher, and the technologies are part of the environment the learners are used to. Furthermore, there are the already existing European Union definitions of formal, non-formal and informal learning as follows:

- Formal learning: Learning typically provided by an education or training institution, structured (in terms of learning objectives, learning time or learning support) and leading to certification. Formal learning is intentional from the learner's perspective.
- Non-formal learning: Learning that is not provided by an education or training institution and typically does not lead to certification. It is, however, structured (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learner's perspective, e.g. self study via a downloaded resource from a free to use online source.
- Informal learning: Learning resulting from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional but in most cases it is non-intentional (or 'incidental'/ random). (Stevens and Shield, *Annexe I*, 9)

Taking those into account, teachers are able to exert direct influence only over the sphere of formal learning. However, considering how widespread ICT is in today's society, it is certainly possible that learners encounter the technologies during both non-formal and informal learning. In fact, research shows that the younger the learner the stronger the tendency to use technologies in some way during the learning process (Stevens and Shield, *Final Report*, 29). A teacher should then take full advantage of every option the technologies have to offer, including:

- Use of digital content and services as teaching or learning resources.
- Use of the technology as a comprehensive learning environment structuring language learning experiences and offering access to services and support
- Facilitation of remote exchanges, communication and collaboration using the target language. (Stevens and Shield, *Annexe I*, 9)
- And also use of World Wide Web to produce and share teaching resources and enter into international cooperation.

All such activities are made possible by the readily available platforms, be it the Internet itself, multimedia editing and playing software and last but not least the communication software. There are also applications with the primary purpose of language learning as well as tools like automatic translators. Virtual Learning Environments are designed to facilitate and manage modern education, including language learning (Dillenbourg, 10).

The realm of VLE and edutainment can also lead to one radically different category, that of computer games. Many learners claim that they have improved the most when playing games, at least regarding "vocabulary and idioms" (Stevens and Shield, *Annexe II*, 30), learning them while having fun. This description comes remarkably close to Second Language Acquisition, where one of the conditions is a relaxed state of mind. This includes not only games aimed primarily at entertainment, but also edutainment. Those range from applications for tablets to Massively Multi-player Online Games. Game based learning is definitely an area of interest, but, especially in Czech Republic, it is yet to be widely accepted at schools (*Horizon*).

Another matter to consider is how much new technologies can change learning behaviours of the learners both inside and outside a classroom. With the emphasis put on communication, new technologies can allow learners to collaborate on a perhaps even unprecedented scale. Considering this, the fact that although probably a majority of learners had communicated in a foreign language, their formal language courses lacked the presence of technologies, is perhaps almost alarming. Especially so, considering the fact that a personal computer with a connection to the Internet is

considered “very helpful” when it comes to improving one’s language skills (Stevens and Shield, *Annexe II*, 30). In more detail, “online dictionaries and grammars and informational websites” (Stevens and Shield, *Annexe II*, 26) are among the top applications helping the improvement of language skills, according to the survey. However, e-mail and discussion forums are also among the top ten helpful applications, both being a tool enabling its users to communicate across vast distances almost instantly, effectively very much shrinking the world, making contact with genuine foreign language native speakers that much easier. Given the overwhelming presence of ICT and new media in young people’s social interactions at present, the reluctance to use such tools and create new methods in formal learning is somewhat baffling. It is especially so as experience in use of new technologies and media is generally considered “a positive influence towards a pre-disposition to adopting new ways of learning” (Stevens and Shield, *Final Report*, 47). And the willingness to learn new ways of learning is considered an essential part of modern education, since the goal of education is to prepare our learners for a world we actually have no idea about.

It should be acknowledged though, that the survey shows, that people are reluctant to try out new ways to use technology and keep to social networking and surface information searches. It would seemingly require that learning through ICT be a part of education from an early age to allow users to learn in depth with a clear and structured plan with ICT (Stevens and Shield, *Annexe III*, 37).

This also leads to at least a two-fold problem:

- Lack of high quality and available materials and lack of centralized database of such materials.
- Lack of well-trained, confident users, willing to enter such materials into their lessons and help improve new methodologies.

Stevens and Shield acknowledge “the need to train and continuously develop language teachers and materials designers and developers, to produce high quality and more creative, imaginative pedagogical structures using ICT and other new media” (Stevens and Shield, *Annexe III*, 38).

While the lack of well-trained and confident users among the teachers is a long term-problem, an answer to the other above mentioned obstacle may be already forming. Along with the development of social computing came the increase in user-generated content of the Internet. Both of these phenomena put emphasis on the participation of Internet users and may very well exert influence over the sphere of language learning. As the number of available tools and resources grows, more users distribute content that is of their own creation. This is commented on in an OECD report:

The creation of content by users is often perceived as having major social implications. The Internet as a new creative outlet has altered the economics of information production, increased the democratization of media production and led to changes in the nature of communication and social relationships ... Changes in the way users produce, distribute, access and re-use information, knowledge and entertainment potentially give rise to increased user autonomy, increased participation and increased diversity. (Vickery and Wunsch-Vincent, 12)

The problem with user-generated content is of course in availability and quality. Although there have been efforts to provide a centralized support infrastructure for the distribution of user-generated teaching and learning resources from the side of European Commission, a large part of these resources is scattered across the numerous addresses all around the world's largest and most complex network with little to nothing in the way of advertisement. The problem of varying quality of user-generated teaching and learning resources is often countered with a system of user rating and review, however, this way is far from flawless, requiring intense perusal teachers considering the use of each individual piece of material.

3 Practical Part

3.1 Including the Interactive Whiteboard

Interactive Whiteboards are among the newest tools that have become a part of the education process. Being a result of a long development process, coming in many different designs, based on several different principles, they bring new options into a classroom, provided they are used responsibly and sensibly. Unfortunately, many people tend to concentrate on teaching with technology, instead of the effects of the technology on learning. A common misconception related to the term interactive results in the fact that some teachers create content oversaturated with elements requiring learner participation. Interactive Whiteboard does not necessarily mean that every element of the content must be interactive. However, incorporating an Interactive Whiteboard into a lesson should result in an increase of interactivity of the lesson. It is not important what happens on the Interactive Whiteboard but what happens because of it. The important part is for the teacher to remember, that the Interactive Whiteboard is not his tool but a resource to be exploited by the whole class.

Should one forget the fact that s/he is using the shiny new piece of technology, although that too can serve as a way to motivate learners at first, it is possible to discover the new options Interactive Whiteboards offer for learners to much closely interact with the subject matter, offering not only

visual and aural stimuli, but also the possibility of manipulating with objects and changing them. In this way the Interactive Whiteboards allow learners to relate much more closely to the subject matter than they would during a more traditional lesson, consisting of listening to the teacher and reading the textbook. And even then an Interactive Whiteboard gives the teacher a greater freedom when it comes to obtaining and presenting audiovisual materials. Another advantage is the option to save and later revisit the learner's work. And last but certainly not least is the fact that the flipchart file has a practically unlimited number of new, free pages, in this way eliminating the need to repeatedly wipe the blackboard.

This technology was not developed just on a whim. Already John Dewey expressed in his work what the Interactive Whiteboards can put into action:

I believe that the image is the great instrument of instruction. What a child gets out of any subject presented to him is simply the images which he himself forms with regard to it. I believe that if nine-tenths of the energy at present directed towards making the child learn certain things, were spent in seeing to it that the child was forming proper images, the work of instruction would be indefinitely facilitated. I believe that much of the time and attention now given to the preparation and presentation of lessons might be more wisely and profitably expended in training the child's power of imagery and in seeing to it that he was continually forming definite, vivid, and growing images of the various subjects with which he comes in contact in his experience. (Dewey, 1987)

An Interactive Whiteboard can provide the learners with the chance for visual, auditory, tactile and kinesthetic learning, thus giving the learners a fairly big stimulus towards forming a mental image. Regarding CLIL, an Interactive Whiteboard gives the learners a chance to be physically involved more often, thus making greater use of body language and perhaps lessening the need for code switching back to the mother tongue when a learner is uncertain how to express himself or herself in the target language.

Teachers should remember not to overwhelm their learners with all the functions of the Interactive Whiteboard. It is fine to keep it on during their whole lesson, serving as a normal blackboard is a part of their functionality after all, but, a segment making full use of the Interactive Whiteboard's capabilities should not be longer than twenty minutes. In a similar vein, this piece of technology is capable of showing millions of various colors, which does not mean that all of them should be used in one flipchart.

In the end, an Interactive Whiteboard is a powerful tool, but it still remains just a tool. A teacher should learn to make use of it for the most benefit of the learner. It is not a panacea for education, nor is it a harbinger of revolution, it is just another tool to master and add to a teacher's disposal.

3.2 About the Tasks

The aim of the practical part of this diploma thesis is to create materials that are usable on a Czech school, aimed at supporting CLIL lessons combining the subjects English Language and ICT. Based on the research done and this writer's own, admittedly limited, experience with trying to make use of the opportunity presented by classes, where every learner has reached at least A2/B1 level of the Common European Framework of Reference for Languages in English to convey the ideas behind certain parts of subject matter of ICT. This happened after consulting more senior teachers for both subjects and both have expressed their approval. The Interactive Whiteboard comes into play because it allows learners to come into closer contact with the subject matter, which, especially in ICT, can be somewhat abstract.

The Interactive Whiteboard chosen was an ActivBoard, for several reasons:

- ActivBoards are one of the most commonly found Interactive Whiteboards in Czech schools.
- The software needed to create content for ActivBoard can be download for free, albeit with limited functionality.
- Unlike other manufacturers, Promethean aimed at creating a school board from the beginning. Arguably their product is best suited for education, at least at present.
- Their software comes with a freely available gallery of graphic elements.

The segments described further below are not planned to take an entire lesson, instead they resemble the concept of language showers. The interactive whiteboard will not be necessary for every activity, although the presumption is that the whiteboard is turned on for the entire lesson, serving as a traditional school board. Every segment is described according to a following template inspired by Do Coyle:

1. Content:
 - a. Context: Each segment is part of a larger thematic unit. Context describes what the learners have already covered in prior lessons and what knowledge they are expected to possess.
 - b. Subject Matter: This describes what topics are covered in the segments.
 - c. Aims: Describes what the teacher's aims for the segment are.

- d. Learning Outcomes: This part describes what knowledge and skills the teacher expects his learners gain from the segment.
2. Communication:
 - a. Specific Language: Describes what language the learners will need to work with and understand the content of the segment. It includes specialized vocabulary related to the subject matter.
 - b. General Language: Describes what vocabulary and phrases the learners are likely to encounter when working with the content. It does not include subject-specific words.
 - c. Grammatical Issues: This describes which parts of grammar will the learners likely encounter.
 - d. Expected problems: This covers the parts of grammar and vocabulary that the learners are likely to have problems with.
 - e. Language Skills: Describes which language skills are covered in the activities.
 3. Cognition:
 - a. Questions: Describes what kind of questions the teacher will ask during the segment.
 - b. Tasks: This describes what kinds of tasks are involved in the segments and which modes of learning they encourage.

Following this is a segment plan, derived from the usual lesson plans, containing expected kinds of interaction and planned timing. Accompanying the segment plan are route maps for the activities involved in the segment. Screenshots from the materials for the Interactive Whiteboard involved with documentation are added as an appendix.

3.3 The Tasks

3.3.1 Introduction to Computers:

1. Content:
 - a. Context: This segment is planned for learners who have just started entered ISCED 2. Their previous experience with ICT is uncertain. Ideally, this would come right at the beginning. The lesson would then continue in Czech, concerning basic safety precautions, basics of working with a computer and samples of computer graphics. During the next lesson, learners would be asked to review the difference between Hardware and Software and to give examples of both.

- b. Subject Matter: This segment introduces learners to computers and the very basic terminology and concepts, including what is a computer, for what things can computers be used, the distinction between Hardware and Software.
- c. Aims: Learners are introduced to computers and learn basic terminology. Learners realize the distinction between Hardware and Software and are given examples of both categories. Learners are led to realize the distinction between input and output.
- d. Learning Outcomes: Learners are able to tell what a computer is and for what things it can be used. Learners can name the most basic parts of a computer. Learners are able to explain the difference between Hardware and Software and give sufficient examples of both. Learners can divide Hardware into Input, Processing and Output. Learners add the specific terminology of the segment into their vocabulary.

2. Communication:

- a. Specific Language: Learners will encounter technical terms: graphics, internet, web, monitor, computer case, keyboard, mouse, printer, hardware, software, input, output, processing, arrow, data, simulation, modeling, presenting and disc.
- b. General Language: Learners will have to understand words like difference, drag, match, decide, kinds, function, example and division, hidden, use.
- c. Grammatical Issues: Learners will encounter questions and imperative sentences said by the teacher, as well as conditional sentences in instructions. They will be asked to use simple sentences to describe components of a computer, using present simple tense.
- d. Expected problems: It is possible the learners will not know the conditionals, but more problems are expected with the specific vocabulary. Problematic terms and grammar will be collected and recorded from the Language Edge element and given to the learner's language teacher, if it is a different person than the CLIL teacher.
- e. Language Skills: Learners will practice mostly speaking and listening. During speaking, learners will describe a purpose of a computer component and explain their reasoning for their choices.

3. Cognition:

- a. Questions: Learners will be asked mostly Wh-questions with simple answers and also to explain their decisions.
- b. Tasks: Learners will be asked to create a mind map. The tasks presented include a matching exercise and recall tasks as part of elicitation. Learners are also asked to apply a general principle on examples and deduce the division of Hardware based

(Input, Processing, Output). During the last activity, learners will have to explain their reason for putting each component in their category. Finally learners will complete a gap-fill and multiple choice answer exercise as a comprehension check.

Segment Plan:

| Teacher: Michal Drápalík | | |
|--------------------------------|---|---|
| Level of Learners: A2–B1 | | |
| Age of Learners: 11–12 | | |
| Classroom: Computer Laboratory | | |
| File: CompIntro.flipchart | | |
| Time: 25–30 minutes | | |
| Timing | Stage/Procedure/Objective | Type of Interaction |
| 2 minutes | Introduction / Hello, today we are here to talk about computers. To see a computer, look around you. (Page 1) | Teacher/Students |
| 7 minutes | Warm-up / As you see, a computer is a machine. But what is it good for? Form groups of four and try to think about the various tasks we use a computer for. You have five minutes. Then we will write what you think up into the mind map. (Page 2) | Teacher/Students, Student/Student, Student/Students |
| 2 minutes | Matching Exercise / Here is a computer. Try to match the terms with the correct parts. If you find any word interesting or don't know do not understand anything, write it into the Language Edge. (Page 3) | Teacher/Students, Student/Students |
| 3 minutes | Decision making / Do you know | Teacher/Students, |

| | | |
|-----------|--|---|
| | <p>what Hardware and Software mean. Write H or S into the correct box. Do you know, what is on the pictures? Correct answers are hidden. If you find any word interesting or don't know do not understand anything, write it into the Language Edge. (Page 4)</p> | Student/Students |
| 1 minutes | <p>Eliciting / We will look into Hardware now. Do you know the most basic division of Hardware? (Input, Output, Processing) Base it on what it does with data. If you find any word interesting or don't know what it means, write it into the Language Edge. (Page 5)</p> | Teacher/Students, Student/Students |
| 5 minutes | <p>Group Work / In your groups of four try to think up as many examples of each kind of Hardware as you can. Then you will write them below the correct arrow. You have four minutes. If you find any word interesting or don't know do not understand anything, write it into the Language Edge. (Page 5)</p> | Teacher/Students, Student/Student, Student/Students |
| 5 minutes | <p>Practice / Now try to remember everything you have learned and write these sentences into your notebooks with the correct answers. Once you are</p> | Teacher/Students |

| | | |
|--|--|--|
| | finished, we will check the answers. (Page 6, 7) | |
|--|--|--|

Introduction to Computers: Warm-up Route Map:

1. Before the Lesson:
 - a. Ideally get to know the class and/or their families. What is their background when it comes to ICT?
 - b. Prepare the flipchart and make sure it is ready to be used.
 - c. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - d. Be prepared to group learners in groups of three or in pairs.
2. Lead-in:
 - a. Let the learners take a look at the computers in the classroom.
 - b. Ask the learners how many computers they have at home.
 - c. Ask a few randomly chosen learners what they like doing with the computer.
3. Setting up the Activity:
 - a. Divide the learners into groups of four, three's or pairs as necessary.
 - b. Show the learners the empty mind map.
 - c. Give instructions: "Try to think about the various tasks we use a computer for. Make a list. You have five minutes. Next choose one of you to write one task into the mind map."
 - d. Ask one learner to repeat what they are supposed to do.
4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Monitor by moving around the classroom.
 - c. Avoid looming or invading personal space.
 - d. Be ready to answer any questions.
 - e. Make sure the control pen is switched to pen mode.
5. Closing the Activity:
 - a. Once over half of the groups look finished or bored, ask one of the finished groups to send their representative to write one of their answers into the mind map.
 - b. If the learners are taking too long, announce that only a minute is left.

6. Post-Activity:

- a. If the learners did not manage to come up with enough acceptable answers try to suggest:
 - i. Ask if they watch weather forecasts.
 - ii. Ask if their family has a car.
- b. Go through the words and grammar that Learners wrote down into the Language Edge.

Introduction to Computers: Group Work Route Map:

1. Before the Lesson:

- a. Prepare a list of the more commonly used hardware.
- b. Ideally also bring examples of a few smaller pieces.
- c. Prepare the flipchart and make sure it is ready to be used.
- d. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
- e. Be prepared to group learners in three's or in pairs.

2. Lead-in:

- a. Ask the learners whether they have heard the terms Hardware and Software.
- b. Let a learner explain to others.
- c. Should nobody know, explain that Hardware are the parts of the computer that can be touched, while Software means various programs and exists in the form of "1s" and "0s" and is stored on data storage devices. Give examples of such devices and show such an example.

3. Setting up the Activity:

- a. Divide the learners again into groups of four, three's or pairs as necessary.
- b. Show the learners the appropriate page of the flipchart.
- c. Give instructions: "In your groups try to think up as many examples of each kind of hardware as you can. Then, once you are finished, write them below the correct arrow. If you have the same example as a previous group, do not repeat those."
- d. Ask one learner to repeat what they are supposed to do.

4. Running the Activity:

- a. Check with each group and see if they understood the instructions.
- b. Monitor from the front, making use of the smaller size of Computer Laboratories move around occasionally.
- c. Avoid looming or appearing threatening.

- d. Be ready to answer any questions.
 - e. Switch the control pen into pen mode.
5. Closing the Activity:
- a. Once over half of the groups look finished or bored, ask one of the finished groups to send their representative to write one of their answers into the mind map.
 - b. If the learners are taking too long, announce that only a minute is left.
6. Post-Activity:
- a. If the learners did not manage to come up with enough acceptable answers try to suggest:
 - i. Input: touchpad, joystick, console controller, steering wheel, scanner, microphone
 - ii. Processing: Central Processing Unit, Graphical Processing Unit, computer case
 - iii. Output: speakers, monitor, printer, 3D printer, joystick with feedback
 - b. Go through the words and grammar written into the Language Edge and explain.

3.3.2 Units of Information:

1. Content:
- a. Context: This segment is planned for learners who have just started entered ISCED 2. Their previous experience with ICT is uncertain. Ideally, this would come very early in the school year. Learners are aware of computers and realize that computers process data. The lesson would continue in Czech, showing learners various data storage devices and comparing their capacity.
 - b. Subject Matter: This lesson deals with giving learners perspective on an abstract term: file size and the idea that data take up space.
 - c. Aims: Learners are introduced to basic units of information. They are shown the method to record such units and their increments. Learners are also shown the difference between IT increments and the metric system. It should also give the math teacher an impulse to mention the possibility of various base numbers to the learners at a later time.
 - d. Learning Outcomes: Learners are able to recall the basic unit of information and the system of counting with such units. They are able to recognize commonly used increment prefixes and are able to correctly use their notation. Learners know the degree of increment for each prefix. Learners begin to realize the binary nature

of electronically stored data. Learners add terms for units of information and increment prefixes into their vocabulary and practice comparison and description.

2. Communication:

- a. Specific Language: Learners will encounter terms for units of information: bit, byte and the increment prefixes kilo, mega, giga, tera.
- b. General Language: Learners will use terms of description and comparison, like big/bigger, small/smaller, words like information, value, size.
- c. Grammatical Issues: Learners will need to understand comparison and form comparative and superlative forms.
- d. Expected problems: Learners may stumble when using comparisons.
- e. Language Skills: Learners will practice speaking, using description and comparison of the units of information and practice listening comprehension.

3. Cognition:

- a. Questions: Learners will be asked mostly simple Wh-questions requiring short answers, but with justification.
- b. Tasks: Learners are asked to come up with examples of informational value bearing statements and justifying their examples. They will work in pairs and in a group and finish with each working on his/her own, solving True/False tasks and a word transformation exercise.

Segment Plan:

| Teacher: Michal Drápalík | | |
|------------------------------------|---|---------------------|
| Level of Learners: A2–B1 | | |
| Age of Learners: 11–12 | | |
| Classroom: Computer Laboratory | | |
| File: UnitsOfInformation.flipchart | | |
| Time: 24–26 minutes | | |
| Timing | Stage/Procedure/Objective | Type of Interaction |
| 1 minute | Introduction / Hello, students. Today we will start talking about information. The important question is what is information? (Page 1) | Teacher/Students |
| 4 minutes | Pair Work / Form pairs with | Teacher/Students, |

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| | your neighbours. Think carefully and write down examples of sentences with information. You have four minutes. (Page 2) | Student/Student |
| 5 minutes | Presenting / One from each pair, come to the whiteboard, write one of your sentences and tell the class, why it is information. (Page 2) | Teacher/Students, Student/Students |
| 3 minutes | Elicitation / Have you heard about the smallest unit of information? Can anyone tell us what it is called? What information is the smallest? (Page 3) | Teacher/Students, Student/Students |
| 5 minutes | Lockstep / There are bigger units of information. A bit is too small. A byte and its increments are more used. The value of one byte is here: just one letter. Then there are kilobytes, mega bytes, gigabytes, and terabytes. A warning, you know that a kilometer is one thousand meters. One kilobyte is 1024 bytes That is because computers work with binary numbers. (Page 3) | Teacher/Students |
| 3–5 minutes | Practice / Now come all around the whiteboard and pass the pen along. You see the names of the units and boxes marked with their shortcuts. Try it for | Teacher/Students, Students/Students |

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| | yourself. A smaller unit fits into a larger unit or into itself, but not into a smaller unit. (Page 4) | |
| 3 minutes | True/False exercise / Write these sentences into your notebook and write whether they are true or false. (Page 5) | Teacher/Students |
| 2 minutes | Word Transformation / Here you will write these sentences into your notebook with the correct word. Use those in the box, but in the correct form. (Page6) | Teacher/Students |

Units of Information: Pair Work Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Be prepared to group the odd learner with a pair.
 - d. Prepare a few examples of statements and non-statements:
 - i. Hello.
 - ii. Today is Tuesday.
 - iii. It is raining.
2. Lead-in:
 - a. Pose the question: What is information?
 - b. Ask the learners if every sentence has information value.
3. Setting up the Activity:
 - a. Divide the learners into pairs, with a group of three if needed.
 - b. Give instructions: "Work in pairs, think carefully and write down examples of sentences containing information. You have four minutes."
 - c. Ask one learner to repeat what they are supposed to do.
4. Running the Activity:

- a. Check with each group and see if they understood the instructions.
 - b. Move around the classroom.
 - c. Avoid threatening gestures and making learners nervous.
 - d. Be ready to answer any questions.
 - e. Switch the control pen into pen mode.
5. Closing the Activity:
- a. Once over half of the groups look finished or bored, ask one of the finished groups to send their representative to write one of their answers onto the Interactive Whiteboard.
 - b. If the learners are taking too long, announce that only a minute is left.
6. Post-Activity:
- a. If the learners did not manage to come up with enough acceptable answers try to offer:
 - i. Information can be true or false.
 - ii. Information is telling something.
 - b. Go through the words and grammar that learners found unfamiliar.

Units of Information: Last two exercises Route Map:

- 1. Before the Lesson:
 - a. Ask their English teacher, if applicable, if they have already done some T/F and word transformation exercises and tried description and comparison.
 - b. Prepare the flipchart and make sure it is ready to be used.
 - c. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - d. Have another surface ready in case of a malfunction.
- 2. Lead-in:
 - a. Exercise demonstrating the differences in size of the units of information
- 3. Setting up the Activity:
 - a. Settle the learners down and get them to open their notebooks.
 - b. Give instructions: "Write these sentences into your notebook. Remember what we were doing and decide whether they are true or false. Then on the next page, you will finish the sentences using the right word from the box in the correct form."
 - c. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:
 - a. Move around the classroom, look for any problems.

- b. Avoid looming or looking over learners' shoulders.
 - c. Be ready to answer any questions.
- 5. Closing the Activity:
 - a. If some learners are finished, allow them a few minutes of browsing the internet.
 - b. If the learners are taking too long, announce that only a minute is left.
- 6. Post-Activity:
 - a. Let the learners check their answers with their neighbours and then answer out loud.
 - b. Answer any questions.

3.3.3 HTML Image Paths:

1. Content:
 - a. Context: This segment is planned for learners going through ISCED 3. They should have solid grounding in ICT with several years of schooling in the subject under their belts. The learners have started learning to create websites, using HTML and cascade styling, with the newest unit being about inserting images into their webpages. The lesson would then continue in Czech, introducing new attributes that modify the image, such as height, width or alternate.
 - b. Subject Matter: This segment includes the notion that computers require an exact path to properly store and recall data and the consequences of a mistake in such a path. The teacher will then demonstrate two ways the paths can be recorded in HTML and the properties of both the absolute and the relative path. The teacher will then revise the tree data structure used in computing and how that influences paths as used in HTML. Based on this, the teacher demonstrates the advantages of the relative path.
 - c. Aims: Learners are introduced to the requirement of carefully considering the location of each file and shown what happens when a file is misplaced. Learners will learn the two ways to write paths to their images in HTML and the differences between the absolute and the relative path. Learners will be reminded of the tree data structure and how that is projected into the paths. Then learners will be led to the advantages of the relative path.
 - d. Learning Outcomes: Learners are able to insert images into their webpages, even if the images are located in a different folder. Learners understand the way data is represented and structured and how to operate with data within that structure. Learners realize and are able to justify the advantages of the relative path. Learners

demonstrate basic user competencies. Learners add the specific terms to their vocabulary and practice conditionals, comparison and cause and effect construction.

2. Communication:

- a. Specific Language: Learners will encounter technical terms: folder, tree data structure, absolute path, relative path, server, webpage, link, attribute, tag, file, ease of use, maintenance, image.
- b. General Language: Learners will have to understand verbs move, remove, create, rename, place, display and words for days of the week, summer, holiday, arrow, correct, successful, green, orange.
- c. Grammatical Issues: Learners will encounter questions and imperative sentences said by the teacher, and a combination of present and past tenses. Both teacher and learners will use conditionals. Learners will use cause and effect structure when evaluating and describing advantages and use comparison.
- d. Expected problems: It is possible the learners will not know the more technical terms in English and have problems with conditionals.
- e. Language Skills: Learners will practice mostly reading comprehension and speaking to present their ideas and opinions. Should a learner respond positively to elicitation, the learner will then explain.

3. Cognition:

- a. Questions: Learners will be asked questions requiring them to use higher order thinking, such as to summarize and explain an advantage of one approach over another or deduce the consequences of an action.
- b. Tasks: Learners will be asked to observe and then deduce and explain the reasons for the observed event. Furthermore, learners will be asked to apply their knowledge and answer hypothetical questions. Then learners will be asked to compare two approaches and evaluate the advantages of one over another and explain them.

Segment Plan:

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| Teacher: Michal Drápalík |
| Level of Learners: B1–B2 |
| Age of Learners: 15–16 |
| Classroom: Computer Laboratory |
| Files: Paths.flipchart |
| Time: 35 minutes |

| Timing | Stage/Procedure/Objective | Type of Interaction |
|-----------|---|--|
| 1 minute | Introduction / Hello, students. Today we will continue working with images. (Page 1) | Teacher/Students |
| 3 minutes | Revision / How do we insert images in HTML? And which attribute is absolutely necessary to be successful. (Page 1) | Teacher/Students, Student/Students |
| 2 minutes | Reminder / Until now, you only had to write the name of your image into the src attribute. That is because you always had the image in the same folder as the file of your page. (Page 2) | Teacher/Students |
| 3 minutes | Elicitation / Now go up a folder and create a new folder called Images. Move your image there. Renew your webpage and describe what happened. Can anyone tell us why? (Page 2) | Teacher/Students, Student/Students |
| 2 minutes | Lockstep / Yes, a computer needs a precise organization of data. If the data is not where it should, the computer reports an error. As if it took a wrong turn. (Page 2) | Teacher/Students |
| 3 minutes | Elicitation / There are two ways to write paths to images in HTML, the absolute and the relative. Does anybody know the difference? Come write both your paths on the | Teacher/Students, Students/Students |

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| | whiteboard. (Change to Page 3) | |
| 3 minutes | Lockstep / For every file the computer keeps a record, a path to reach the file. *reveal* (Page 3) | Teacher/Students |
| 4 minutes | Practice / Here is the tree data structure, remember? Now come here and mark both paths to the image. Use the orange arrows for the absolute path and the green arrows for the relative path. *Move Image.jpg to Thursday* Now show us how that paths have changed. (Page 4) | Teacher/Students, Student/Students |
| 8 minutes | Pair Work / Form pairs. Now your webpage has been moved to a server. In your pairs, try to come up with what changed and how it will influence both the absolute and the relative path. And be ready to present your idea about which path is better. (Page 5) | Teacher/Students, Student/Student |
| 6 minutes | Pair Work / You will work in your pairs. As you see, you will be switching places and playing a game of Hide and Seek. Instructions are on the board. (Page 6) | Teacher/Students, Student/Student |

HTML Image Paths: Pair Work Route Map:

1. Before the Lesson:

- a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners are aware of servers.
 - d. Be prepared to make a group of three if necessary.
2. Lead-in:
 - a. Mention that there are advantages to one of the paths.
3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.
 - b. Give instructions: "Form pairs. You want to publish your webpage and placed it on a server. In your pairs, try to come up with what changed and how it will influence both the absolute and the relative path. And be ready to present your idea about which path is better."
 - c. Ask one learner to repeat what they are supposed to do.
4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Monitor from the front, making use of the smaller size of Computer Laboratories.
 - c. Appear interested in the discussions.
 - d. Be ready to answer questions.
5. Closing the Activity:
 - a. Once over half of the groups look finished or bored, ask one of the finished groups to send their representative to present their ideas
 - b. If the learners are taking too long, announce that only a minute is left.
6. Post-Activity:
 - a. Summarize their ideas.
 - b. Emphasize the ease of use of the relative path.
 - c. Go over the vocabulary and grammar written into the Language Edge.
 - d. Ask them which method they were using last lesson.

HTML Image Paths: Hide and Seek Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.

- c. Make sure the learners are able to cut, paste and move files and use the search engine.
 - d. Be prepared to make a group of three if necessary.
 - e. Observe the class for excessive profanity and potential troublemakers.
 - f. Ask their other teachers about relationships in the class.
 - g. Prepare a low-risk seating arrangement.
- 2. Lead-in:
 - a. Remind the learners of the possibility of searching for files by name.
 - b. Ask if they ever played a game of Hide and Seek.
- 3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three, while keeping to the low-risk seating arrangement.
 - b. Separate troublemakers.
 - c. Give instructions: "You will work in your pairs. As you can see on the board, you will be switching places and playing a game of Hide and Seek. Remember that profanities are prohibited and the entire group is responsible for any damage done to the system during the game."
 - d. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Move around the classroom in case of trouble.
 - c. Do not violate personal space.
 - d. Be ready to answer questions.
- 5. Closing the Activity:
 - a. Announce a minute remaining.
- 6. Post-Activity:
 - a. Ask the learners if they had any troubles with finding the files and writing the correct paths.
 - b. Emphasize the importance of using sensible names for your files and keeping an orderly folder structure.

3.3.4 User Basics:

- 1. Content:
 - a. Context: This segment is planned for learners who have just started entered ISCED 3. Their previous experience with ICT is uncertain. Ideally, this would come very early

in the school year. Learners are aware of computers and realize that computers process data. Learners are aware that information in computing is quantifiable and know the units of information. The lesson would continue in Czech, talking about using the computer responsibly and debating the differences between antivirus software and firewall.

- b. Subject Matter: This lesson is about file types and some potential dangers a computer user might have to face.
- c. Aims: Learners are introduced to the notion that to read data, it must be interpreted. They are shown how the computer demonstrates the interpretation to the user. Learners are also shown the commonly used base number systems used in computing. It should also give the math teacher an impulse to delve deeper into the various base numbers at a later time.
- d. Learning Outcomes: Learners realize that data is stored in a raw form and interpreted for further processing. Learners are able to demonstrate their knowledge of various file types. They are able to recognize commonly used file extensions. Learners realize the risks of opening unknown or suspicious files and do a very rudimentary evaluation of the threat a file might pose. Learners know the commonly used precautions concerning user safety. Learners realize the existence of other base number counting systems. Learners add the specific terms into their vocabulary and practice terms of frequency, probability, passives and numerals.

2. Communication:

- a. Specific Language: Learners will encounter terms like file type, virus, hacking, antivirus, firewall, infection, base number, binary, octal, decimal, hexadecimal, library, archive, spreadsheet, executable, command, code, format, file extension, document, hypertext, database, link, initiation, danger, threat, spyware.
- b. General Language: Learners will use terms of frequency, activities, numerals, probability.
- c. Grammatical Issues: Learners will practice modal verbs and encounter conditionals. Learners will also practice passives.
- d. Expected problems: Learners may have trouble with the correct choice of modal verbs or forget to use the bare infinitive after a modal. Problems with conditionals and passives are also possible.
- e. Language Skills: Learners will practice speaking, using descriptions, elucidating on their answers and explanations. They will also ask for explanations and practice listening comprehension.

3. Cognition:

- a. Questions: Learners will be asked mostly simple Wh-questions requiring longer answers and explanations, they will be asked for enumerations as well as creative thinking.
- b. Tasks: Learners will be asked to create a mind map. Learners are asked to come up with examples of types and formats, based on their previous experience. They will have to think to recognize a trick question. They will be commenting on and explaining their answers and applying their knowledge to deduce whether a file format can be dangerous and speculate how one can be infected by a computer virus. They will work in pairs and in groups and finish with each working on his/her own, solving a gap fill exercise and a sentence transformation exercise.

Segment Plan:

| Teacher: Michal Drápalík | | |
|--------------------------------|--|---------------------------------------|
| Level of Learners: A2–B1 | | |
| Age of Learners: 15–16 | | |
| Classroom: Computer Laboratory | | |
| Files: Basics.flipchart | | |
| Time: 54 minutes | | |
| Timing | Stage/Procedure/Objective | Type of Interaction |
| 1 minute | Introduction / Hello, students. Today we will talk about the basics of using a computer. (Page 1) | Teacher/Students |
| 3 minutes | Warm-up / What do you do on a computer most often? Do you prefer playing games or working? (Page 1) | Teacher/Students, Student/Students |
| 2 minutes | Voting / You see the question on the board. You will be voting for your answers, random student here will be tallying the votes. If your answer is other, tell us what it is. (Page 2) | Teacher/Students, Student/Students |

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| 2 minutes | Lockstep / This was a trick question. Every answer could be true, depending on the base number. Without it, it is impossible to interpret the number correctly. (Page 2) | Teacher/Students |
| 5 minutes | Mind Map / You have surely seen files while working with a computer. There are many types of files. Write a type you know on the board. (Page 3) | Teacher/Students, Student/Students |
| 4 minutes | Lockstep / Good. You can recognize the type of a file if you look at the extension, which is written after the period. Like on the board. Files themselves are stored as raw data, like that number. The extension tells us how that file will be interpreted. A long time ago a file name could be only 8 letters long plus period and extension. Now it can be up to 260 letters long and special characters can be used too. Including the period. So be careful. *reveal warning* (Page 4) | Teacher/Students |
| 7 minutes | Group Work / In your groups try to think of as many extensions as you can. After five minutes, you will have to explain what type of file it is. Who has the most wins a merit. | Teacher/Students, Student/Students |

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| | Write the extensions on the board. (Page 4) | |
| 5 minutes | Question and Answer / Here are some of the most commonly used extensions. You should know at least some of them. So now you can ask about any of these extensions, either for their type or their meaning or both. They are in fact abbreviations. (Page 5) | Teacher/Students |
| 3 minutes | Elicitation / There are some dangers you can meet. What can endanger your computer? (virus, hacking, spyware) (Page 6) | Teacher/Students, Student/Students |
| 5 minutes | Pair Work / Work in pairs. Try to come up with various ways a virus can infect your computer. You have three minutes. After that, each pair will write a way on the whiteboard. (Page 6) | Teacher/Students, Student/Student |
| 3 minutes | Elicitation / Trying to repair a computer attacked by a virus is often hard and takes a long time. What is the best defense? *reveal* (antivirus, firewall) Do you know any? (Optional homework) (Page 7) | Teacher/Students, Student/Students |
| 5 minutes | Group Work / Now we are back at file formats. You know you can catch a virus if you are not careful. Form groups of four and decide which of these | Teacher/Students, Student/Students |

| | | |
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| | extensions can be dangerous. After four minutes we will vote. (Page 5) | |
| 9 minutes | Exercises / You see the exercises on the board. Fill the correct words in the gaps. Transform the last three sentences into passive. And no cooperation. (Page 8) | Teacher/Students |

User Basics: Extensions Group Work Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners have a computer at home or have the chance to work with a computer regularly.
 - d. Be prepared to make a group of five or groups of three if necessary.
2. Lead-in:
 - a. Remind the learners of the number and base numbers.
 - b. Ask learners how they start games or if they used Word.
3. Setting up the Activity:
 - a. Divide the learners into groups of four, five or three as necessary.
 - b. Give instructions: "In your groups try to come up with as many file extensions as you can. After five minutes, you will have to explain what type of file it is. Who has the most wins a merit. Write the extensions on the board."
 - c. Ask one learner to repeat what they are supposed to do.
4. Running the Activity:
 - a. Check with each group and see if they understood the instructions and are working.
 - b. Move around the classroom.
 - c. Avoid looming.
 - d. Be ready to answer questions.
 - e. Make sure the control pen is in pen mode.
5. Closing the Activity:

- a. Announce a minute remaining.
 - b. Commence writing on the board once time is up or groups grow too unruly.
- 6. Post-Activity:
 - a. Praise learners for a job well done.
 - b. Go over any vocabulary and grammar written into the Language Edge.

User Basics: Pair Work Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners have a computer at home or have the chance to work with a computer regularly.
 - d. Be prepared to make a group of three if necessary.
2. Lead-in:
 - a. Ask learners whether they ever had a computer virus or if they heard about some famous virus.
3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.
 - b. Give instructions: "Work in pairs. You will play software designers. Try to come up with ways a computer virus can infect a computer, because you were asked to create a report in risky user behaviour. After three minutes, you will be asked to write one way on the board."
 - c. Ask one learner to repeat what they are supposed to do.
4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Monitor from the front, and move around the classroom.
 - c. Avoid looming or concentrating on one specific group.
 - d. Be ready to answer questions.
 - e. Switch the control pen into pen mode.
5. Closing the Activity:
 - a. Announce a minute remaining.
 - b. If most groups seem to be finished, commence writing on the board.
6. Post-Activity:
 - a. Praise learners for a job well done.

- b. Ask them to be careful and avoid risky behaviour.
- c. Go over any words or vocabulary written into the Language Edge.

User Basics: Voting Group work Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners have a computer at home or have the chance to work with a computer regularly.
 - d. Be prepared to make a few groups of three if necessary.
2. Lead-in:
 - a. Ask learners whether they open e-mails from unknown people.
 - b. Mention a few prolific viruses.
 - i. I love you.
 - ii. Police Ransomware.
3. Setting up the Activity:
 - a. Divide the learners into groups of four or three.
 - b. Give instructions: "Now we are back at file formats. You know you can catch a virus if you are not careful. Form groups of four, you will decide which of these extensions can be hiding a virus. After four minutes we will vote."
 - c. Ask one learner to repeat what they are supposed to do.
4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Move around the groups, join in, if asked.
 - c. Avoid looming or invading personal space.
 - d. Be ready to answer questions.
 - e. Switch the control pen into selection mode.
5. Closing the Activity:
 - a. Announce a minute remaining.
 - b. If the majority seems finished, commence voting on the board, moving black marks to the extensions deemed dangerous.
6. Post-Activity:
 - a. Praise learners for a job well done.
 - b. Fill in additional black marks if necessary.

- c. Urge learners to be careful.
- d. Mention again that Windows can be set to hide the extensions and that file names now can contain a period, thus making a file with a fake extension: Image.jpg.exe

3.3.5 User Basics 2:

1. Content:

- a. Context: This segment is planned for learners who have just started entered ISCED 3. Their previous experience with ICT is uncertain. Ideally, this would come very early in the school year. Learners are aware of computers and realize that computers process data. Learners are aware that information in computing is quantifiable and know the units of information. Learners are aware of the risks connected with irresponsible behaviour online and of rudimentary necessary precautions. Lesson would continue Czech with an optional presentation on commonly used antivirus software and firewalls.
- b. Subject Matter: This lesson covers the basics of using a computer – manipulation with files.
- c. Aims: Learners are introduced to the basics of giving input to an operation system they are most likely to encounter. They are shown the tree data structure. Learners are also shown the commonly used operations with files and methods of manipulation with files in bulk.
- d. Learning Outcomes: Learners realize that data is stored in an organized structure and are able to orient themselves in it. Learners are able to demonstrate their ability to manipulate files, move, copy, create, open and remove. They are able to realize there are multiple ways of achieving the same result and master at least one of them. Learners can manipulate multiple files simultaneously. Learners will add the specific terms into their vocabulary and practice giving instructions and directions, using quantifiers and modals.

2. Communication:

- a. Specific Language: Learners will encounter terms like file, delete, remove, bin, copy, cut, paste, rename, create, open, move, select, tree structure, root, temporary, folder, keyboard, mouse, archive, pack, address bar, directory separator.
- b. General Language: Learners will use terms of movement and direction, can do statements, terms like usual and containing, quantifiers, blindfold, path.
- c. Grammatical Issues: Learners will practice imperatives and modals.
- d. Expected problems: Learners may have trouble with imperatives and quantifiers.

- e. Language Skills: Learners will practice speaking, giving instructions and directions, use can do statements and describe events. They will also practice reading comprehension.

3. Cognition:

- a. Questions: Learners will be asked mostly simple Wh-questions requiring enumerations and descriptions in their own words.
- b. Tasks: Learners are asked to trust each other and cooperate. They will have to think up various operations with files, based on their experience and expectations. They will fill in a mind map. They will do a matching exercise between operations and ways to realize them. They will be asked to find information using either research or experimentation. They will work on their own on a reading comprehension exercise that is at the same time a revision of the segment.

Segment Plan:

| Teacher: Michal Drápalík | | |
|--------------------------------|--|------------------------------------|
| Level of Learners: B1–B2 | | |
| Age of Learners: 15–16 | | |
| Classroom: Computer Laboratory | | |
| File: Basics2.flipchart | | |
| Time: 41 minutes | | |
| Timing | Stage/Procedure/Objective | Type of Interaction |
| 1 minute | Introduction / Hello, students. Today we will continue learning how to use a computer effectively. (Page 1) | Teacher/Students |
| 3 minutes | Warm-up / How do we give the computer our instructions? (revision of input hardware) (Page 1) | Teacher/Students, Student/Students |
| 5 minutes | Elicitation / I wonder if you looked at the Windows Explorer. There on the left side is the organization structure of the files. Do you know how it is | Teacher/Students, Student/Students |

| | | |
|-----------|---|--|
| | called? And you surely noticed the words root, folder and temporary. Does anyone know them. (explain otherwise) (Page 2) | |
| 4 minutes | Pair Work / Form pairs. One of you has a new text file on your desktop. Inside is a description of a path to another file in your partner's computer. Guide your partner to the file. You have two minutes. After you finish, one of you will write the path to that file as it is written in the Explorer's address bar on the whiteboard. (after that is finished) Notice the backslash symbol between levels. That is the directory separator. (Page 3) | Teacher/Students, Student/Student |
| 4 minutes | Elicitation / What can you actually do with files? Come write the operations on the board into the mind map. (Page 4) | Teacher/Students, Student/Students |
| 6 minutes | Pair Work / Work in pairs and match these operations (in blue) with how to them (in green). You have four minutes. After that, each pair will match one operation on the board, until all are finished. (Page 5) | Teacher/Students, Students/Students, Student/Student |
| 3 minutes | Elicitation / How do we select a file? Do that now. And press a | Teacher/Students, Student/Students |

| | | |
|------------|--|--------------------------------------|
| | down arrow key. What happened? (Page 6) | |
| 5 minutes | Pair Work / Work in pairs. On the board you can see three further operations. Try to discover how to do them. There may be more ways than one. You have four minutes. (Page 6) | Teacher/Students, Student/Student |
| 10 minutes | Revision / You will work on your own. Instructions are on the board. (Page 7) | Teacher/Students |

User Basics 2: Navigation Pair Work Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners have a computer at home or have worked with a computer before.
 - d. Prepare the necessary files.
 - i. Instructions should be simple: Go into folder XY...
 - e. Be prepared to make a group of three.
2. Lead-in:
 - a. Have you ever played a game, where you had a blindfold and somebody was navigating you?
3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.
 - b. Make sure each has the correct files.
 - c. Give instructions: "Take a look at your Windows desktop. One in each pair will find a new text file there, called Directions.txt. Inside is a description of a path to another file in your partner's computer. Guide your partner to the file. You have two minutes. After you finish, one of you will write the path to that file as it is written in the Explorer's address bar on the whiteboard."

- d. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Move around the classroom.
 - c. Check for language problems.
 - d. Avoid looming.
 - e. Be ready to answer questions.
- 5. Closing the Activity:
 - a. Announce a minute remaining.
 - b. If a group seems finished, ask if everything went fine.
- 6. Post-Activity:
 - a. Mention the backslash as the directory separator.
 - b. Go over any words or grammar written into the Language Edge.

User Basics 2: Matching Pair Work Route Map:

- 1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners have a computer at home or have the chance to work with a computer regularly.
 - d. Be prepared to make a few groups of three if necessary.
 - e. Ask their English teacher, if applicable, if they have experience with matching exercises.
- 2. Lead-in:
 - a. Mention that now that we have so many operations, it is time to take a look at how to do them.
- 3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.
 - b. Give instructions: "Match these operations in blue with the ways to do them in green. After four minutes, each pair will match one operation on the board, until all are finished."
 - c. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.

- b. Move around, if a group does not know any, advise them to look for the information.
 - c. Avoid looming, looking over learners' shoulders or invading personal space.
 - d. Be ready to answer questions.
 - e. Make sure the control pen is in pen mode.
- 5. Closing the Activity:
 - a. Announce a minute remaining.
 - b. If a majority of the groups seems ready, start matching on the whiteboard.
- 6. Post-Activity:
 - a. Praise learners for a job well done.
 - b. Fill in blanks if necessary.
 - c. Mention that in operation systems other than Windows, the operations can be done differently.
 - d. Mention that there are more options for each operation.
 - e. Go over any unfamiliar words or pieces of grammar the learners have written into the Language Edge.

User Basics 2: Discovery Pair Work route Map:

- 1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Make sure the learners have a computer at home or have some experience working with a computer.
 - d. Make sure the internet connection is functional.
 - e. Be prepared to make a group of three.
- 2. Lead-in:
 - a. Now we will see what is quicker, looking for information or experiments.
- 3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.
 - b. Make sure each has access to the internet
 - c. Give instructions: "There are three more operations on the board. Try to discover how to do them, you can experiment or look for the information on the web. There may be more ways than one. You have four minutes."
 - d. Ask one learner to repeat what they are supposed to do.

Running the Activity:

- e. Check with each group and see if they understood the instructions.
 - f. Monitor mostly from the front. Move around if a group seems troubled.
 - g. Avoid looming or offering unwanted help.
 - h. Be ready to answer questions.
4. Closing the Activity:
- a. Announce a minute remaining.
 - b. If a group seems finished, ask if everything went fine.
 - c. Once a majority seems finished, start asking.
5. Post-Activity:
- a. Reveal the correct answers.
 - b. Ask how many experimented and how many looked for the information.
 - c. Ask where they found the information.
 - d. Go over anything the learners may have written into the Language Edge.

3.3.6 Computer Networks:

1. Content:
- a. Context: Learners are nearing the end of their ISCED 3 stage. They had ICT as a subject at least for three years as the same class. They are competent computer users, able to use various software to work with texts, create and edit graphics, work with statistics, organize their data effectively, work ergonomically and are aware of basics of user safety both offline and online. They are able to create web content, search for information and then present the information. After this segment, the lesson would continue in Czech, specifying more network node devices and networking protocols.
 - b. Subject Matter: This segment serves as an opening of the topic of Computer Networks, their typology and basic building block making up a network, as well as the reasons for networking.
 - c. Aims: Show learners that computer networks are almost omnipresent nowadays. Introduce to them the basic typology of networks based on the distance they cover. Tell learners about the primary functions of computer networks. Show learners the basic components of computer networks and the media by which the networks are connected.
 - d. Learning Outcomes: Learners realize that networks are part of our everyday lives. They are able to distinguish between local networks and a global one and judge

which is better for which purpose. Learners are able to recall the basic components of a computer network. Learners add the specific terms into their vocabulary.

2. Communication:

- a. Specific Language: Learners will encounter technical terms like network, browse, periphery, remote access, optic cable, metallic cable, wireless, router, modem, server, device, components, desktop, printer, Central Registry of Vehicles.
- b. General Language: Learners will have to deal with expressions like share, purpose, distance, area, kilometers, primary, building block, role-play, company, office building, access, save money, be safe, designer, accountant, decision maker, cost, cheap.
- c. Grammatical Issues: Teacher will use a Have you ever... question, learners will mostly use declaration sentences. Learners will use infinitives of purpose in descriptions, and use terms of comparison in comparative and superlative forms. Learners will have to adapt verbs to fit the sentence. Learners will have to understand sentence constructions with want to...
- d. Expected problems: Learners may have trouble understanding a Have you ever... constructions, as well as having problems with the infinitives of purpose. This could be a vocabulary heavy segment, but the learners will practice using the vocabulary during the final role-play.
- e. Language Skills: Learners will practice listening comprehension and also speaking, both with presenting their ideas and with the role-play. Correctly filling in the transformation gap-fill will require reading comprehension.

3. Cognition:

- a. Questions: Teacher will ask a Have you ever... question along with Wh-questions with answers requiring elaboration.
- b. Tasks: Learners will be asked to create a mind map, use their own knowledge and experience to deduce the functions of computer networks, based on their knowledge, make a decision which type of network is best suited for which task, research types of network links and describe them, transform verbs to fit a sentence and fill in the gaps and then work as a group in a role-play, either designing a computer network, researching the costs involved or making decisions based on presentation of the design and findings.

Segment Plan:

| Teacher: Michal Drápalík | | |
|--------------------------------|---|---|
| Level of Learners: B1–C1 | | |
| Age of Learners: 17–18 | | |
| Classroom: Computer Laboratory | | |
| File: Network.flipchart | | |
| Time: 48 minutes | | |
| Timing | Stage/Procedure/Objective | Type of Interaction |
| 1 minute | Introduction / Hello, students. Today we will talk about computer networks. (Page 1) | Teacher/Students |
| 3 minutes | Warm-up / Have you ever used a computer network before? And where? (Yes, Internet.) (Page 1) | Teacher/Students, Student/Students |
| 6 minutes | Pair Work / Work with your neighbour and try to come up with thing for which a computer network is useful. You have four minutes. After that, each pair will write an answer into the mind map and comment on it, why it is useful. (Page 2) | Teacher/Students, Student/Student, Student/Students |
| 3 minutes | Lockstep / There are many types of network, based on the distances they cover. The first is Local Area Network, covering only a single building or very short distances, maybe two buildings close together. Metropolitan Area Network covers several buildings. The Central Registry of Vehicles they had trouble with lately, is | Teacher/Students |

| | | |
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| | <p>one. And over longer distances you need a Wide Area Network. The largest one is the Internet As you can see, the first two can be rather structured. Internet not so much. (Page 3)</p> | |
| 7 minutes | <p>Group Work / Form groups of four. In your groups try to decide which type of network is best suited for which task from the mind map. You have five minutes and then a chosen speaker will present your decisions. (Page 3)</p> | <p>Teacher/Students, Student/Student, Student/Students</p> |
| 3 minutes | <p>Elicitation / Do any of you know from which components do you build a computer network? What do you need? Remember the base functions.(Page 4)</p> | <p>Teacher/Students, Students/Students</p> |
| 5 minutes | <p>Pair Work / In your pairs I want you to research what kind of network links there are. After three minutes, write one on the board. (Page 4)</p> | <p>Teacher/Students, Student/Student, Student/Students</p> |
| 3 minutes | <p>Lockstep / The network nodes are devices for sending and receiving data, so the computers would be there, along with peripherals like printers. Then there are devices such as modems, routers or repeater, which make sure that you actually send the data to</p> | <p>Teacher/Students</p> |

| | | |
|------------|--|---|
| | the right place. (Page 4) | |
| 5 minutes | Gap Fill / Write these sentences into your notebooks. Fill the gaps with the right verbs from the box in the correct forms. (Page 5) | Teacher/Students |
| 14 minutes | Group Work / You will all work together. Imagine that you are a new company. You want to build a computer network in your office building. There are as many offices as there are people in the class. Split into three teams, the first one will be the designers planning the network, the second group will be the accountants and the third team the decision makers. You have ten minutes. | Teacher/Students, Student/Student, Student/Students |

Computer Networks: Network Functions Route Map:

1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Be prepared to make a group of three.
2. Lead-in:
 - a. Ask the learners if they have some experience with computer networks.
 - b. Suggest the Internet.
 - c. Ask if they play online games.
 - d. Show the learners the unfilled mind map.
3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.

- b. Give instructions: “With your neighbour try to think up things for which computer networks can be useful. After four minutes, each pair will write one of their answers into the mind map. Make sure that you do not repeat answers.”
 - c. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Monitor mostly from the front. Move around if a group seems troubled.
 - c. Avoid looming or offering unwanted help.
 - d. Be ready to answer questions.
 - e. Switch the control pen into pen mode.
- 5. Closing the Activity:
 - a. Announce a minute remaining.
 - b. Once a majority seems finished, start asking them to write their answers into the mind map.
- 6. Post-Activity:
 - a. Comment on the answers.
 - b. If needed, fill in a few more:
 - i. Sharing of data.
 - ii. Sharing of peripherals.
 - iii. Sharing of computational resources.
 - iv. Remote access.
 - v. Interpersonal communication.
 - c. Congratulate the learners on a job well done.

Computer Networks: Primary Tasks Route Map:

- 1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Be prepared to make a group of three or five.
- 2. Lead-in:
 - a. Ask the learners if they every type of network has the same main functions.
 - b. Suggest the Internet and the school network, maybe they have a home network.
- 3. Setting up the Activity:
 - a. Divide the learners into groups of four, three or five.

- b. Give instructions: “In your groups try to decide which type of task from the mind map is each type of network best suited. You have five minutes and then a chosen speaker will present your decisions.”
 - c. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:
 - a. Check with each group and see if they understood the instructions.
 - b. Move around the classroom.
 - c. Avoid looming or appearing intimidating.
 - d. Be ready to answer questions.
- 5. Closing the Activity:
 - a. Announce a minute remaining.
 - b. Once a majority seems finished, ask one of the finished groups to choose a speaker.
- 6. Post-Activity:
 - a. Comment on the answers.
 - b. Congratulate the learners on a job well done.
 - c. Go over any words or pieces of grammar that ended in the Language Edge.

Computer Networks: Research Route Map:

- 1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Be prepared to make a group of three.
 - d. Prepare examples of twisted pair, coaxial and optical cables.
 - e. Make sure the Internet connection is functional.
- 2. Lead-in:
 - a. Mention that for the function of the network, links are very important, speed of the connection is limited by them.
- 3. Setting up the Activity:
 - a. Divide the learners into pairs or groups of three.
 - b. Give instructions: “You will work in pairs. This time you will be doing a bit of research. Find out what kinds of network links are being used today and prepare a description of them.”
 - c. Ask one learner to repeat what they are supposed to do.
- 4. Running the Activity:

- a. Check with each group and see if they understood the instructions.
 - b. Move around the classroom, checking that they do not play games or browse freely.
 - c. Avoid looming or appearing intimidating.
 - d. Be ready to answer questions.
5. Closing the Activity:
- a. Announce a minute remaining.
 - b. Once a majority seems finished, ask one of the finished pairs to present their findings about one of the network links.
6. Post-Activity:
- a. Comment on the answers.
 - b. Send the examples of the cables around the class.
 - c. Congratulate the learners on a job well done.
 - d. Go over any unfamiliar words or pieces of grammar the learners have written into the Language Edge.

Computer Networks: Project Route Map:

- 1. Before the Lesson:
 - a. Prepare the flipchart and make sure it is ready to be used.
 - b. Make sure the Interactive Whiteboard is functional and compatible with the flipchart.
 - c. Check the prices of computer equipment available.
- 2. Lead-in:
 - a. Ask the learners if they enjoy role-playing games.
- 3. Setting up the Activity:
 - a. Describe the learners' roles: "Imagine that you are a new company. You want to build a computer network in your office building. There are as many offices as there are people in the class. Split into three teams, the first one will be the designers planning the network, the second group will be the accountants and the third team the decision makers."
 - b. Instructions to the Designer Team: "will be designing the layout of the network. You want to make sure that if a computer gets broken, the network will still work. Your components are desktops, printers, servers and a connection to the internet. You want every worker to be comfortable and make sure that the equipment is not overused. You will work with the board. The components are in the upper left corner, just drag a copy to where you want it. Instead of cables, draw with the pen.

You have ten minutes to design. After that, you will present your design to the Decision Makers and defend it from the Accountants.”

- c. Instructions to the Accountant Team: “Your job is to research how much it will cost to build a network and maintain it. Make sure you save as much money as you can. Network links are considered cheap. You will work with the internet. Try to find the cheapest and best models. You have ten minutes to do your research, after that the Designers will present their design to the Decision Makers. You will try to change their design to save money but still keep the network functioning.”
- d. Instructions to the Decision Makers Team: “At first, listen to both groups. After ten minutes, they will present their plans to you and you will have to make a decision and justify it. You want the network to work well and to save as much money as possible.”

4. Running the Activity:

- a. Check with each group and see if they understood the instructions.
- b. Move around the groups.
- c. Avoid looming or appearing threatening.
- d. Be ready to answer questions.

5. Closing the Activity:

- a. Announce a minute remaining.

6. Post-Activity:

- a. Comment on the answers and congratulate learners on a job well done.
- b. Mention that networks are generally expensive to set up, but better equipment lasts longer.

4 Conclusion

This thesis focused on Content and Language Integrated Learning and tried to look at the possibility of CLIL to teach ICT in combination with English, while making use of an Interactive Whiteboard, including the creation of a series of activities that make use of both English and the Interactive Whiteboard to teach ICT. As citizens of the European Union, the children of Czech Republic will be required to gain both language and digital competencies. Teachers at schools should be the ones to point the learners in the right direction in order to obtain them. As CLIL offers the chance to show the subjects as somewhat blended, it is very useful in preparing the learners for their adult life, because there are only rare few matters that are separated into neat little boxes like traditional subjects at school.

The Theoretical Part of this thesis takes a look at the term CLIL, its modern roots and the underlying principles. The research here was somewhat frustrating, because very many works mention CLIL only in the most general terms. After that the Theoretical Part looks at the inherent challenges of trying to implement CLIL and the advantages it can offer to a school. Hopefully this can help understand CLIL and what it stands for better. Next in line is a brief look at the impact ICT had on learners and the process of learning itself. As time goes on, circumstances change and shape the learners, to which the teachers must adapt to still be effective. One way to do this is by accepting the new technologies as a part of life and fully exploiting their capabilities.

The Practical Part starts with justifying the use of the Interactive Whiteboard and a warning against some common mistakes when using it. The frustration from the Theoretical Part fully set in here, because just as there are numerous works talking about CLIL, there is no “cookbook” of surefire CLIL methods. It took some time for the realization to set in that as circumstances are never the same, neither are the learners nor the teachers. As Grin mentioned, there are over two hundred variants of CLIL being used (Grin). The methods to use are up to the teacher, because only he/she knows the class. A discerning reader will notice the absence of the Culture dimension of CLIL in the description of each segment. The reason for that is the universal application of ICT in the modern world, unlike History or Geography which offer many chances to include the culture of other countries into the lessons, with some exceptions, like the history of computing and the first female programmer, Ada Lovelace, born Byron. The core of the Practical Part are the segments of activities, design of which came from the writer’s admittedly short teaching experience and consulting the subject teachers at the school. The age range for the activities includes learners attending ISCED 2 and ISCED 3 levels of education to keep with the specialization of the writer’s studies. After a discussion with the subject teacher, it was decided to make use of a modular form of CLIL, taking only a part of the 90 minute lesson and more content driven.

The process of creating the segments and activities in the Practical Part began during the teaching practice, where some classes had to cope with the writer during both English and ICT lessons. For example the User Basics segment came from the moment when learners had to familiarize themselves with the commonly used file types and their extensions. They looked at it as if the extensions were just random chunks of letters. Their usual teacher gave permission to use English to give examples of the extensions’ meaning. The learners reacted very positively when the random chunks of letters became ordinary words that could be easily understood.

The Paths segment was born of frustration on the teacher's part. The learners were practicing inserting images into their webpages, using the relative path for some time already but could not grasp it, as it is admittedly an abstract concept. As there was no Interactive Whiteboard, the learners at the time had to cope with the writer's quite flawed drawing technique. Still, it was almost possible to see the light bulbs above their heads starting to shine. The other segments have similar origins, where the usual methods of teaching ICT seemed to be lacking in some regard. The activities here are an attempt to answer this frustration, trying to use the vehicle of English language to help learners understand the quite difficult terminology and the Interactive Whiteboard to change abstract concepts into representations the learners can relate to easier.

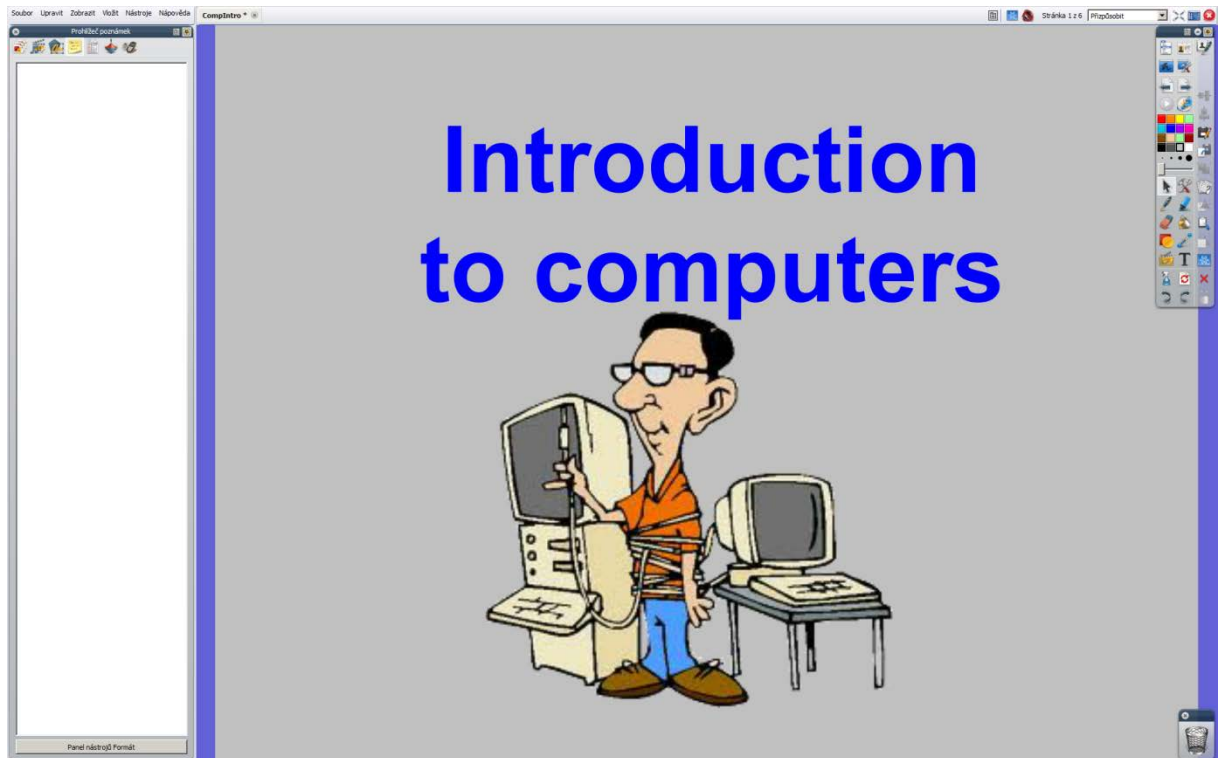
While creating the activities, it became obvious that some topics lend themselves to such efforts more easily than others, because for example statistics in MS Excel would hardly be made easier by adding another level of terminology and the use of Interactive Whiteboard would be reduced to an overhead projector screen. Similarly, programming as it is taught would probably benefit very little.

The work showed that CLIL can be used to enhance the ICT lessons and boost the exposure time to the learners target language, but only to a certain degree. CLIL should not completely supplant the usual teaching but supplement it, which can bring positive results, at least in the short term, as long term benefits were not possible to ascertain due to time constraints. The activities here can serve as a beginning of a portfolio of digital learning objects.

Appendix

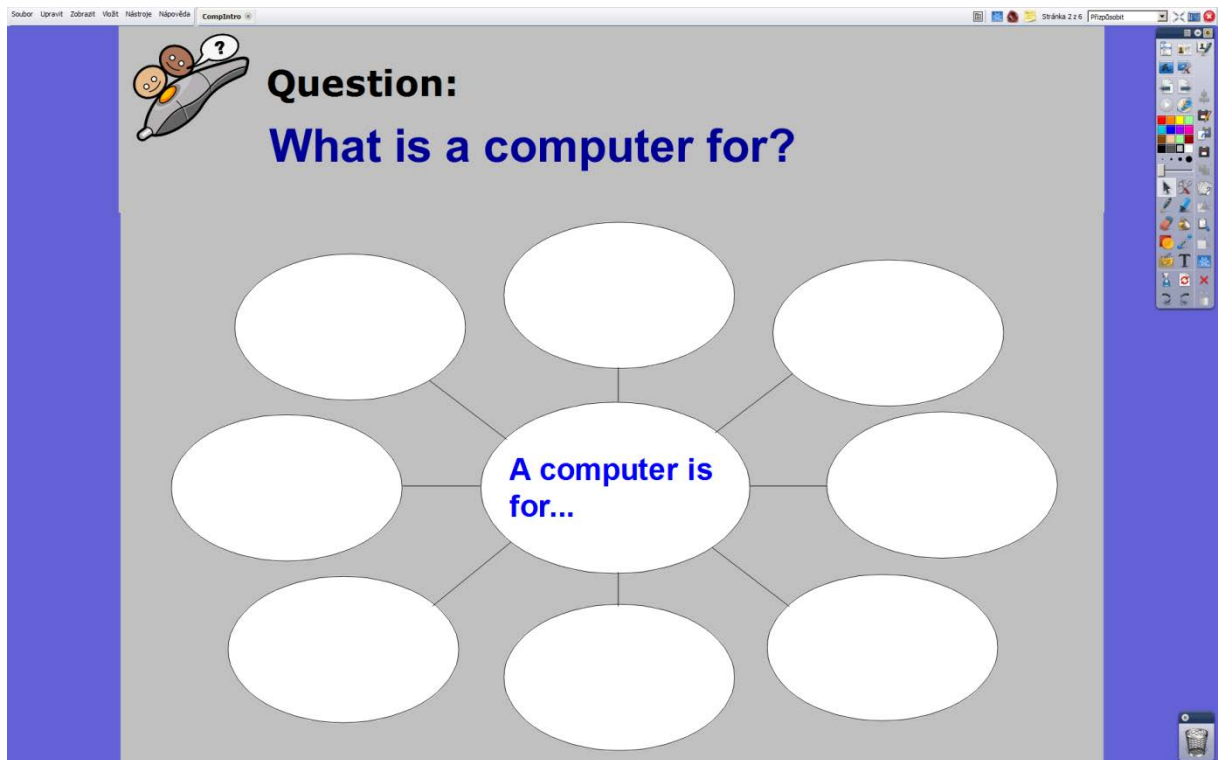
Introduction to Computers Documentation:

Figure 1: Page 1:



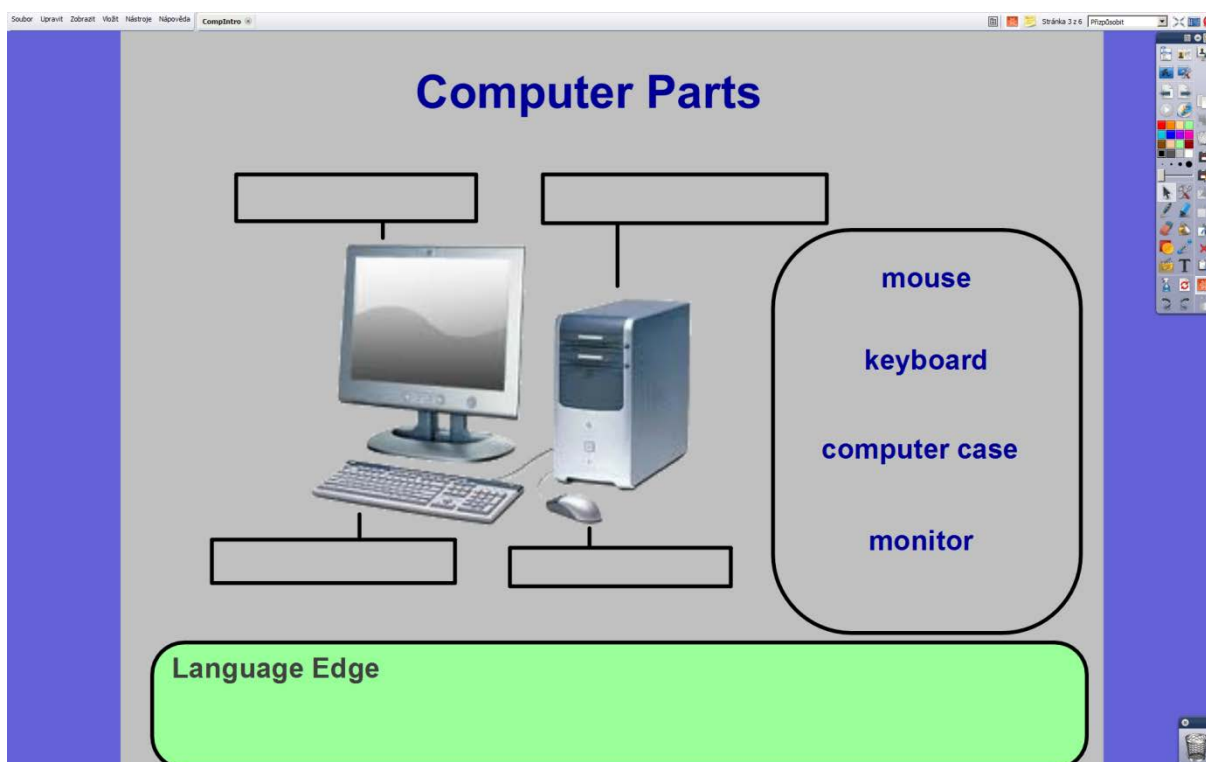
This is the most basic page when it comes to preparation. The aim is to grab learners' attention and introduce the topic. The headline is written in larger font than the others, as it is the main headline of the flipchart. The background colour was chosen to be neutral grey to keep from aggravating learners' eyes. Dark blue of the headline is contrasting enough to be readable from several meters away, just in case the lesson takes place in a larger room. The image is supposed to be humorous, playing on the stereotype of an ICT user. It was chosen from a free clipart gallery and further modified in Adobe PhotoShop CS5.1. The original white background was cut out, leaving the background transparent, necessitating a change of image format, from JFIF into PNG, which allows for transparency. Otherwise, nothing special happens on this page.

Figure 2: Page 2:



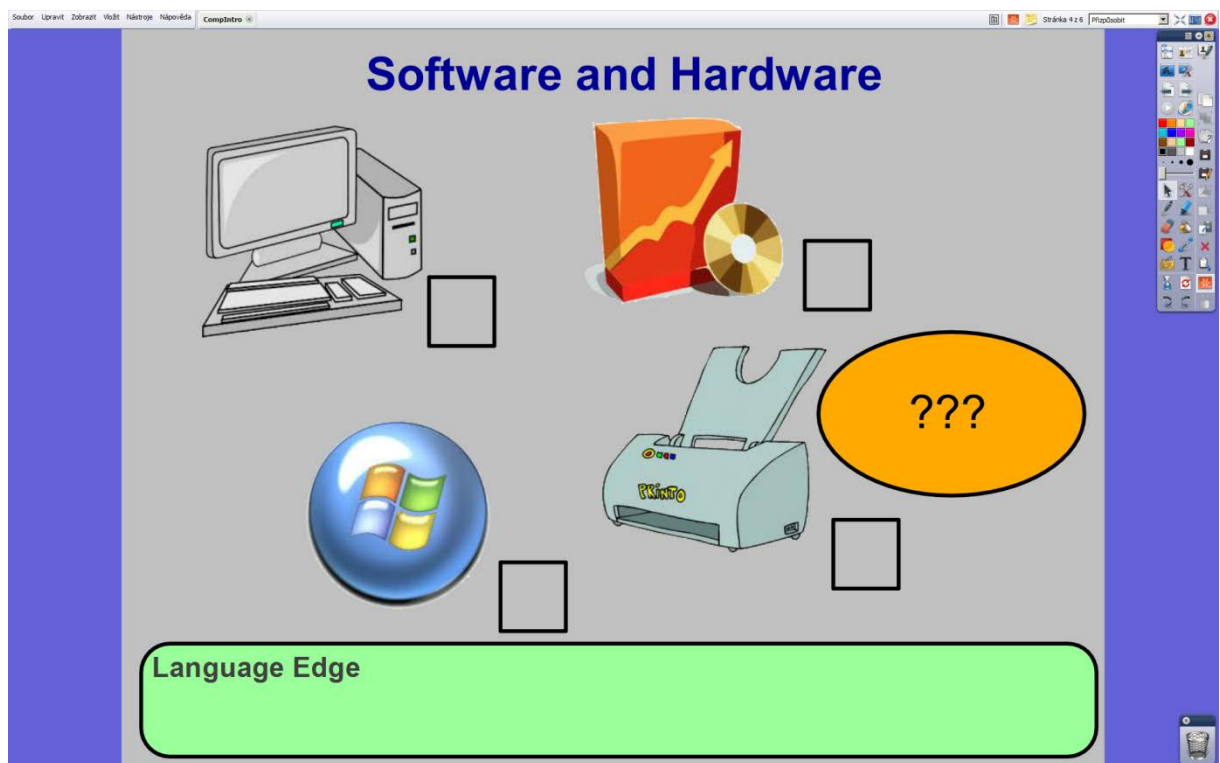
This page is aimed to make use of the mind map format. In this case, the gallery of graphical elements, templates and motifs served well, although the chosen template had to be modified slightly, to keep the colour scheme. The image in the upper left corner serves as a link to change the control pen into pen mode, so the learners can write their ideas into the mind map. A link to the notes browser can be found in the upper right corner, looking like a sticky note. Notes for this page contain suggestions if the learners are not forthcoming with their answers.

Figure 3: Page 3:



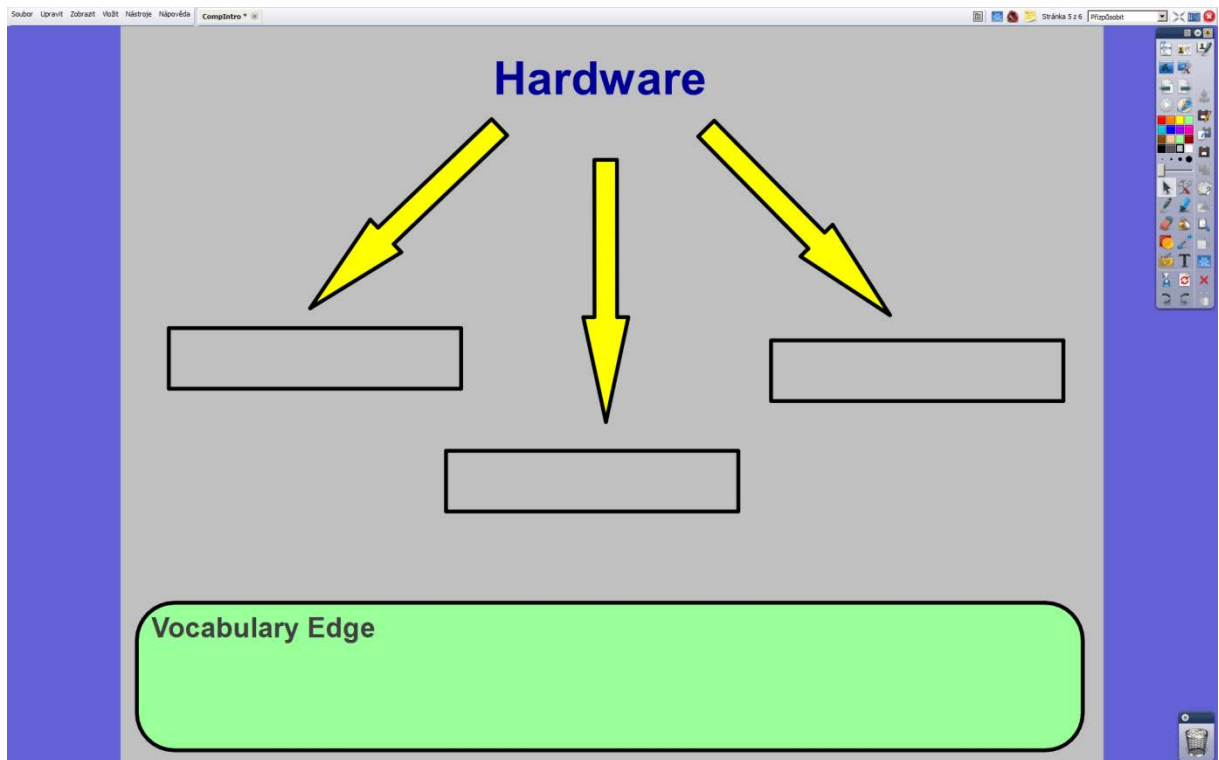
The colour scheme chosen to keep from aggravating the learners' eyes is kept. The headline is smaller this time as this activity is done best with the learners gathered around the Interactive Whiteboard. The image was again chosen from a free gallery and the previously mentioned modification was necessary here as well, so, again, the white background had to be cut out, leaving it transparent and the image format had to be changed. PNG was chosen for its favorable properties, meaning that it enables transparency and keeps a higher quality of the image. A new element is the Language Edge, a simple rounded rectangle with a bit of text, all locked into place to keep anyone from moving it by mistake. It is the place, where learners will write words and grammar they find remarkable, interesting or unfamiliar. Boxes made of rectangles with their inside coloured to match the background were added to each part of the computer, while to the side a box containing the usually used terms for each component was placed. The word box is another rounded rectangle. Each name has an attribute called "key word" activated, with each key word being different. Every box near a computer component is made into a "container", allowing only objects with the correct "key word" to be placed inside. Should a name be placed incorrectly, it will return to its starting point. This is the page for the matching exercise. Should learners forget the verbal instructions, they can open notes, using the sticky note icon in the upper right corner.

Figure 4: Page 4:



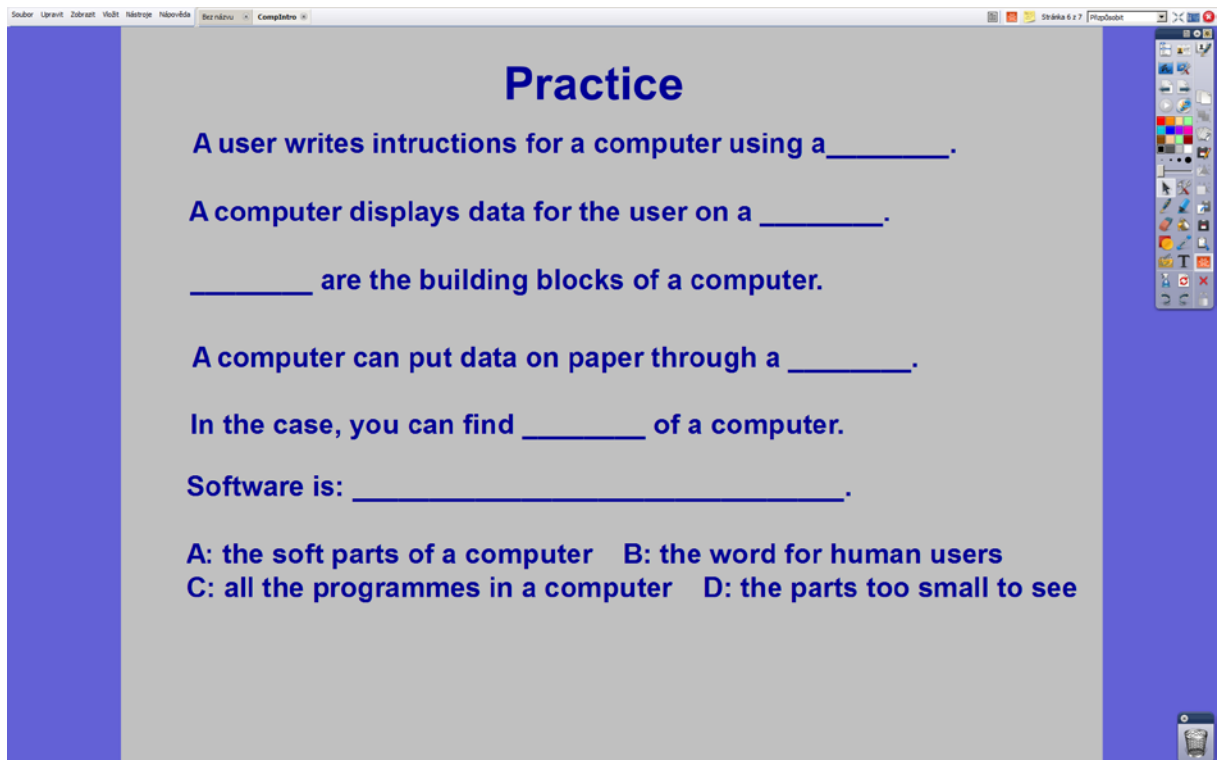
This page continues with the settings for background colour and headline. The pictures were again all chosen from free clipart galleries and further modified in Adobe PhotoShop CS5.1 to get rid of their white backgrounds, leaving them transparent. On this page learners are introduced to the concepts of Hardware and Software. Elicitation follows to see whether any learners are familiar with the term and an explanation from the teacher or a knowledgeable learner comes right after. Learners are given time to think for themselves and decide whether the pictures show a piece of Hardware or Software, signifying their choice by writing either “H” or “S” in the proper boxes. Learners are also asked whether they know what the pictures show. Answers are written on the page and obscured by the ellipsis with question marks. Notes are again accessible through the sticky note icon in the upper right corner.

Figure 5: Page 5:



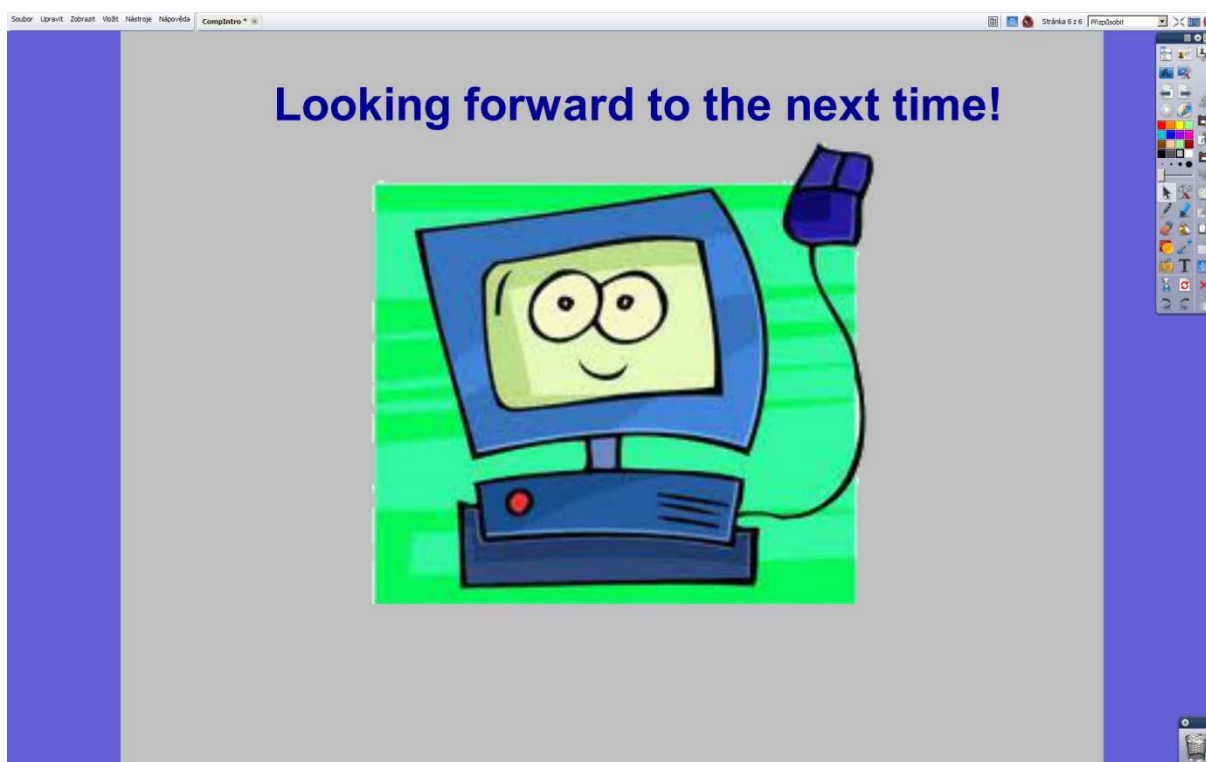
The familiar elements of background colour, headline and Language Edge can be found on this page too, along with the notes accessible through the sticky note icon in the upper right corner, containing instructions for the activity on this page. Teacher elicits the basic division of hardware into input/processing/output, for example by mentioning the process of a computer executing an instruction. Learners are then given time to work in groups and come up with as many examples of all three kinds of Hardware. They write their ideas under the correct arrows. The group with the most ideas wins a merit.

Figure 6: Page 6:



This is a very simple page containing the final comprehension check in the form of gap fill and a multiple choice exercise. The background colour was kept and notes containing the instructions for the tasks can be accessed by the sticky note icon in the upper right corner.

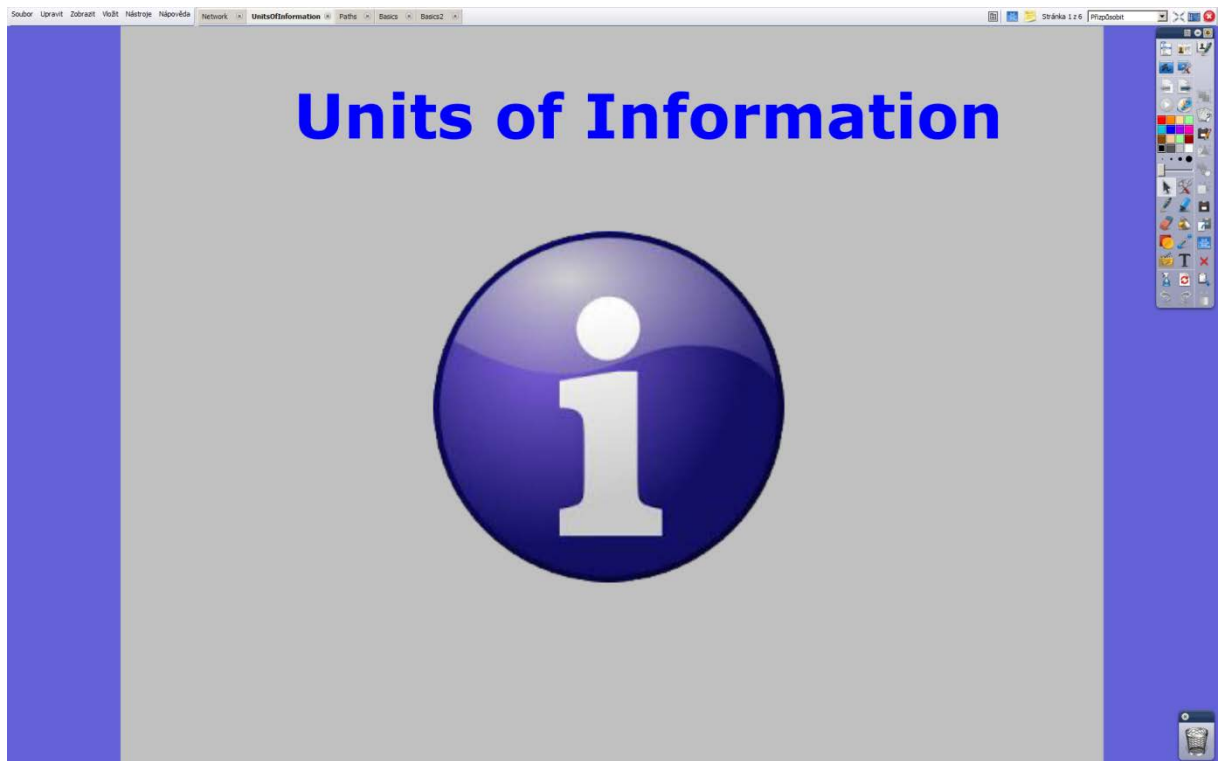
Figure 7: Page 7:



This page contains no special features, merely an image, that was chosen from a free gallery and modified for use. This page is also a chance to go back to each page and elicit or explain the words and grammar learners have written into Language Edges.

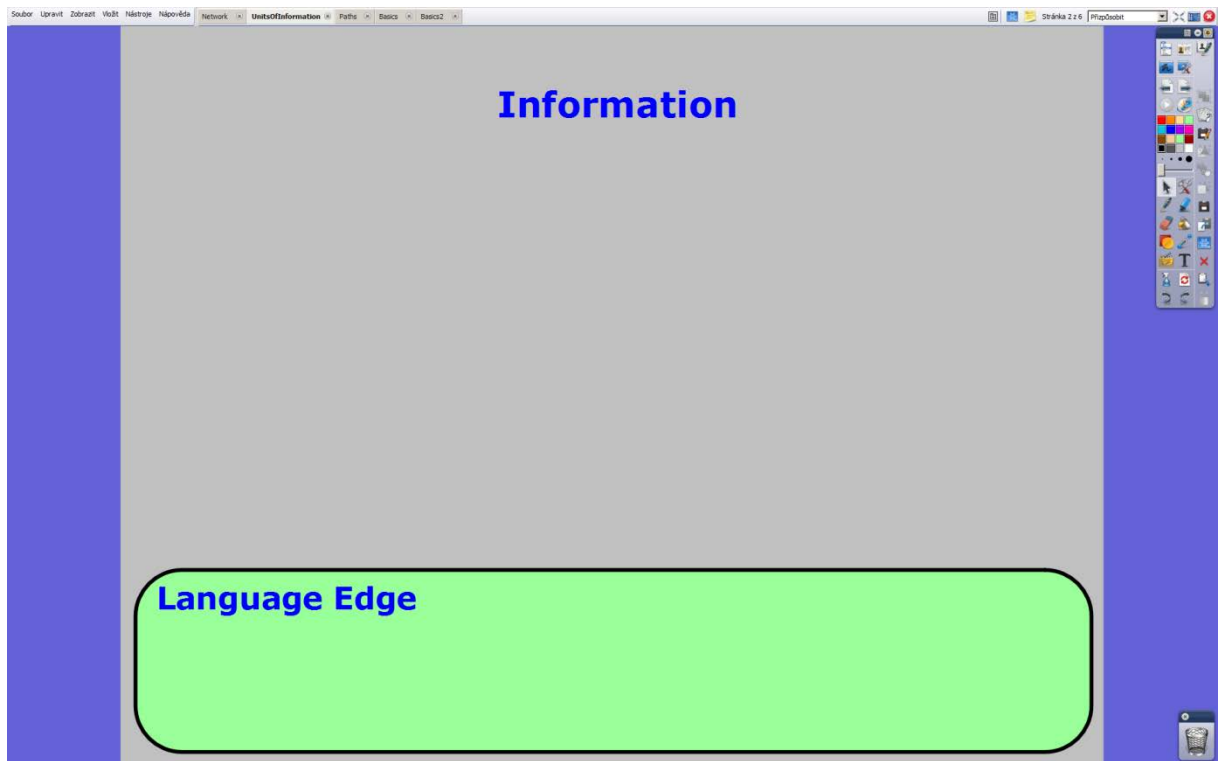
Units of Information Documentation:

Figure 8: Page1:



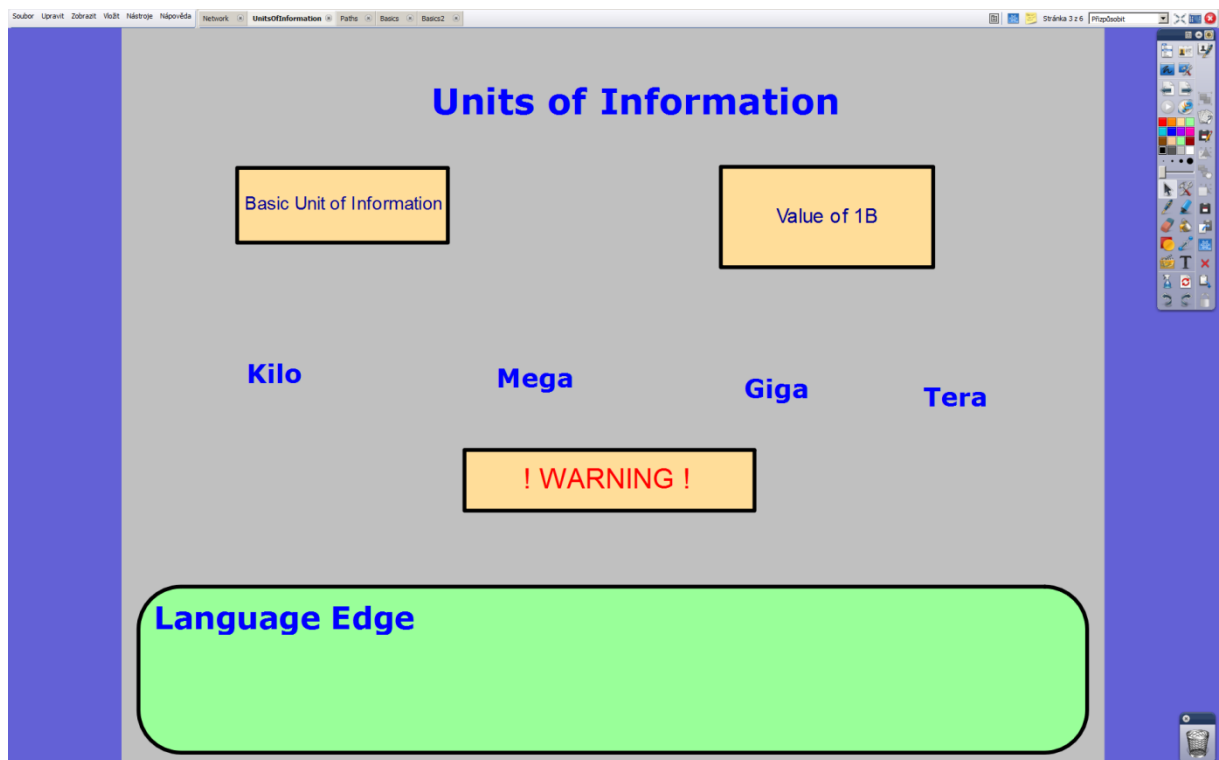
This is the introduction page of the segment. The aim of the page is to grab learners' attention and introduce the topic, hence the well known symbol for information. The headline is written in larger font than the others, what with it being the main headline of the flipchart. Neutral grey is chosen to calm down the younger learners. The image was chosen from a free clipart gallery and then modified in Adobe PhotoShop CS5.1. The image format was converted into a PNG to allow for transparent edges, so as to better fit in with the background. Notes for the page can be found using the sticky note icon in the upper right corner of the screen.

Figure 9: Page 2:



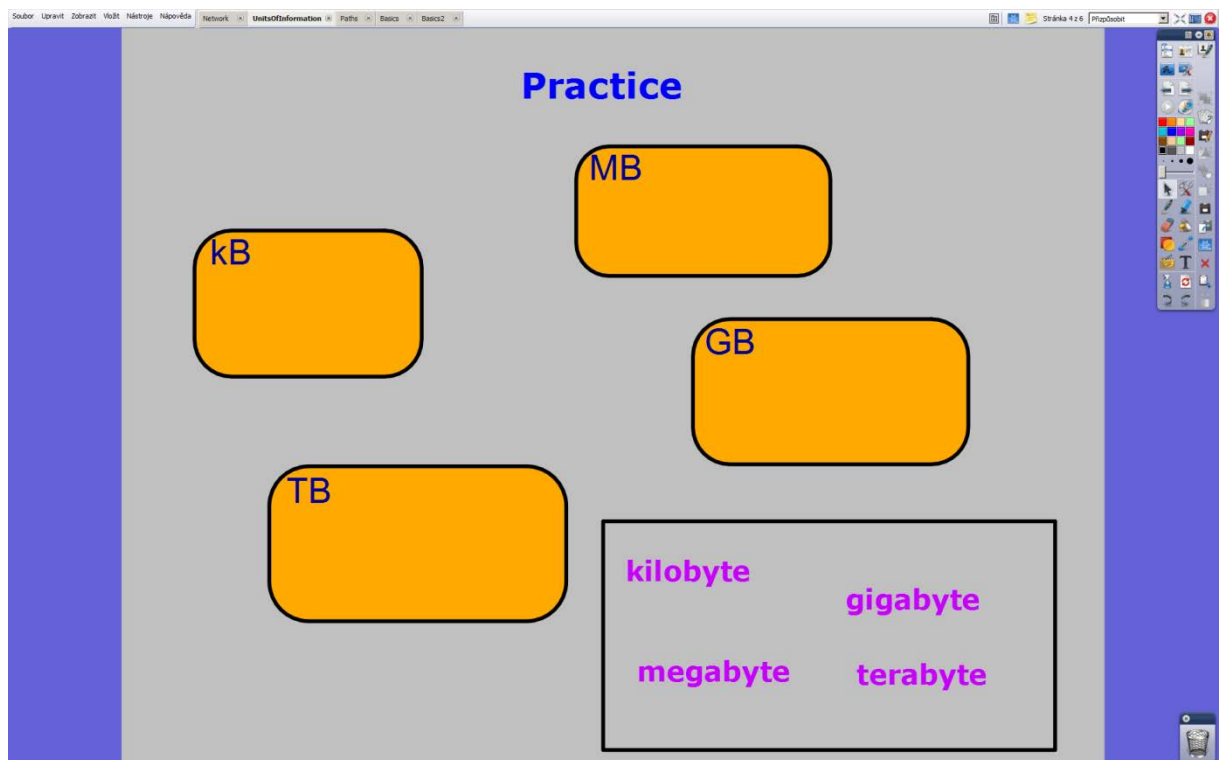
This page is intentionally kept blank as learners will write examples of sentences they think have informational value into the free space. A counter example may written, a sentence with no informational value. Notes for the teacher can be found using the sticky note icon in the upper right corner. The Language Edge element is here in case a learner finds an interesting or unfamiliar word or piece of grammar.

Figure 10: Page 3:



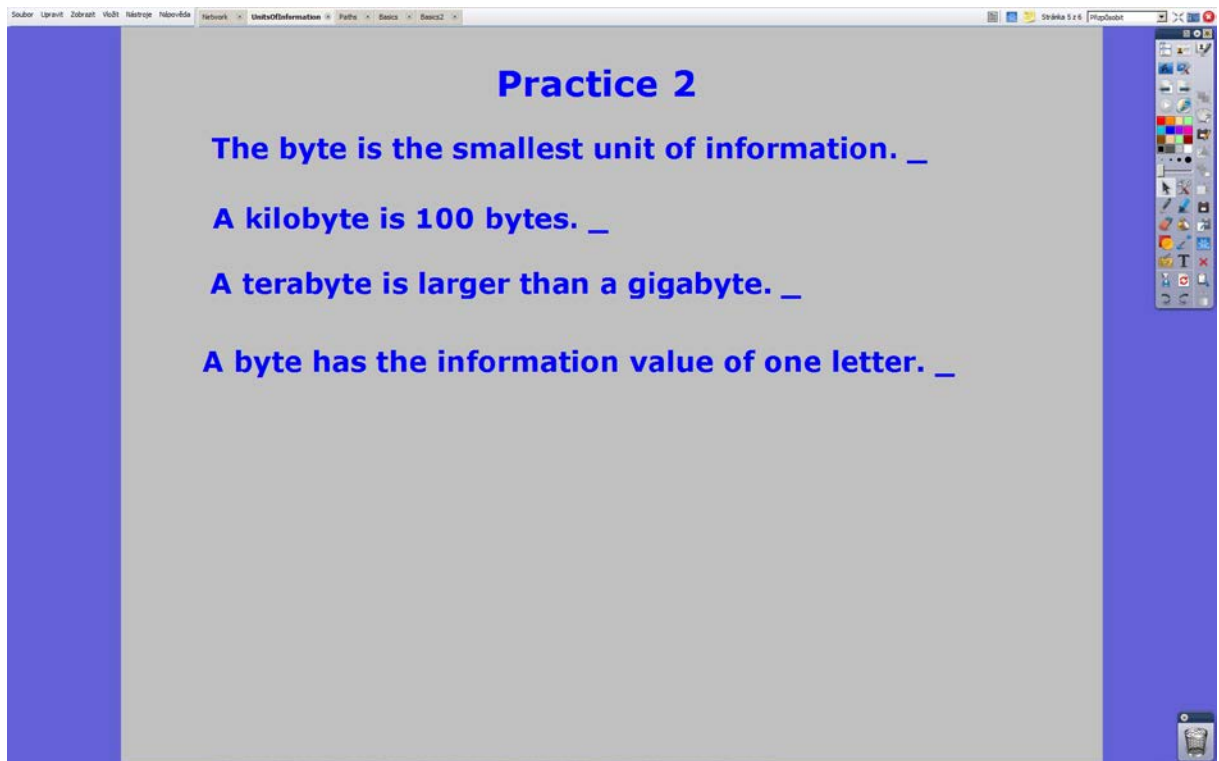
This page keeps with the colour scheme. The labeled yellow boxes represent the questions that will be asked by the teacher and either elicited or the boxes removed, revealing the answers. The warning box hides the fact that ICT does not use the same increment system as the rest of metric system using world, with each of the increment prefixes symbolizing two to the power of ten instead of ten to the power of three. The prefixes are sorted by size from left to right from smallest to largest. Teacher will write the shortened notation for the units of information derived from these increments near each prefix. The element of Language Edge is here for any learner who finds a fascinating or unfamiliar word or piece of grammar. Notes for the teacher can be found using the sticky note icon in the upper right corner.

Figure 11: Page 4:



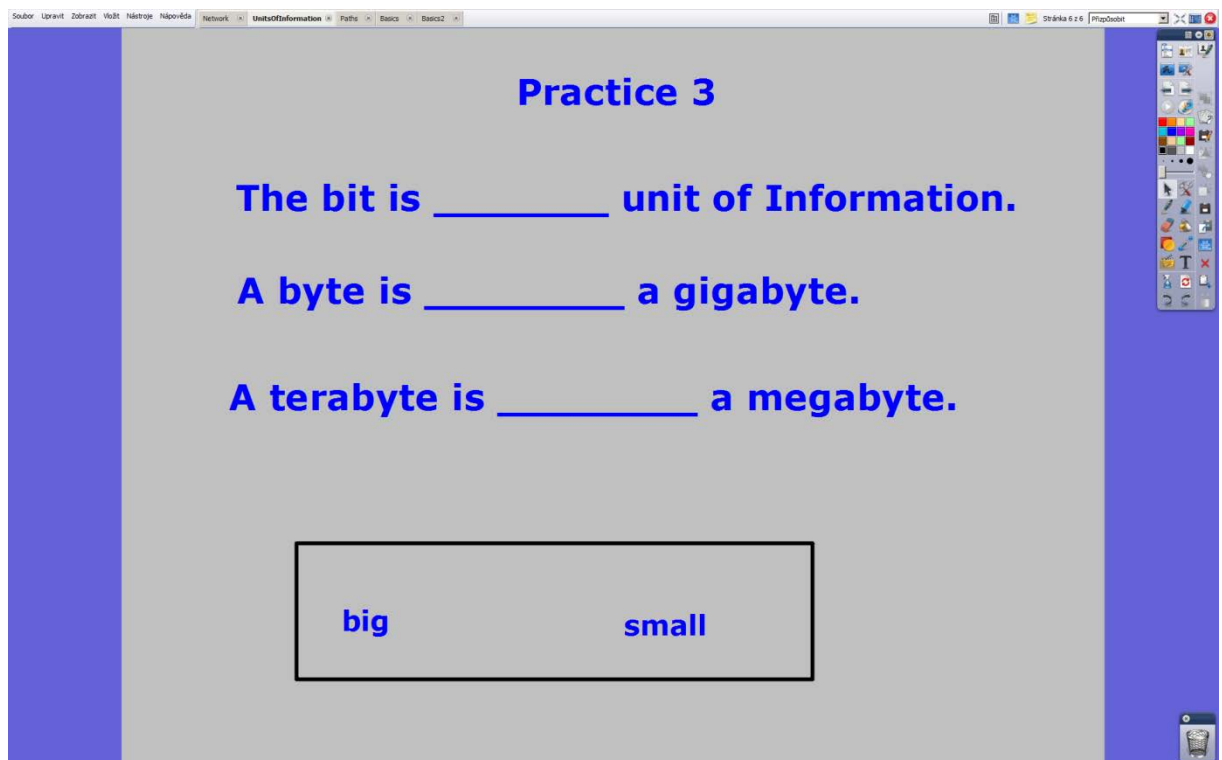
This page keeps the neutral background colour, but offers activity directly to the learners. The box in the lower left corner contains words for the derived units of information in purple. Those can be dragged by a pen in selection mode. However, if those are dragged into most places, they will just snap back, thanks to an attribute called “return of not contained” being set to TRUE in the Object Property Browser. The orange boxes serve as containers. To simulate the size of each unit of information, the container will hold only the same unit as on its label, or smaller, so kB will hold only the kilobyte, while TB will hold every unit. Notes for the teacher can be accessed by using the sticky note icon in the upper right corner of the screen.

Figure 12: Page 5:



This is a very simple page with just a comprehension check task. Learners have to write the sentences into their notebooks and mark them as either True or False, practicing comparison at the same time. Notes for the teacher can be accessed via the sticky note icon in the upper right corner of the screen.

Figure 13: Page 6:



This is another simple page with a comprehension check exercise. Here, learners have to fill the gaps with the right words from the box in the correct form. The neutral background continues and the sticky note icon in the upper right corner of the screen will lead to notes for the teacher.

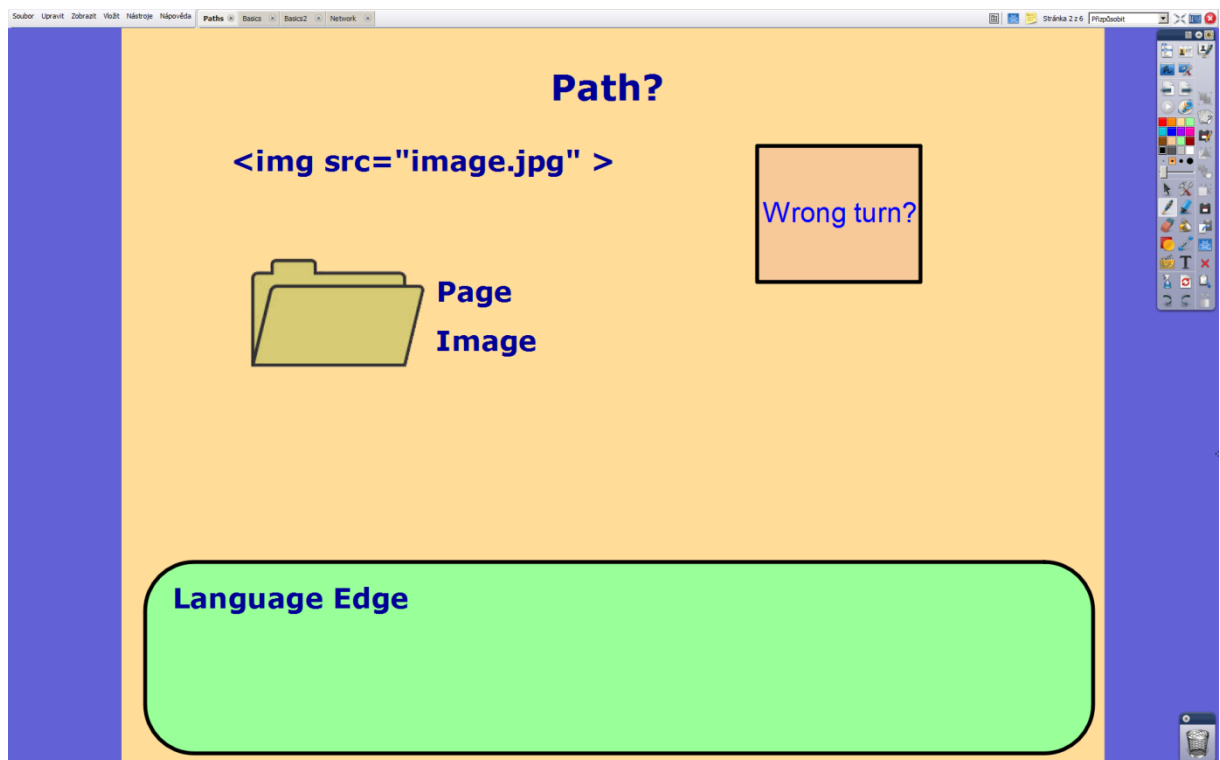
HTML Image Paths Documentation:

Figure 14: Page 1:



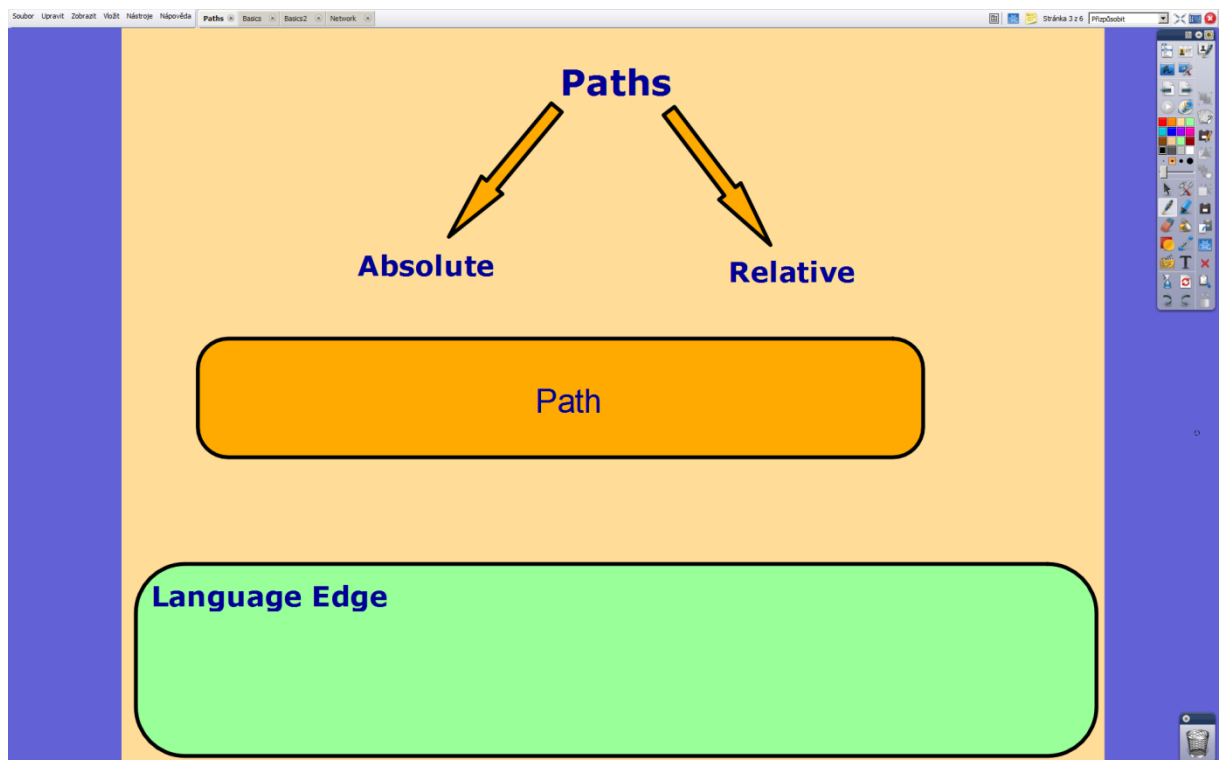
This is the introduction page of the segment, with the traditional headline and introductory image combination. A more contrastive background was selected, a brighter colour more likely to keep the attention of older learners. The image was downloaded from a free clipart gallery and modified in Adobe PhotoShop CS5.1 to change the white background into a transparent one and the image format was changed from JFIF to PNG, which actually permits transparent colour channels. Notes for the teacher can be accessed by the sticky note icon in the upper right corner.

Figure 15: Page 2:



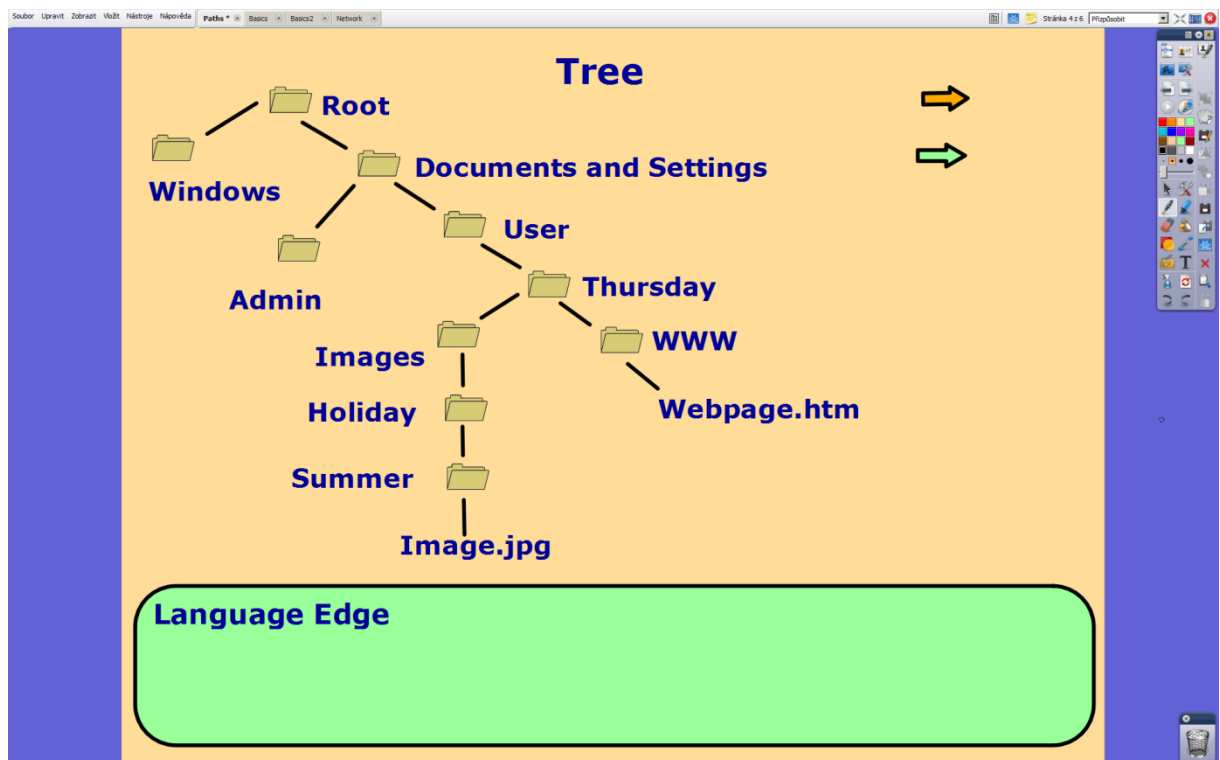
This page keeps the new colour scheme. Continuing from the elicitation, it displays the img tag with src attribute, which are used to insert an image into a webpage. The folder image comes from a free clipart gallery and had to be modified in Adobe PhotoShop CS5.1 to turn the white background into a transparent one and then the image format had to be changed from JFIF into PNG, which allows transparent colour channels. The words Page and Image symbolize the location of the files the learners have been using so far. The Wrong Turn? box is movable and hides the answer to the question of what happens when the image path is written wrong. The Language Edge element can be found at the bottom, into which learners can write words or grammar they find unfamiliar or interesting. Notes for the teacher can be found by using the sticky note icon in the upper right corner.

Figure 16: Page 3:



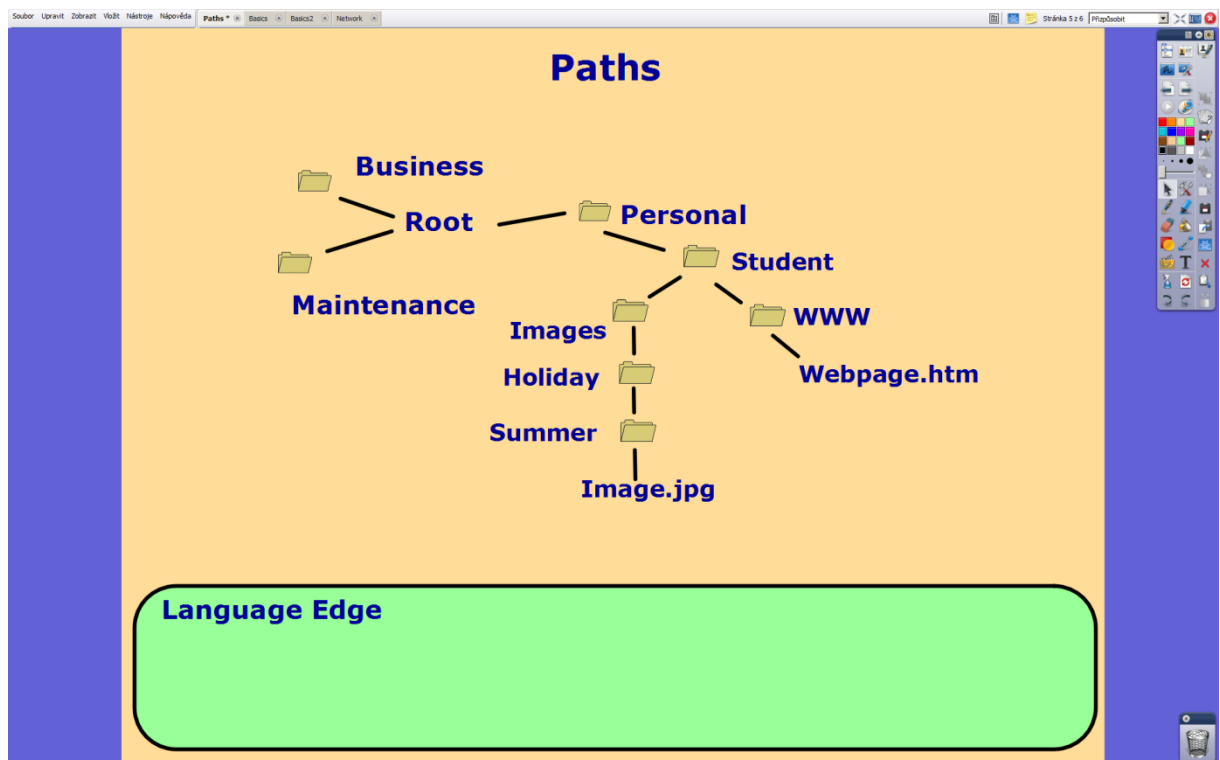
This page keeps the same colour scheme. It introduces the two ways an image path can be written in HTML, absolute and relative. The path box hides a visual representation of a path on a disc. Following a successful elicitation, learners will write an example of both kinds of path under the correct arrow, otherwise it falls to the teacher. The Language Edge element is present here in case learners find any words or grammar unfamiliar or fascinating. To open notes for the teacher use the sticky note icon in the upper right corner of the screen.

Figure 17: Page 4:



This page keeps the usual layout and colour scheme. It serves to remind learners of the tree data structure and demonstrate how their webpage is stored on the disc. Learners will use the orange and green arrows to mark the ways absolute and relative paths go. The folder image is repurposed from page 2 and copied. Links are made using the shape tool. Both arrows have been set into infinite cloner mode in their properties. Learners can move both their webpage and their image inside the tree structure and practice writing down the new paths. The Language Edge element is present, so that any words or pieces of grammar the learners find interesting or unfamiliar may be written into it. Notes for the teacher can be found by clicking the sticky note icon in the upper right corner.

Figure 18: Page 5:



This page keeps the structure and colour scheme. Learners are stood before the situation of posting their webpage on a server. The folder images are repurposed from page 2, resized and copied. Links are made using the shape tool. Learners are asked to deduce how the situation change regarding the image paths and which path is better suited for the situation. The Language Edge element is present here too, so that learners may write down into it and words or pieces of grammar they find interesting or unfamiliar. Notes for the teacher can be opened by clicking on the sticky note icon in the upper right corner.

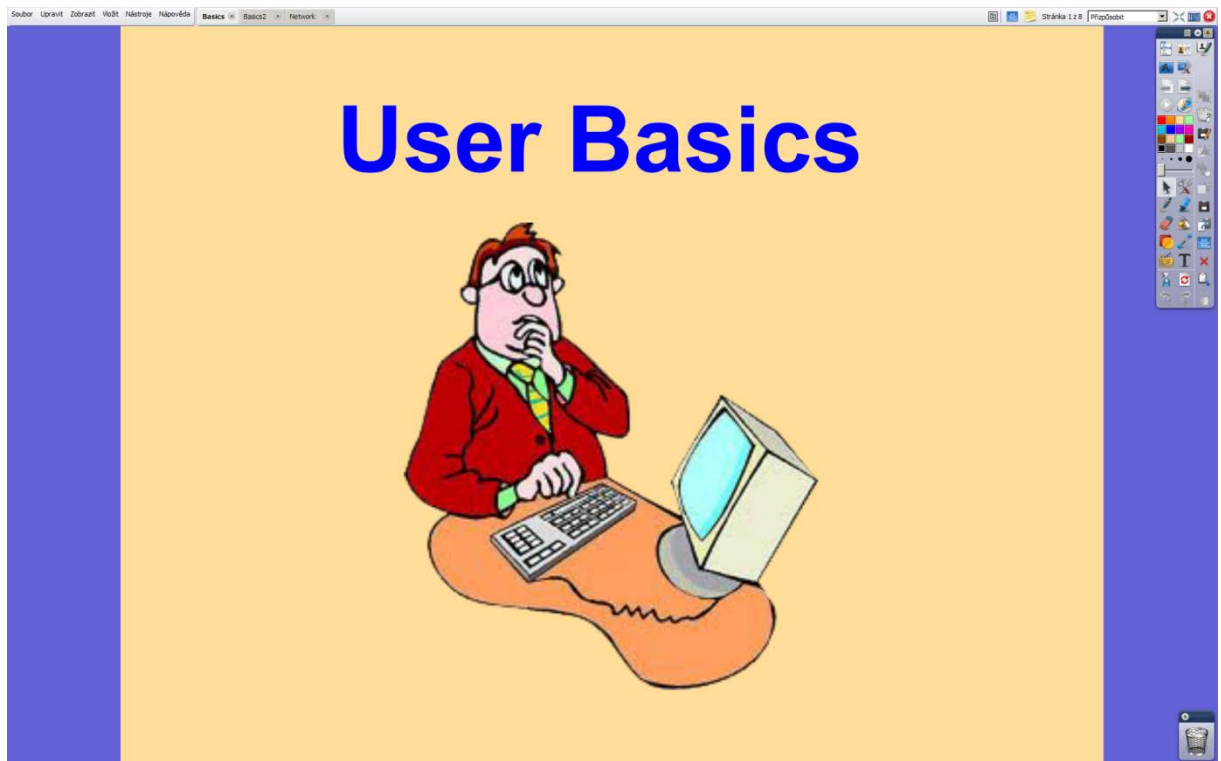
Figure 19: Page 6:



This is a simple page using the basic layout and colour scheme. The image should symbolize the activity learners are asked to do. Instructions for the activity are written below the image. Learners will practice writing the correct relative path as well as some basic user competencies. To access notes for the teacher, clicking the sticky note icon in the upper right corner will suffice.

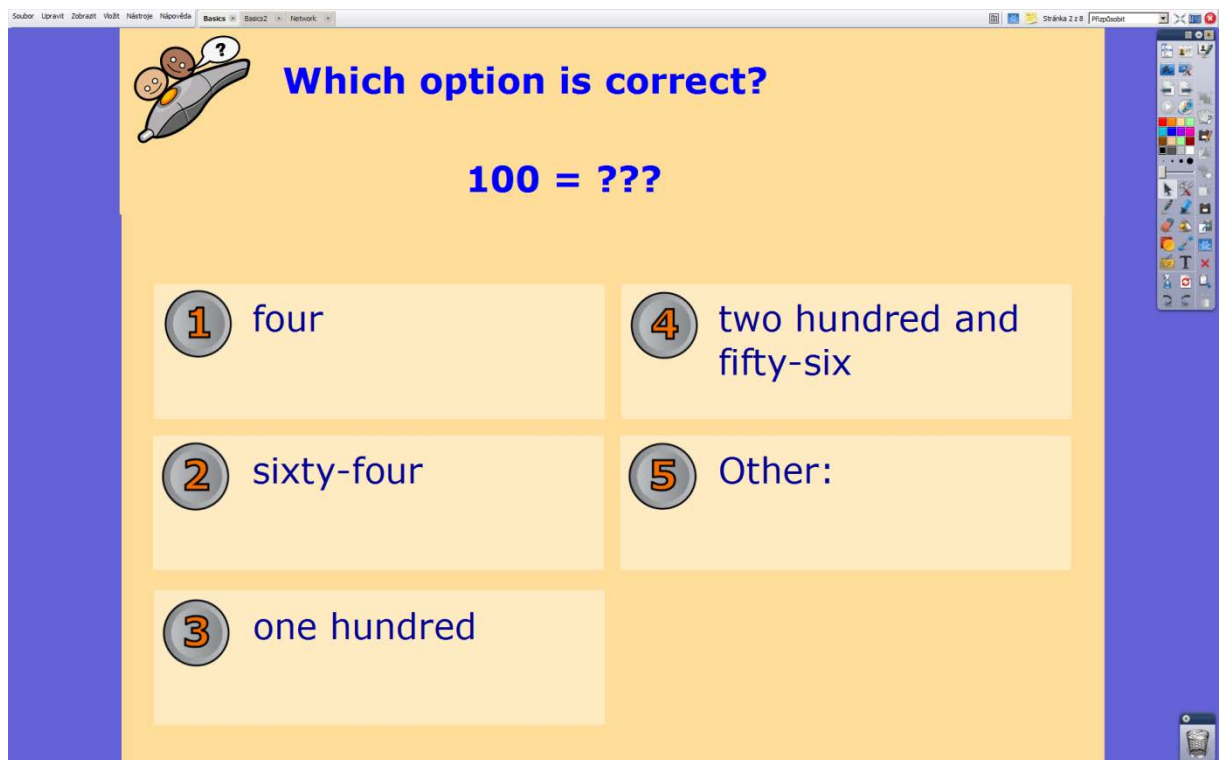
User Basics Documentation:

Figure 20: Page 1:



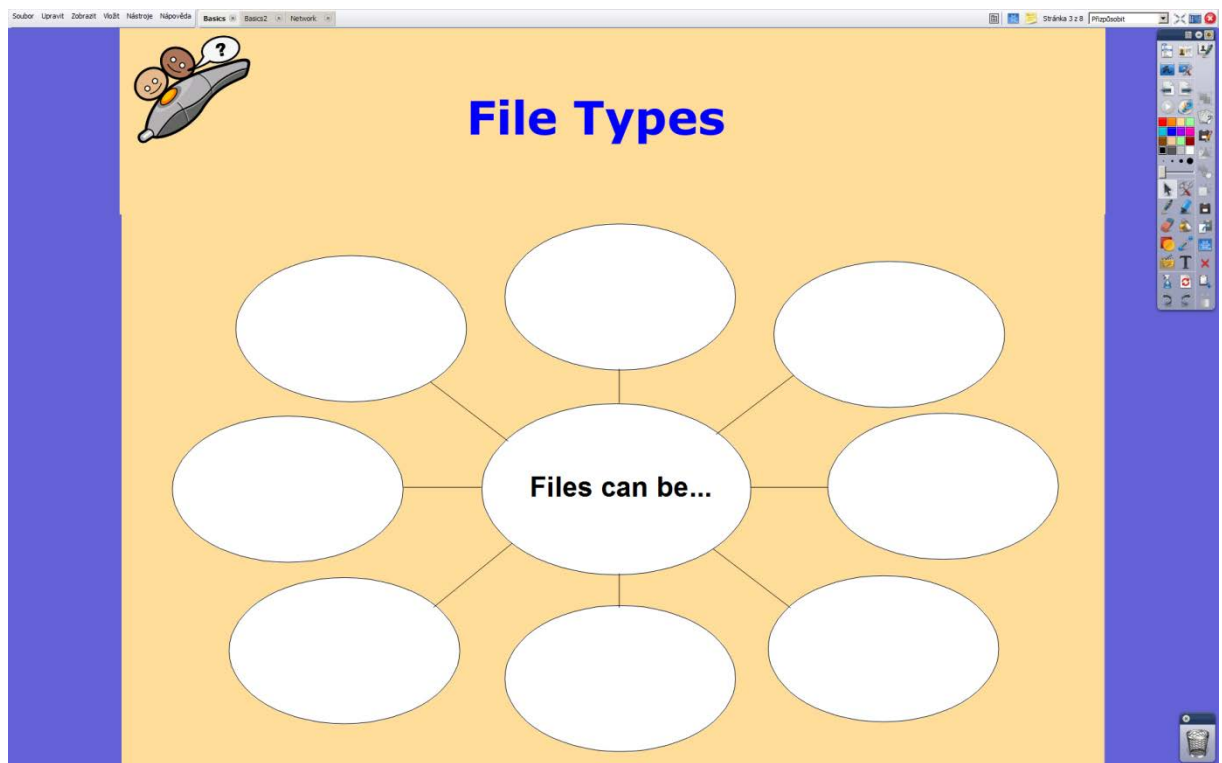
Keeping with the previously established layout and colour scheme combination, this page introduces the topic for the next segment. The main headline is larger than the rest with the image showing a reluctant computer user. The image comes from a free clipart gallery. It had to be modified in Adobe PhotoShop CS5.1 to change the white background into transparent. The image format was changed from JFIF to PNG, which allows transparent colour channels. Learners are asked to tell of their experiences with using a computer. Notes for the teacher can be found by clicking the sticky note icon in the upper right corner of the screen.

Figure 21: Page 2:



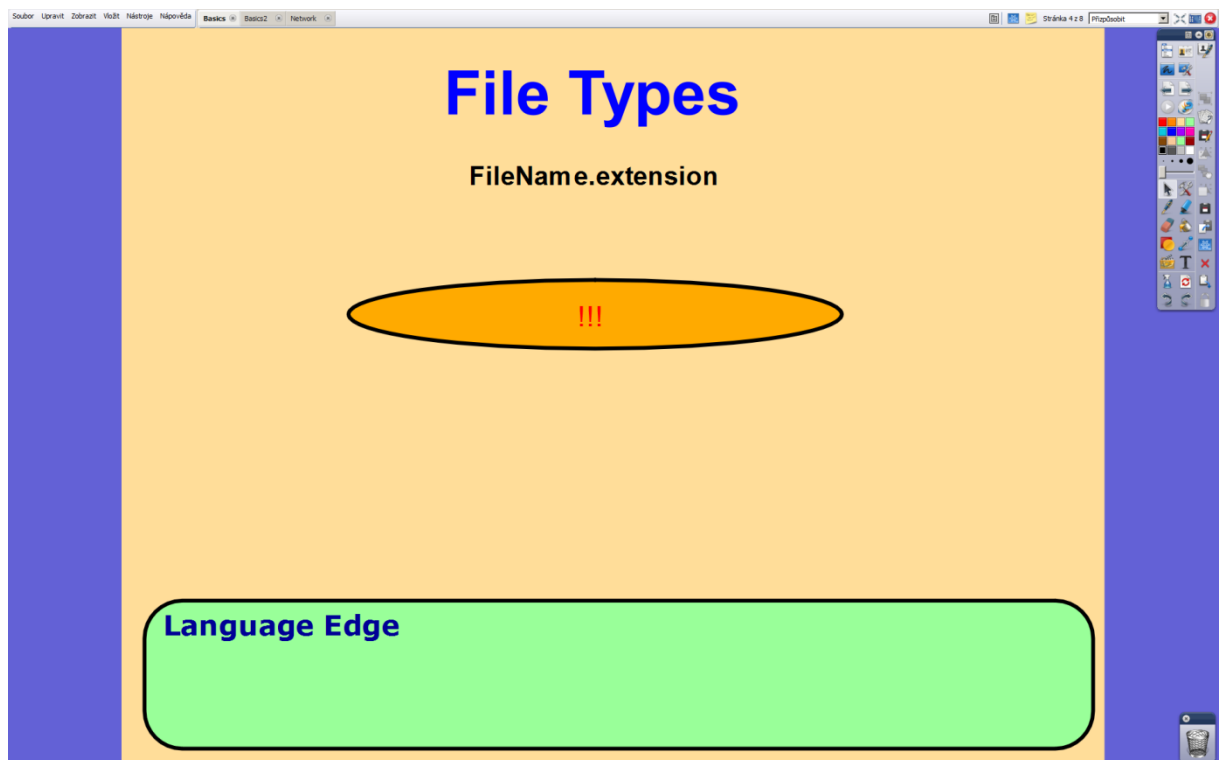
This page continues with the colour scheme and layout already established. It posits a question with five possible answers. For this, the five answers template was used and modified. Learners will answer by voting for their answers, in the last case also specifying. Votes are tallied by a volunteer using the control pen in the pen mode. Notes for the teacher can be accessed by clicking the sticky note icon in the upper right corner of the screen.

Figure 22: Page3:



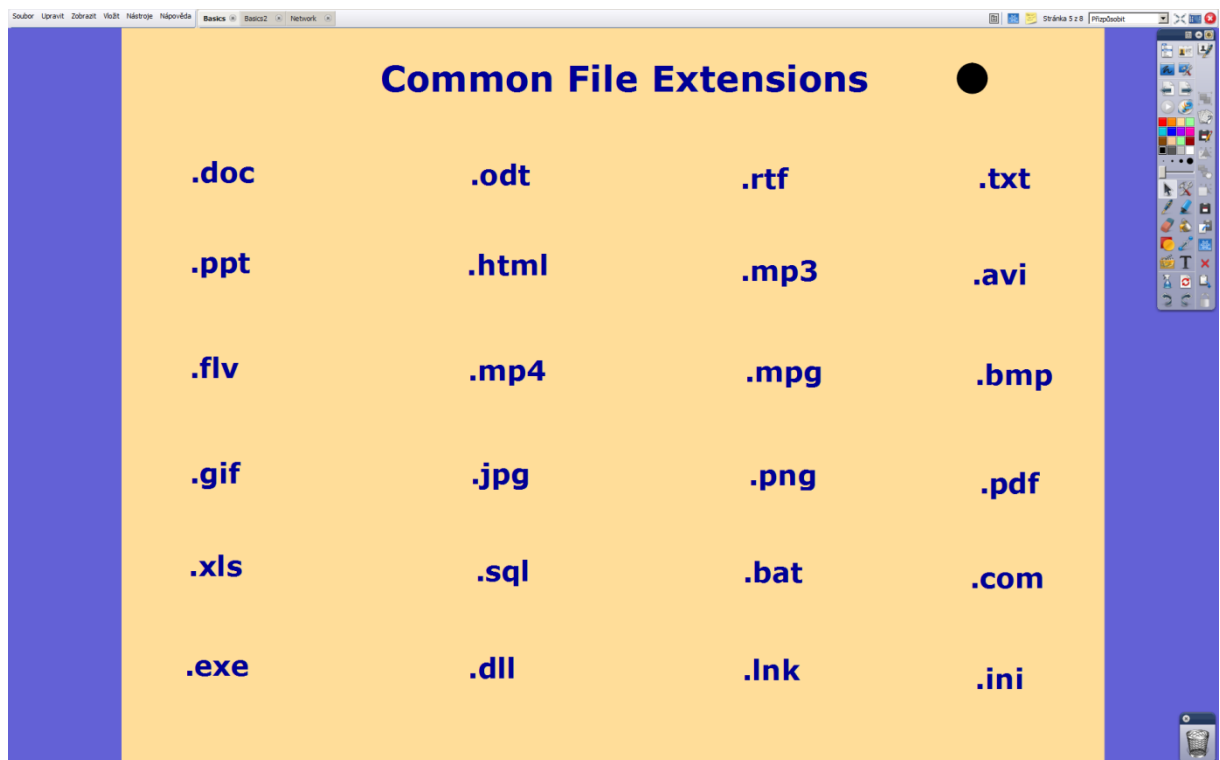
This page, too, used a pre-made template modified to fit into the established layout and colour scheme. Learners will fill in the mind map with the various file types (text, audio, video, executable etc.). Teacher notes can be found by clicking on the sticky note icon in the upper right corner of the screen. The image of the control pen serves as a button to switch the control pen into the pen function. All elements here are locked in place to avoid any accidental removals of any elements.

Figure 23: Page 4:



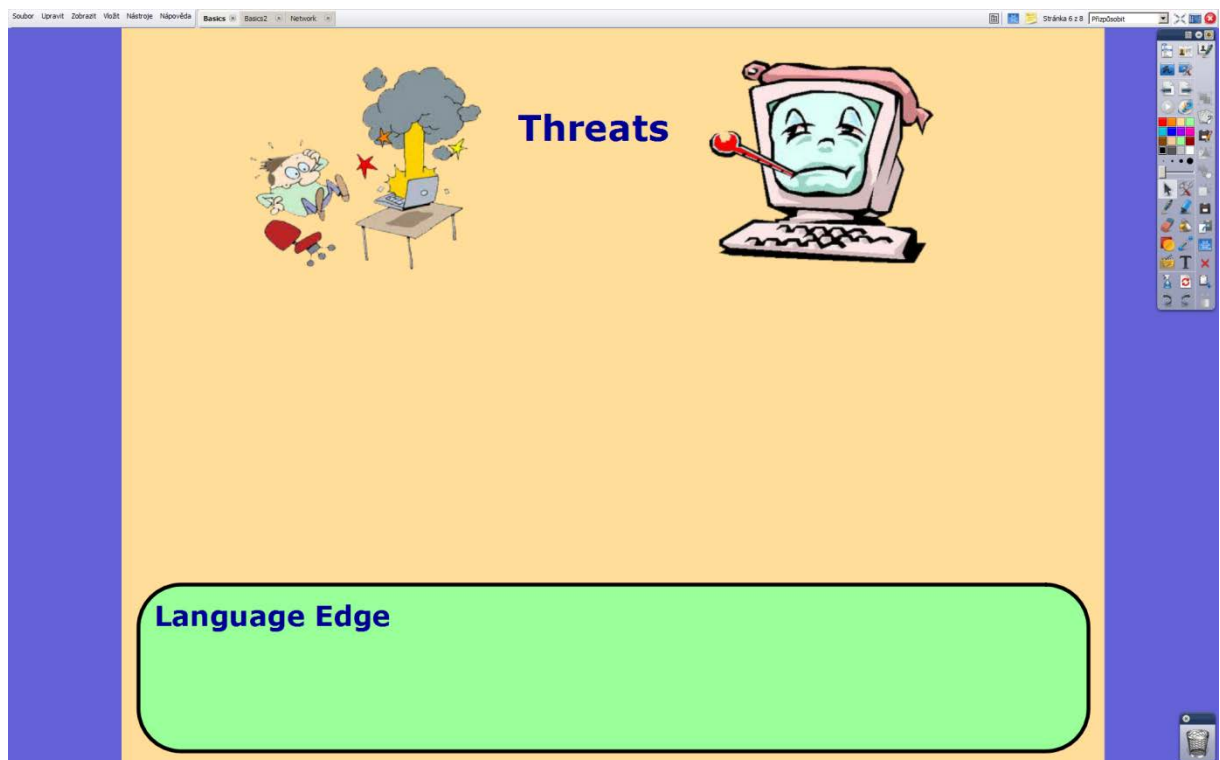
This page continues with the layout and colour scheme. Right below the headline is a demonstration of the notation of file names and extensions. Below that, hidden to catch learners' interest is an example of the modern standard, which allows for fake extensions, thus increasing the risk of a virus infection by opening a seemingly innocent file. The oval shape can be moved simply by dragging it with the control pen in selection mode. Below the warning is a place where learners will write down examples of file extensions they can come up with on their own. Also present is the Language Edge element, where learners can write down any words or pieces of grammar they find interesting or unfamiliar. Teacher's notes can be reached by clicking on the sticky note icon in the upper right corner of the screen.

Figure 24: Page 5:



This is a somewhat dry and difficult page, keeping with the established layout and colour scheme. Teacher here asks learners if they know what any of the extensions mean, considering they are abbreviations. This leads to the discovery that it is quite possible to make a reasonable guess as to a file type. Full meanings of the abbreviations can be written below them. Later, after talking about computer viruses, teacher returns here and has the learners vote, which of the file formats shown here can infect a computer. Each extension selected receives a black mark, which is a simple black circle set to have activated the property of infinite cloner. Notes for the teacher are accessed by clicking on the sticky note icon in the upper right corner of the screen.

Figure 25: Page 6:



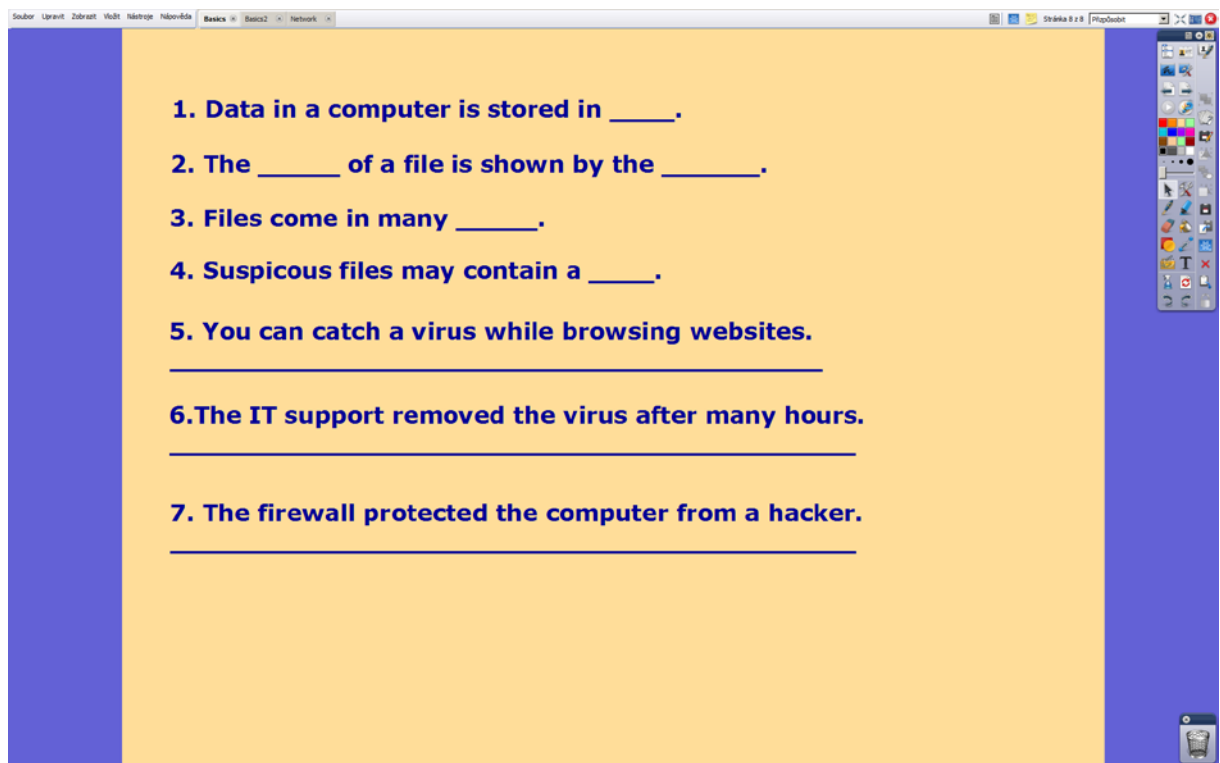
This page keeps the colour scheme and layout. The topic introduced here are threat a computer user can encounter, like viruses or hacking attempts. Both images are meant to suggest the topic. They come from a free clipart gallery and were modified in Adobe PhotoShop CS5.1. The space is left mostly empty as learner will be asked to come up with ways one can get infected, which the learners will write down on the board. The Language Edge element is present here, so that learners can write down any words or grammar they find interesting or unfamiliar. The sticky note icon in the upper right corner of the screen leads to teacher's notes.

Figure 26: Page 7:



This page keeps the layout and colour scheme. It continues with the topic of viruses and goes to help, prevention and anti-virus software. Both pictures come from free clipart galleries and were modified in Adobe PhotoShop CS5.1. The Best Medicine box can be moved aside to reveal the word prevention. Below that learners will be tasked with writing down examples of anti-virus software. On the bottom is the Language Edge element waiting for any unfamiliar words or pieces of grammar. Notes for the teacher can be accessed by clicking on the sticky note icon in the upper right corner.

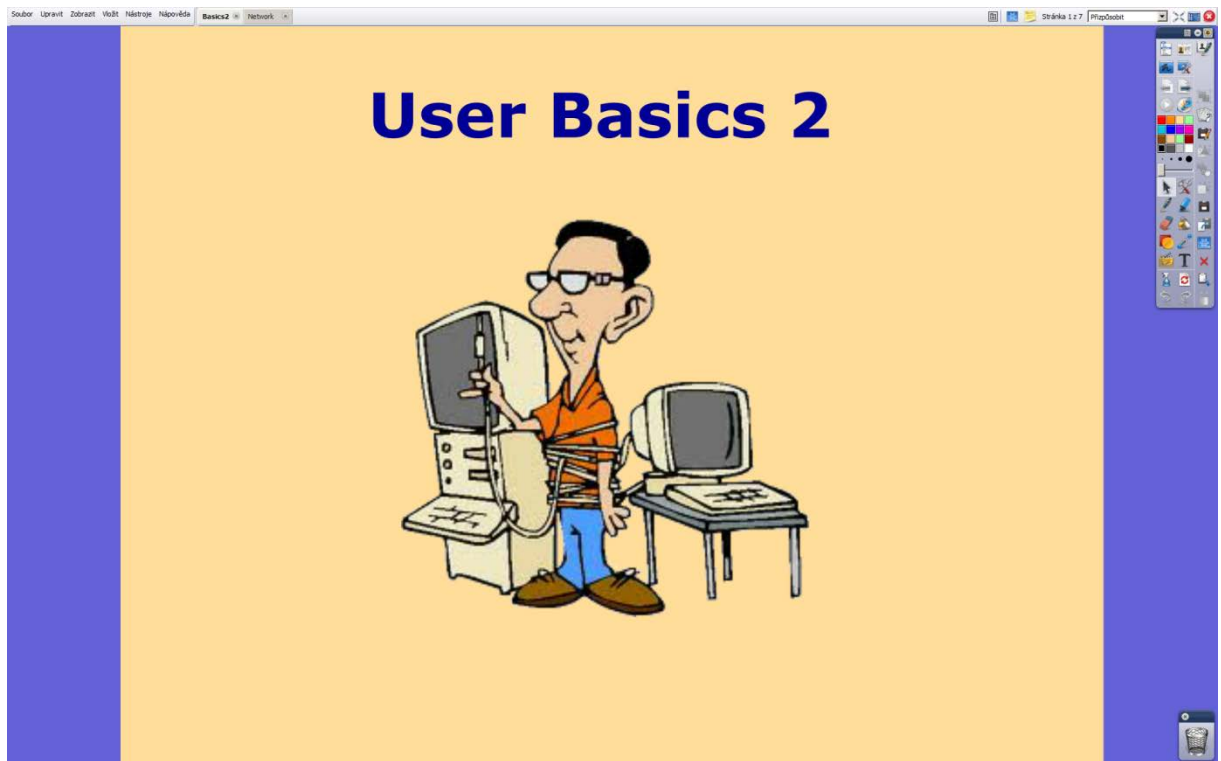
Figure 27: Page 8:



This page continues with the colour and layout scheme. It is a simple practice page used to check the learners' comprehension. Learners are asked to write the sentences down into their notebooks and fill in the correct words or transform the sentences into passive. The sticky note icon in the upper right corner of the screen leads to notes for the teacher.

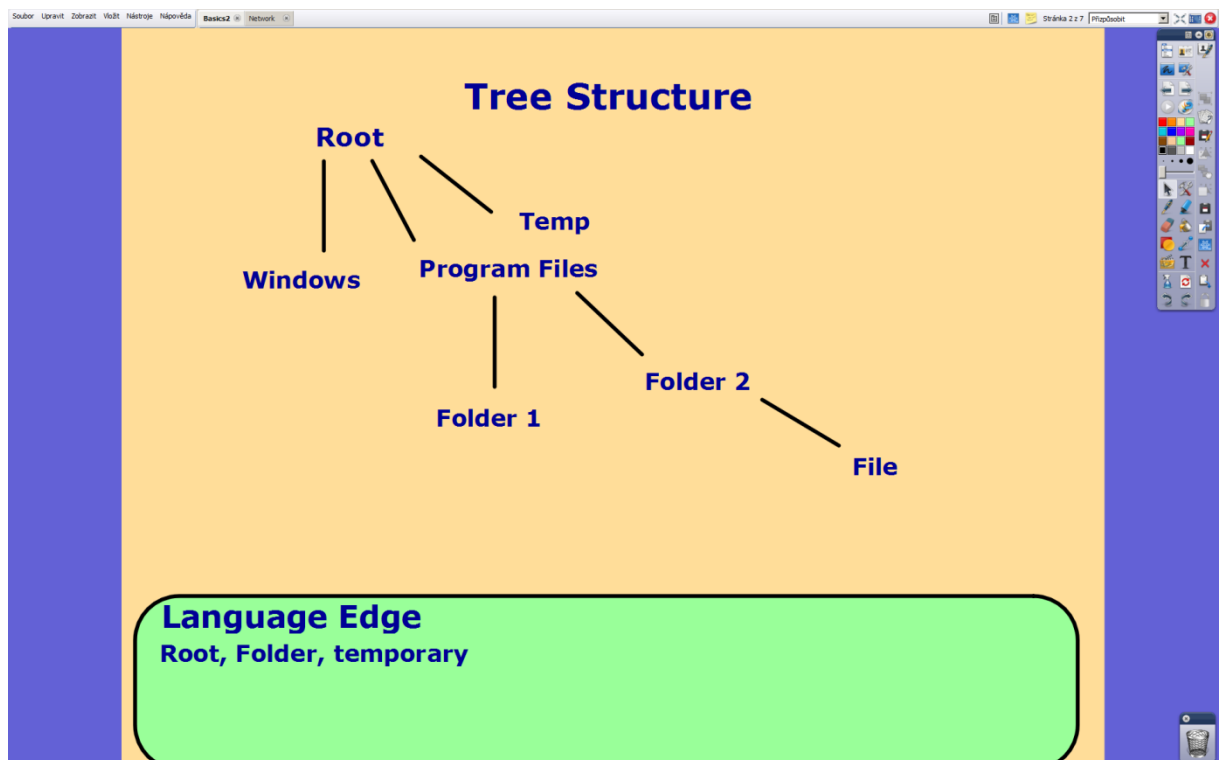
User Basics 2 Documentation:

Figure 28: Page 1:



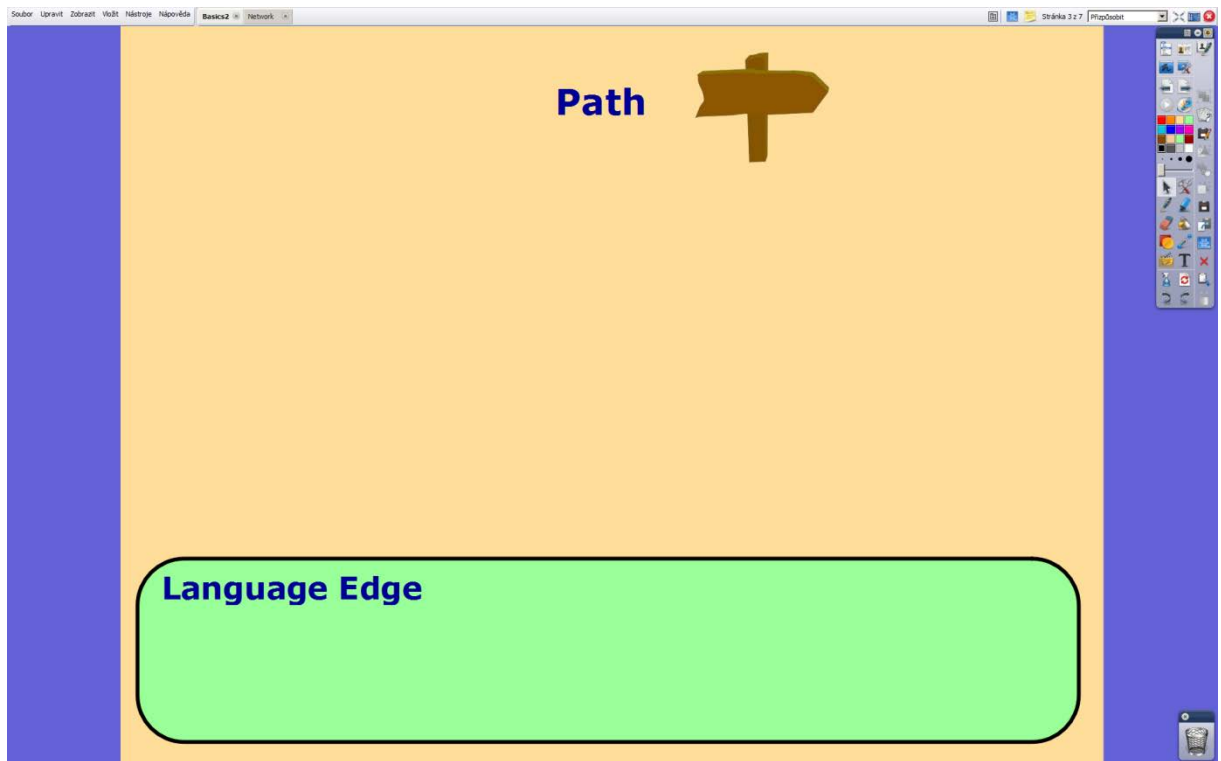
This is a simple introduction page, repurposing an image from a different segment, with the topic being basics of working with a computer. The colour scheme and layout continue. Teacher here will elicit input hardware as the lesson's topic is giving various instructions to the computer. Teacher's notes can be opened by clicking on the sticky note icon in the upper right corner.

Figure 29: Page 2:



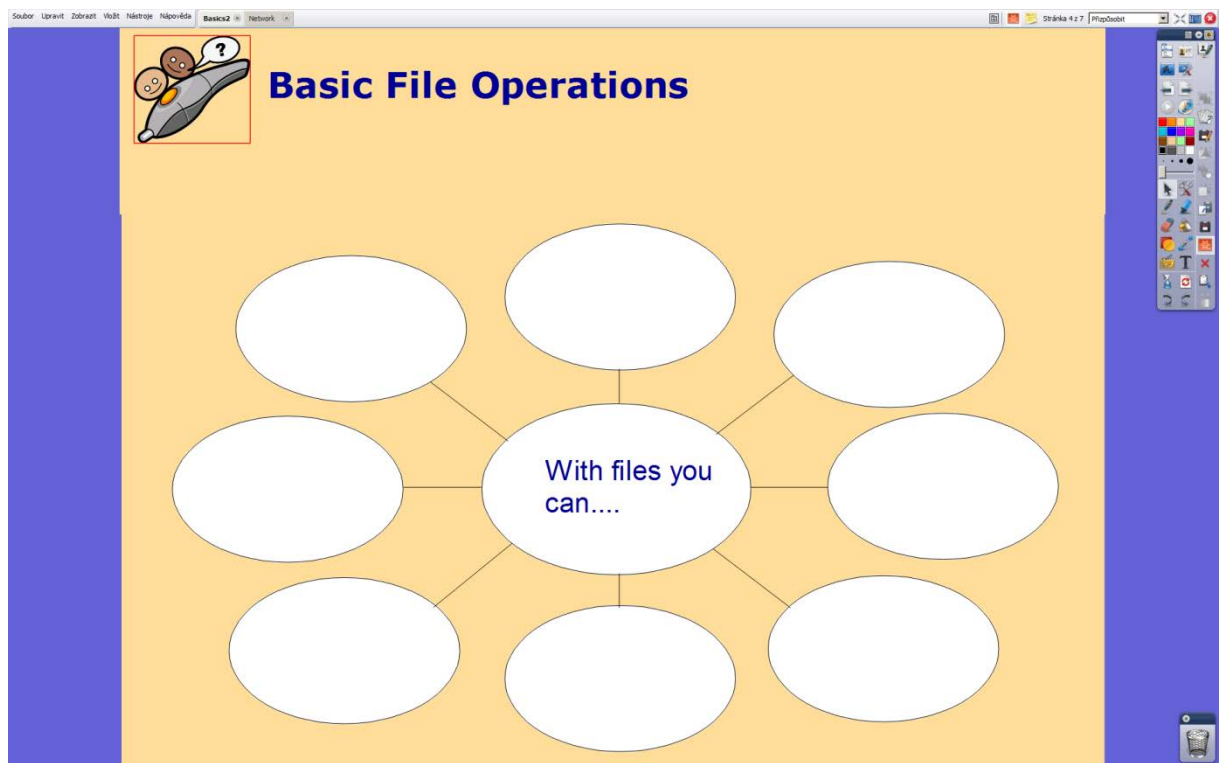
This page keeps the layout and colour scheme. The focus of this page is to point out the tree data structure to the learners, because they will be working with it later. There are several words in the Language Edge already, which the teacher will either elicit or explain. Learners should notice that the data in their own class computer is arranged the same type of tree structure. Teacher's notes can be accessed by clicking on the sticky note icon in the upper right corner of the screen.

Figure 30: Page 3:



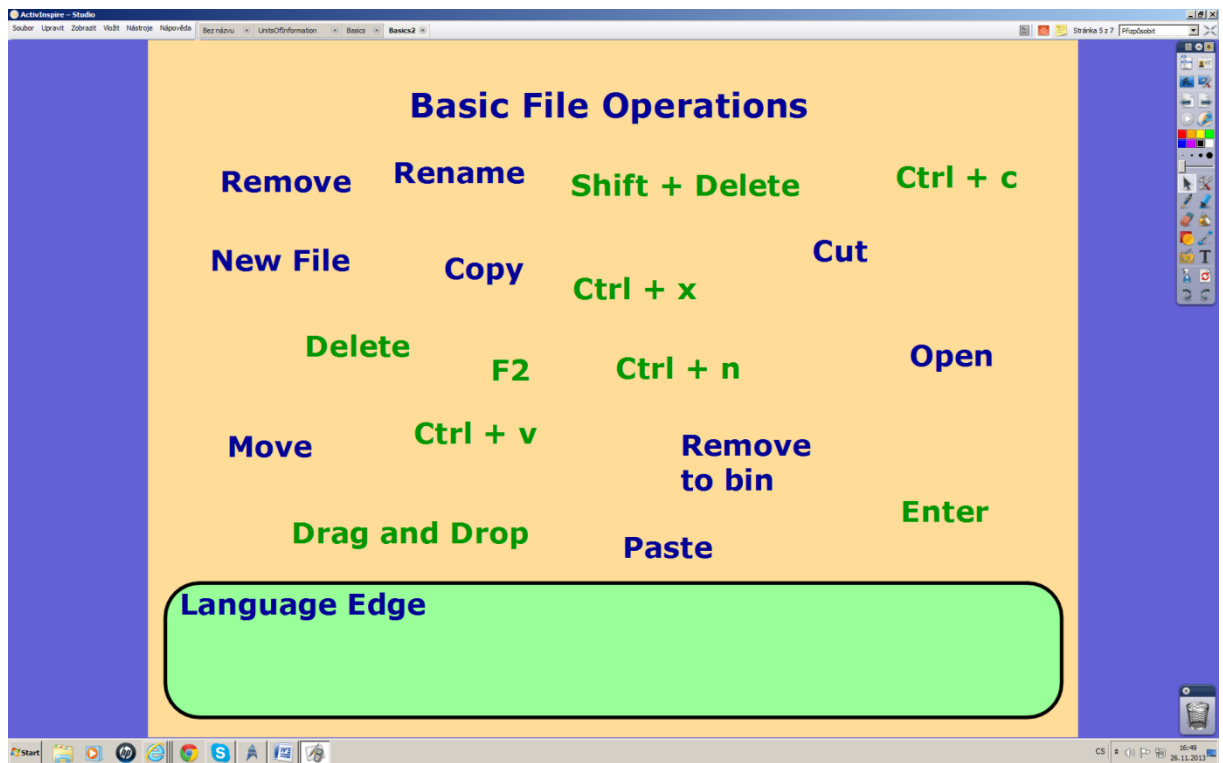
This is a very simple page with the established colour scheme and layout. The image is from a free clipart gallery and was modified in Adobe PhotoShop CS5.1. Learners will work mostly with their own computers in pairs. The empty space will be used by learners to write down how the computer represents the path to a file through the tree data structure in text form for the user. The Language Edge element is present, into which learners may write down words or pieces of grammar they find unfamiliar. The sticky note icon in the upper right corner of the screen leads to teacher's notes.

Figure 31: Page 4:



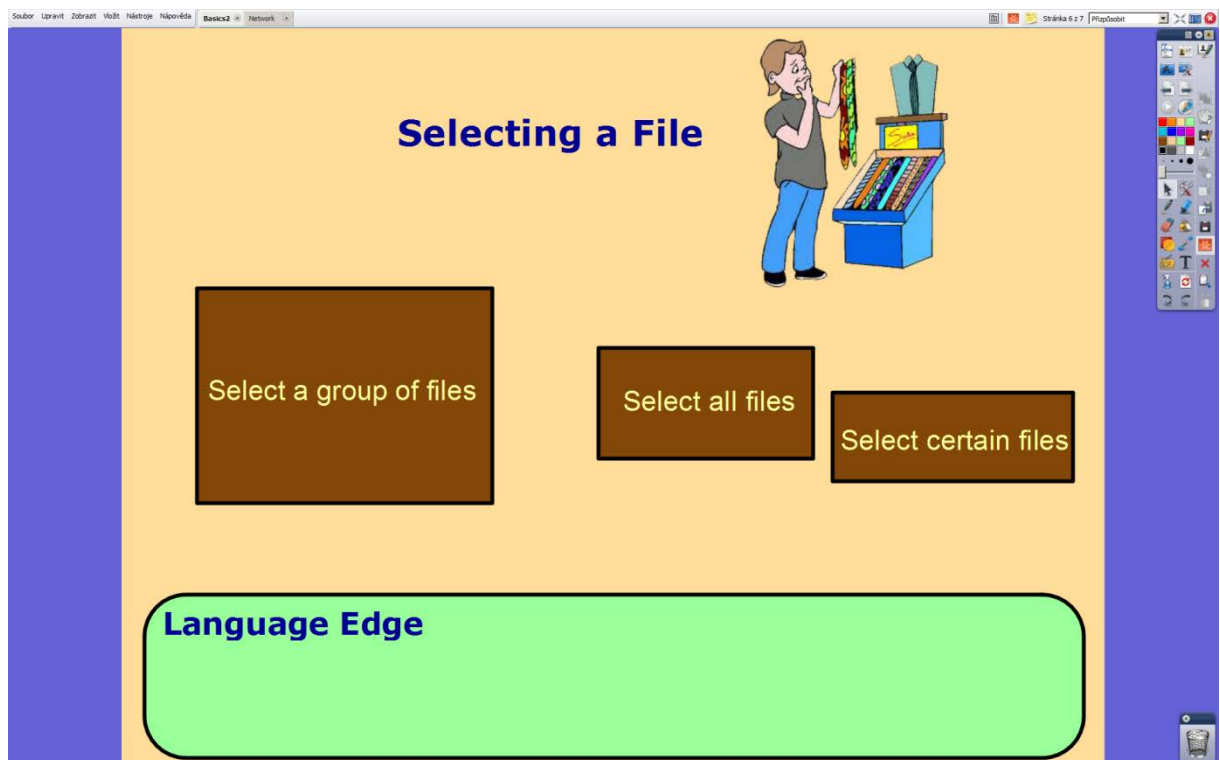
This page keeps the established colour scheme and layout. Teacher will elicit basic operations a user can do with files, which learners will fill into the mind map. It uses a modified pre-made template. The image of the control pen serves as a button to switch the control pen into pen mode. The sticky note icon in the upper right corner of the screen opens the teacher's notes.

Figure 32: Page 5:



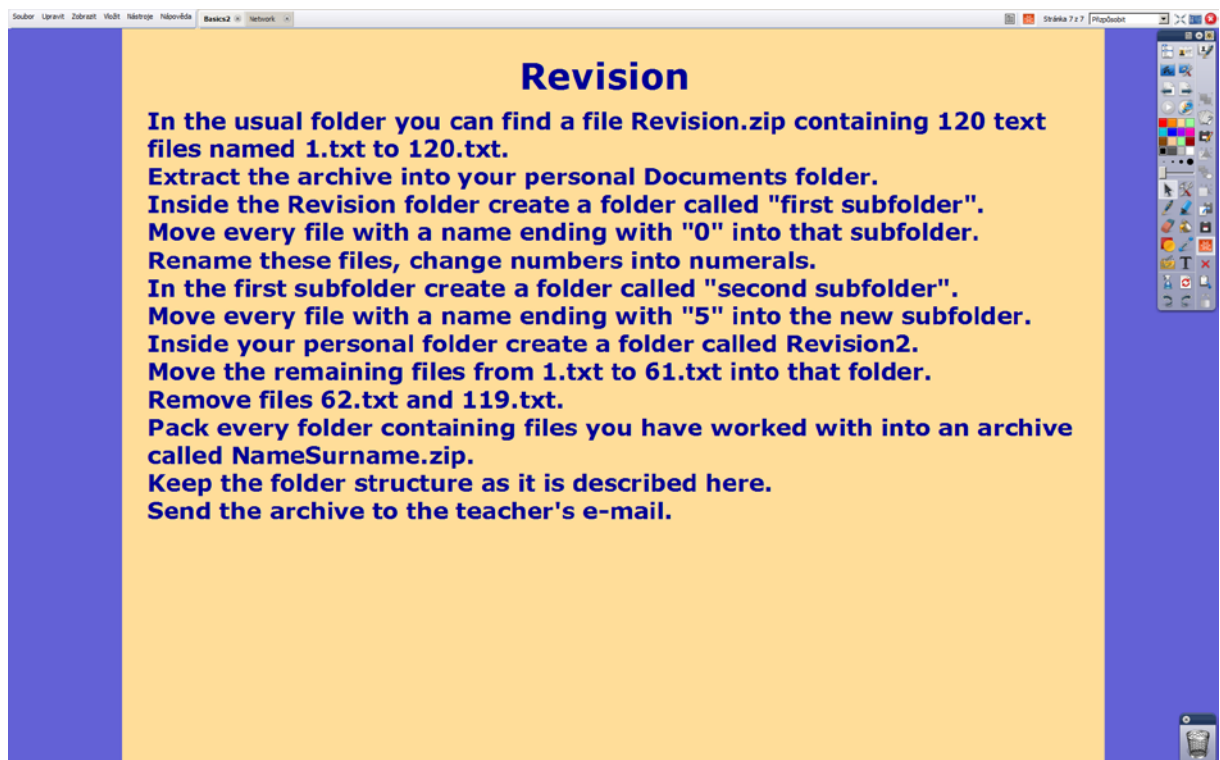
This page keeps the established colour scheme and layout. The various operations one can do with files are written in blue while in green are the instructions to trigger the operation. Learners will work in pairs to find out which match and then use the pen to connect the operations with their instructions. The Language Edge element is present in case learners find any words or pieces of grammar interesting or unfamiliar. To reach the teacher's notes use the sticky note icon in the upper right corner.

Figure 33: Page 6:



This page keeps the established colour scheme and layout. The image is meant to lighten the mood. It comes from a free clipart gallery and was modified in Adobe PhotoShop CS5.1 to get rid of the white background. Converting the image from JFIF to PNG allows it to have a transparent background. Learners are asked to come up with instructions for the tasks indicated on the boxes. The right answers can be revealed by dragging the boxes aside with the control pen in the selection mode. Should the learners find any words or pieces of grammar interesting or unfamiliar, they will write them into the Language Edge. The teacher's notes can be accessed by clicking on the sticky note icon.

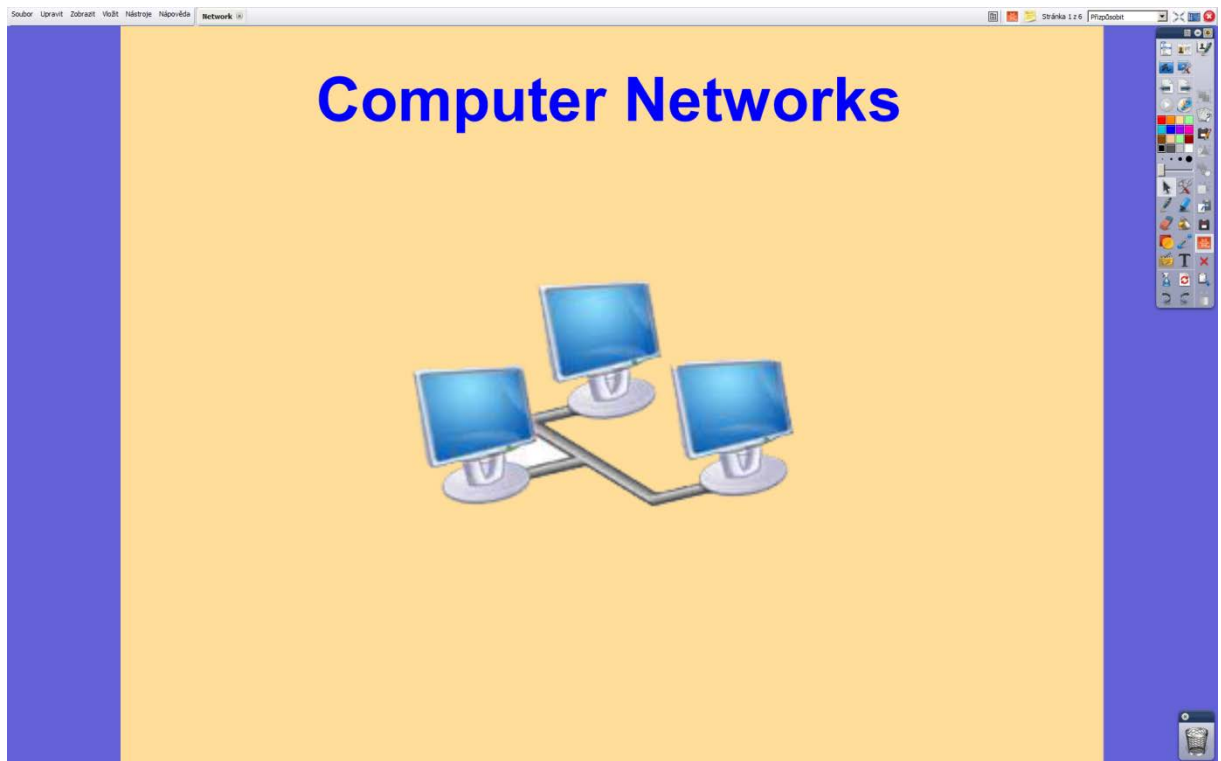
Figure 34: Page 7:



This is a very simple page, keeping with the same colour scheme and layout. The learners have their instructions on the board. This will check both their comprehension of the segment but also their reading comprehension. Clicking on the sticky note icon in the upper right corner of the screen will reveal the teacher's notes.

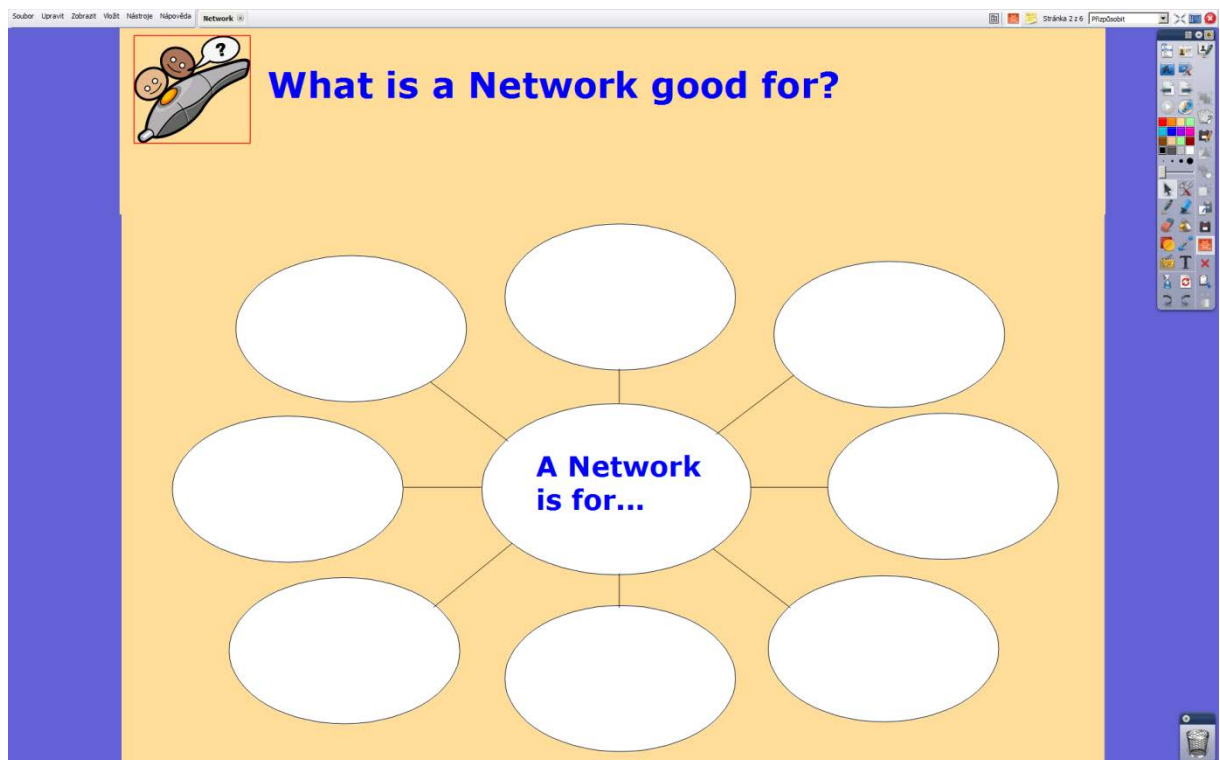
Computer Networks Documentation:

Figure 35: Page 1:



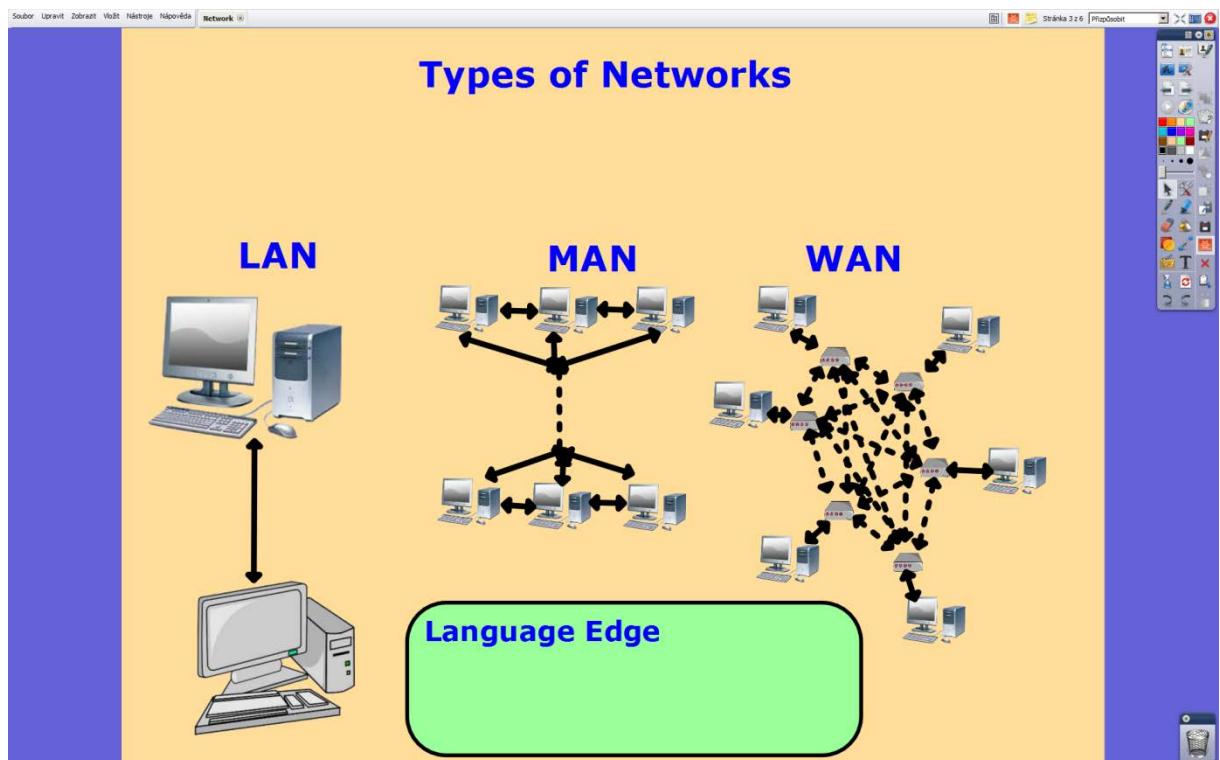
This introduction page keeps the colour scheme and layout. The image comes from a free clipart gallery and was modified in Adobe PhotoShop CS5.1 to change its white background into a transparent one, which also necessitated a change of format from JFIF into PNG, which allows a transparent colour channel. Learners here are asked about their experience with computer networks. To access the teacher's notes one must click on the sticky note icon in the upper right corner.

Figure 36: Page 2:



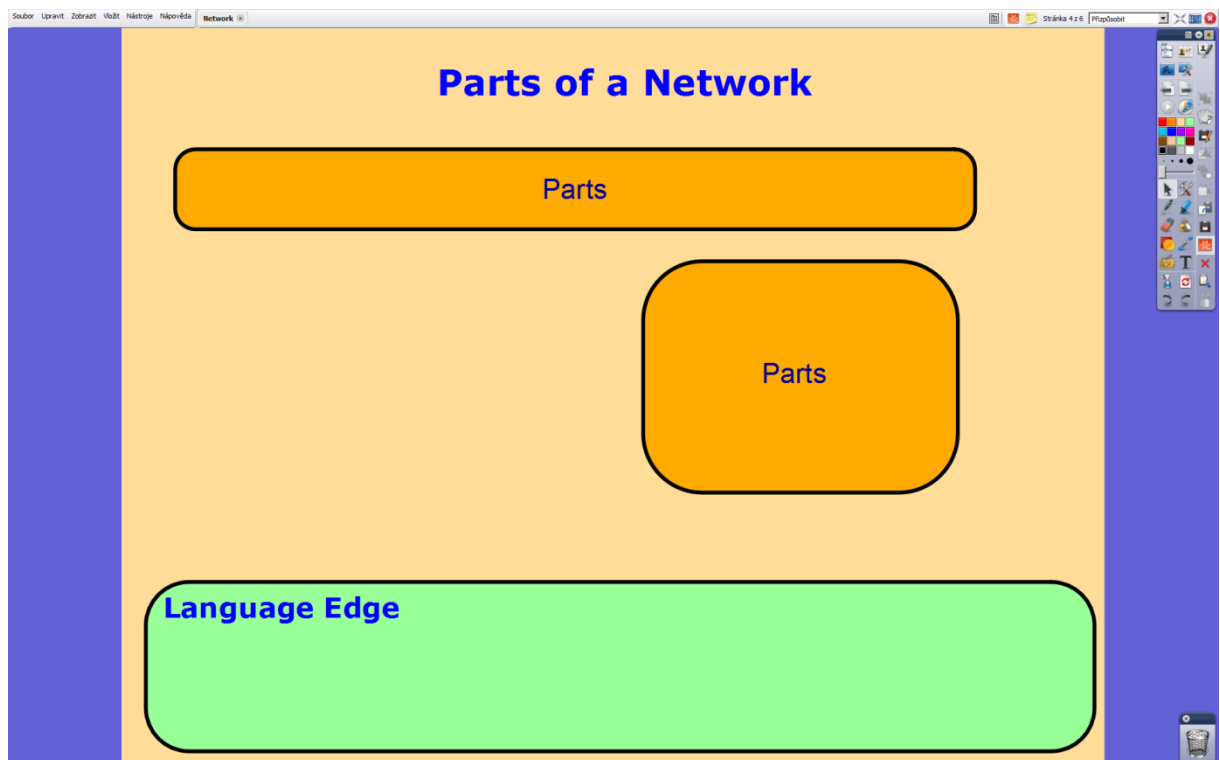
This page keeps the colour scheme and layout. It poses a question aimed at having the learners try to come up with reasons computer networks are built. They will fill in the mind map. The page makes use of a modified pre-made template. The image of the control pen serves as a button to switch the control pen into pen mode. Teacher's notes can be opened by clicking on the sticky note icon in the upper right corner of the screen.

Figure 37: Page 3:



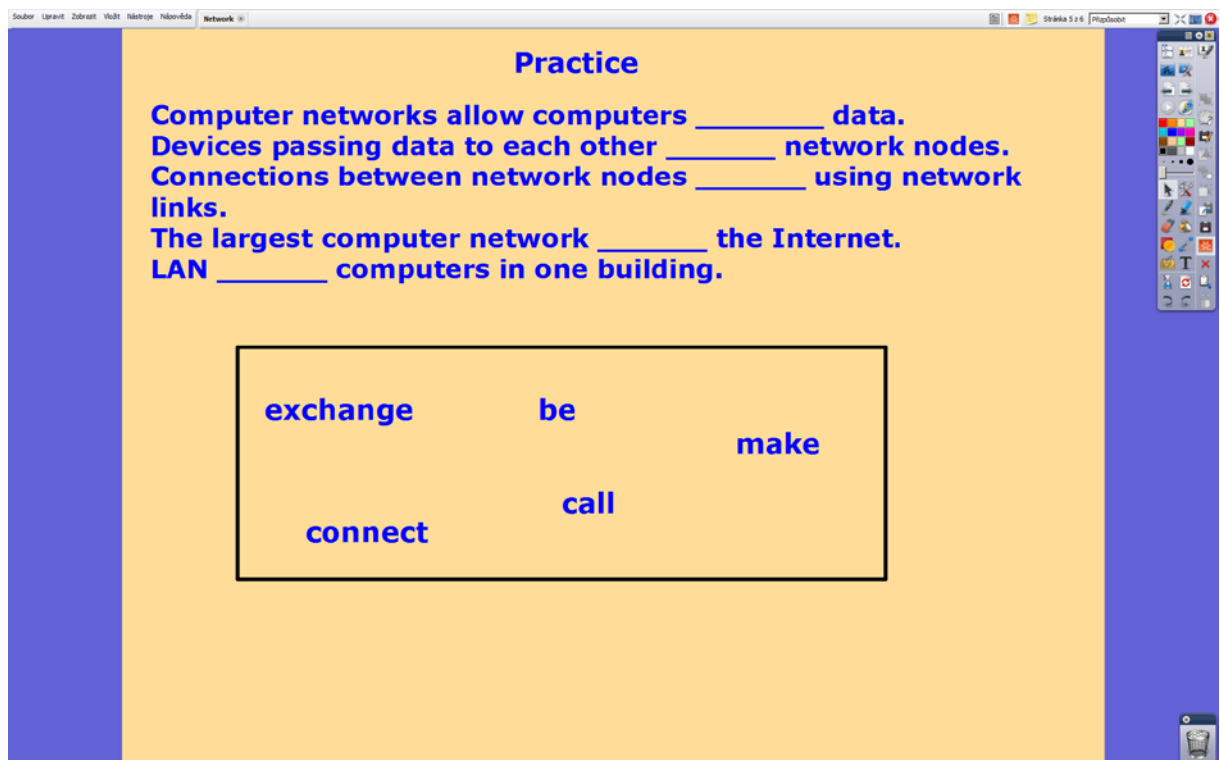
This page keeps the colour scheme and layout. It introduces the basic computer network typology based on the area they cover. The space above the abbreviations will be used to write their full meaning. The links between computers are made using the Connector tool. All images come from free clipart galleries and had to be modified in Adobe PhotoShop CS5.1. The Language Edge element is present in case learners find any words or pieces of grammar interesting or unfamiliar. The sticky note icon in the upper right corner of the screen leads to the teacher's notes.

Figure 38: Page 4:



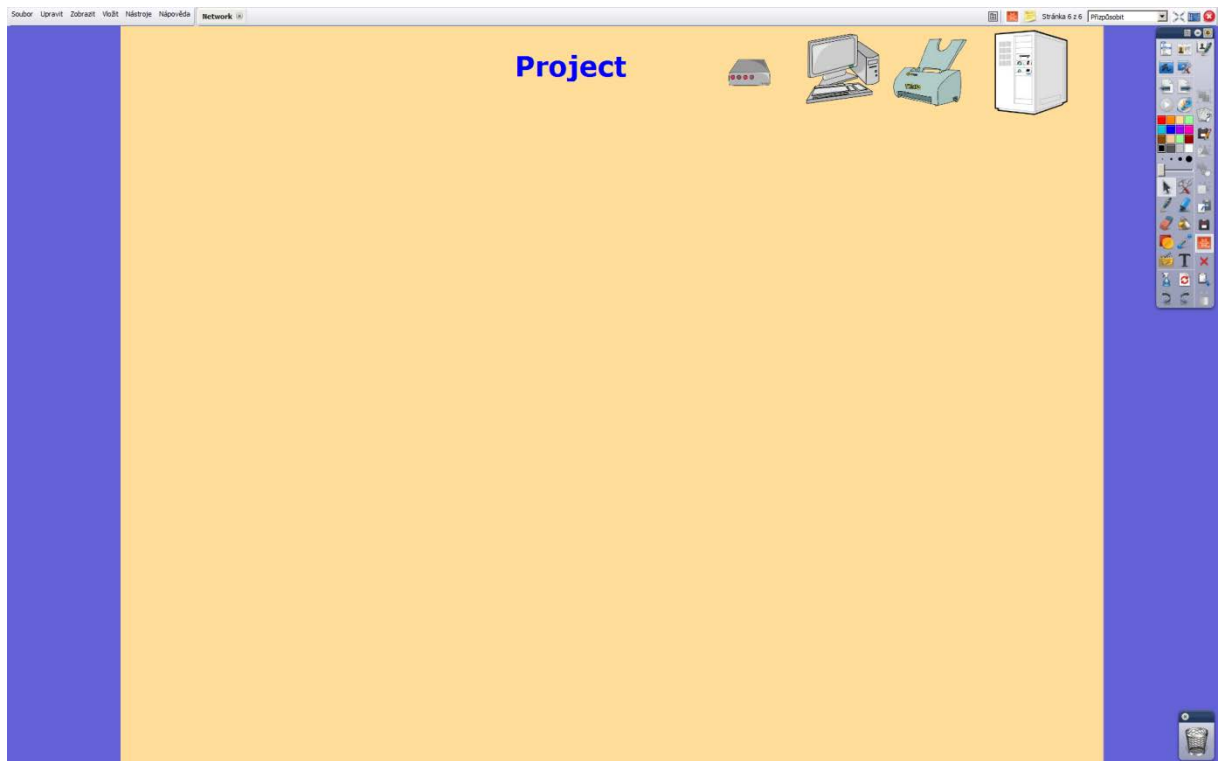
This page keeps the established colour scheme and layout. Teacher tries to elicit the basic division of part making up a computer network, which is hidden by the upper Parts box. Under it to the left, learners will write the various kinds of network links they had researched. The lower Parts box hides the basic kinds of network nodes, on which the teacher will comment. The Language Edge element is present, into which any interesting or unfamiliar words or pieces of grammar will be written. To open the teacher's notes, click on the sticky note icon in the upper right corner.

Figure 39: Page 5:



This is a simple page with the established colour scheme and layout. The sentences are a gap fill exercise. Learners will write them down into their notebooks and fill the gaps with the right verb in the correct form. The teacher's notes can be found by clicking on the sticky note icon in the upper right corner.

Figure 40: Page 6:



This is a simple page with the established colour scheme and layout. The images come from free clipart galleries and had to be modified in Adobe PhotoShop CS5.1 to change their white background into a transparent one, which also required a change of format from JFIF into PNG. All the images are set to be infinite cloners, meaning that learners can create copies simply by trying to drag the image. This page is the workspace for the Designers Team, where they will try to create their ideal computer network using the images and pen. To get to the teacher's notes, simply click on the sticky note icon.

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