



Next Generation
Teaching, Education
and Learning for Life



Deliverable D7.2

Training Materials for Release 1

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12	2011-10-28	Created small training material bundles in English and German; end correction of the Deliverable
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1 Executive Summary

Deliverable 7.2 covers the description of training materials for the NEXT-TELL tools as well as an implementation guideline for the trainings in schools. This deliverable builds on deliverable 7.1 that describes the different phases of the trainings courses and tools.

With the ongoing progress of NEXT-TELL and the successful completion of previous milestones, this deliverable explains the first NEXT-TELL tool materials, in German and English. The main components are:

	Methods	Tools
ECAAD	Evidence-centered activity and assessment design.	Assessment Designer; Learning Activity Planner
Learning Environment	Teacher-driven pedagogy and content decisions.	Moodle; Google Docs & Spreadsheet; OpenSim; RFGA; EVA.
Open Learner Model and E-portfolio	Knowledge and learning process visualisations; portfolio pedagogy.	NEXT-TELL OLM Mahara (integrated with Moodle)
SPICE	Variant of Balanced Score Card.	Needs identification tool; Customized version of ADOScore

In the first year, MTO staff is being trained in all software solutions, modules and tools used within the NEXT-TELL framework. MTO's training is held by the software developers and enables MTO itself to train all NEXT-TELL cooperation partners in the participating countries, who will provide the trainings outside Germany. All required training materials are produced by MTO in German/ English and will be provided at the BSCW, to assure that all multipliers have access to the materials. As the knowledge base and technological level is varying among the participating countries, the training materials can be used, adjusted and modified easily according to individual demands of every school.

The teachers involved in the participating schools have a crucial role; since they will act as agents between content, pupils and technology. Their training is of paramount importance. At the beginning of their trainings, which always are adjusted to the audience needs and requirements, there will be individual mentoring and an extended conceptual phase.

Other key stakeholders during the entire process are the participating schools principals. As we already described in Deliverable 7.1, the principals are first introduced into strategic planning methods deriving from the usage of a balanced scorecard, followed by the implementation of SPICE and of course thorough further assistance during the school year.

At the end of this deliverable, the different NEXT-TELL tool materials are described in German and English. The description of the tools for training purposes provided in this deliverable are only indicative, as it is up to the person working with individual schools to decide, in cooperation with the teachers and principals, to make decide what will eventually be used in the training, and how it will be introduced. Not only has every trainer to modify materials to the schools specific needs, but they also will be further adapted, adjusted and modified in the following years and continuously improved.

2 Introduction

2.1 Purpose of this Document

The purpose of this document is to provide an overview of developing and conducting training materials for teachers and principals. The training aims at enabling teachers to work with the advanced learning technologies and the applications to support appraisal and decision making (and thus improving their assessment literacy) that will be developed and provided within the framework of the NEXT-TELL project.

The role of MTO is to design a training program for the participating teachers in English and German language, to provide all required materials, and to conduct the training in the participating schools in Germany. Trainings will be conducted in a combination of face-to-face workshops and on-line activities for each of the major releases before they are subjected to trials in pilot studies. The on-line materials will also be made available for pre-service teacher education. For instance, lecturers in an Education Faculty in a course on educational assessment can make use of these materials to include in their teaching. Languages supported will be English and German.

2.2 Scope of this Document

This document comprises of a description of the immediate next steps of the NEXT-TELL project. It explains the conceptual framework of the NEXT-TELL training materials in schools about the generic NEXT-TELL tools. The materials that are described are not fully detailed, because each country has to adjust the materials to the demands of their schools and needs.

2.3 Status of this Document

This is the final version of D7.2.

2.4 Related Documents

This document provides the conceptual framework of the NEXT-TELL training materials in schools about the generic NEXT-TELL tools. The detailed materials, which are also part of deliverable D7.2, are contained in separate documents as follows:

- CbKST: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_CbKST_v02.doc
- ECAAD: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_ECAAD_v02.doc
- EVE: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_EVE_v02.doc
- Mahara: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_Mahara_v02.doc
- Moodle: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_Moodle_v02.doc
- Moodle (German): NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_MoodleGerman_v02.doc
- OpenSim: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_OpenSim_v02.doc
- RGFA: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_RGFA_v02.doc
- SPICE: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_SPICE_v02.doc

All documents are publicly available at <http://www.next-tell.eu/publications>, training materials for schools can also be found at <http://www.next-tell.eu/schools/training-materials>.

Before, or in conjunction with, reading this document it is recommended to be familiar with the following documents, which summarise Release 1 and the Training Plan:

- D2.2, D3.2, D4.2, D5.2 (Deliverables on Release 1), D6.2 “Report on Baseline Studies and Requirement Analysis” and D7.1 “Training Plan”

3 Pedagogical approach for the trainings

Pedagogical approach for the trainings – basic rules and guidelines

This chapter highlights the core components of the training approach. The integration of ICT into schools and into teachers' and students' practices is a huge challenge. While we know by now better how to train end users on specific software tools, such as on Microsoft PowerPoint, the nature of software used in schools has begun to change. So-called plug-in architectures are now dominating the structure of Learning Management Systems, such as the widely used Moodle LMS. This means that schools and even individual teachers can decide to a large extent what *their LMS* will look like and be able to do. And this can be constantly changed and adapted. This is part of a larger move in the software industry to so-called *software ecosystems* (Messerschmitt & Szyperki, 2003), with Cloud tools and web services as the current pinnacle: Many tools/services can be used to realize identical or similar functions. And macro-functions are achieved by combining components (services), which can come from many different providers, and may be frequently changing. Users, even end-users, have a large number of choices, and configuration options. Training the end-user in the use of specific tools, which are now more likely temporal configurations rather than monolithic structures, becomes less and less appropriate. To react to these changes in the nature of teaching/learning software, which are also reflected in the the NEXT-TELL architecture, we will realize a "training" concept that combines elements of tool training with on-going user support and capacity building within teams of teachers for training themselves to a large extent.

The learning models and theories about learning behavior underlying our approach will not be discussed at this point in detail. We refer to the fundamental work of Edelman (1996) "psychology of learning", on the pioneering work of Forgas (1996) *Interpersonal communication: the role of language in social interaction* (social interaction and communication) to give modern characteristic style. Their models and learning theories are provided and are therefore not explained here.

Focus on the teaching not on the software

As it is crucial for teachers to use new technology quickly for their teaching and not to become a software specialist or develop elaborate up to date programming skills, usability, user-friendliness and intuitive workflows are the key features that need to be fulfilled.

Therefore they have first to be provided with basically technical training to be able to translate these in pedagogical and subject related training. Information and communication technology can change teaching in the sense that teachers become more in favor of peer working and employing collaborative and teamwork methods.

Pedagogy-based training serves as the basis for designing future workshops. This means that the training focuses on the teaching and learning principles in a wide-ranging way. It should be applicable on all classes, classrooms, teaching disciplines and within as many hard- and software standards as possible. In order to reach this degree of it is mandatory to first discuss the pedagogy of instructional technology in order to be able to identify the later required hard- and software during the instructional design process. Besides this, another advantage arises in spending more time in this phase: critical technical skills that need to be taught before instructional technologies can be implemented

Aside from technical skills, the differences between teacher and pupil ICT competence, the needs for teachers to have a new kind of pedagogical excellence, and pressure to develop collaborative working to improve the use of information and communication technology are new challenges. While teachers still need support to be able to meaningfully use ICT in their teaching, the exact needs vary greatly. This means multi-form, flexible training, small-scale training events, shared support and individual guidance.

Make product development a team effort

The pedagogical workshops will be organized for teachers in action stage, when a start is made on implementing the learning projects. In the pedagogical workshops, teachers can plan, perfect and show each other their own learning projects and receive technical and pedagogical help from trainers and, perhaps most important of all, exchange about web-based teaching and their experiences with peer teachers and trainers. If



teachers wish, experts on web-based teaching can be invited to the pedagogical workshops to initiate discussion. It's a good idea to organize pedagogical workshops in a computer classroom so that teachers really have a chance to work on their own projects, also with NEXT-TELL tools. The main focus in pedagogical workshops should be on the teacher's own working. Teachers should be allowed plenty of time for working and there should be adequate trainers available in the workshop to help teachers.

Our approach assumes that face-to-face trainings will be necessary at some stages during this project phase. Besides these, off-line workshops and school support will be offered. For a successful implementation of ICT, schools should support a team-based approach. By using the workforce and talents of several staff members, institutions can distribute the workload of lesson development across individuals and departments. Team-based lesson development is not only more time and energy efficient; it also has a very desirable side-effect: the team members are "cross-trained" by learning from each other which enhances their overall technical skills. The teams can, and in our opinion should be, composed of people having different backgrounds, e.g. experienced (external) software specialists or ICT-experienced faculty members. To save money and ensure a school-wide involvement, schools might also consider using hourly student help.

Technology training should have simple goals. Faculty staff should learn to use technology in a way that allows them to address the schools overall mission: student learning and student success. This means that teachers will need to learn the pedagogical (not just technical) priorities related to instructional technologies. Mere availability or usage of technology does neither mean good teaching practices nor ensure a successful teaching. The following chapter describes, how technology training should focus on specific, critical skills; student success is fostered by the appropriate selection, precise mix, and proper use of instructional technologies. A form of training that is delivered virtually as well as face-to-face facilitates these goals while preserving the priority of good teaching practice and a learner-centered education.

Suggestions for the project-management during the implementation

In this chapter we will provide basic rules and guidelines which will help schools in the implementation process. It must be first acknowledged, that bringing technology into a school involves many persons from the very beginning of the project up to the point when teachers are ready to use it for teaching and students can use it for learning. Therefore, the project needs to be split into smaller parts, otherwise the people involved may become negative towards it, as the workload might seem too huge.

The introduction of technology into a school involves five sub-projects that can be broken down into even smaller steps:

- preparing the environment
- selecting, procuring and installing hardware
- choosing appropriate e-content
- initial computer literacy training of teachers
- making teachers comfortable in using technology as a teaching tool.

The secret lies in setting small goals for the school. Take the last point mentioned above: "*Making teachers comfortable in using technology as a teaching tool*". Given the fact that carrying out learning projects itself is a demanding process, this has to be broken up into smaller projects.

Draw up a brief project plan for the project:

- Decide on the objectives of the exercise. Be specific. How many teachers will participate?
- Identify the tools. Which hardware and software products will be required? Are they available or must they be procured?
- Identify the training needs of the teachers. Do some of them need additional computer literacy training? Would they need product training?
- Set the time to start the project.
- Set a target date to reach all the objectives.



Technical support in the Action stage

The technical support contains three aspects: user support, general technical support and specific application support. The user support concentrates on how to use the tools and functions of NEXT-TELL tools. The user support will be offered for piloting teachers mainly in teacher training workshops and by individual consulting. The planning of implementing functions and tools of NEXT-TELL are reflected from the point of view of the pedagogical principles: teachers are supported to implement and test NEXT-TELL tools pedagogically meaningful ways taking into consideration the objectives and curriculums of their learning projects.

The user support training should encourage teachers to understand the developmental nature of the NEXT-TELL project: the first tool versions NEXT-TELL software is under continuous evaluation and user stories/feedback on pedagogical and technical usability are needed. The teachers will be trained to use User Stories as a method for continuous feedback giving to the IT developers. They will also collaborate on software's usability with pedagogical partners of the projects.

The content of teacher training courses:

- Pedagogical workshop on formative assessment and ICT integration into teaching and learning.
- NEXT-TELL base training.
- School consulting (pedagogical and technical support).

I. Pedagogical workshop on formative assessment and ICT integration into teaching and learning

Content of the course:

- guiding discussion with teachers on future challenges on teaching and learning with IT
- guiding the teachers to understand the elements of formative assessment and its relation to pedagogical decision making; focus on the notion of learning progressions and learning trajectories.
- introduction of the elements and methods of collaborative learning and knowledge building by analyzing some case studies and comparing them to the traditional classroom teaching.
- introduction of the case studies of progressive inquiry learning projects implemented in or/ and supported by ICT.
- Determination of the elements of the learning environment teachers want to focus on during the NEXT-TELL base training.
- guiding discussion and knowledge building on the benefits of the progressive inquiry and new

II. NEXT-TELL base training course

Base training refers to the common elements of the NEXT-TELL technical environment: teacher, student, and parent portal; ECAAD tools; OLM. In addition to these shared components, base training will introduce those elements of the learning environment the participating teachers decided to focus on during the Pedagogy workshop.

Content of the course:

- guiding discussion on the basic concepts of NEXT-TELL: web based learning environment, study tools, knowledge building, thinking types, chat and map tools, personal, group and course notebooks etc.
- introduction of NEXT-TELL tools
- introduction of the technical and pedagogical principles of NEXT-TELL by special case study created to NEXT-TELL for the purpose by trainers
- guiding the teachers to plan their learning progression projects in NEXT-TELL
- introducing the consultants for teachers and schools for pedagogical and technical support



III. School consulting (pedagogical and technical support)

Content of the consulting:

- every pilot teacher has a personal contact to the consultant¹, who organizes technical and pedagogical support in face to face and virtual form;
- consultants follow actively the progress of the project and support the teachers and the pupils;
- the support is mainly pedagogical: guiding discussions, collaboration and joint reflections (it is important that the consultant is not only the technical help desk, but the facilitator and co-learner of the process);
- the pilot teachers are consulted by e-mail, via Skype, over the phone and by concrete school visits and virtually.

¹ During the engagement with the Next-Tell project, one of the NEXT-TELL project members involved in the research with the teacher will act as te consultant.

4 Training materials

This chapter provides short introductions to the tools that will be trained, training guidelines and training materials, such as PowerPoint presentations and handouts for the trainings in schools. All materials will be released on the BSCW (in English and German), so every trainer can download the specific NEXT-TELL tool training materials on demand. The materials will have to be adapted to the specific requirements and needs of every country and every school.

The training guidelines contain recommendations for the schedule of the trainings and for methods, media and training material that can be used.

The main focus of the trainings will be on introducing the NEXT-TELL tools and methods to teachers and principals. In the following project years the trainings and the training materials will be further developed and become more sophisticated. We have provided different training guidelines: a general one, which can be used for every NEXT-TELL tool; special one for CbKST, because this tool is yet not so far to be trained, it exists only a presentation of the method and a training guideline for SPICE, principles.

The training materials are separated, because each and every school/country will train their schools on their specific needs. So every trainer can take only the specific tool materials out of the deliverable. In this main Deliverable we will only describe a very brief introduction of the tools.

The detailed materials, which are also part of deliverable D7.2, are contained in separate documents as follows:

- CbKST: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_CbKST_v02.doc
- ECAAD: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_ECAAD_v02.doc
- EVE: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_EVE_v02.doc
- Mahara: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_Mahara_v02.doc
- Moodle: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_Moodle_v02.doc
- Moodle (German): NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_MoodleGerman_v02.doc
- OpenSim: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_OpenSim_v02.doc
- RGFA: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_RGFA_v02.doc
- SPICE: NEXT-TELL-D7.2-MTO-TrainingMaterialsR1_SPICE_v02.doc

All documents are publicly available at <http://www.next-tell.eu/publications>, training materials for schools can also be found at <http://www.next-tell.eu/schools/training-materials>.



Training guideline

NEXT-TELL tools

All tools are provided at the following URL: <http://sandbox.next-tell.eu/>

duration	content	method	media	materials	trainer (name)
Unit 1: introduction and tool presentation					
1,5 – 2 hours	<ul style="list-style-type: none"> welcoming the participants if applicable: introduction of the trainer(s) and into the aims of the NEXT-TELL trainings presentation of the agenda 	oral presentation	flip chart	flip chart sheet: agenda	
	<ul style="list-style-type: none"> tool presentation 	presentation	laptop, beamer	powerpoint presentation, handout	
Unit 2: practice phase					
1 – 2 hours	<ul style="list-style-type: none"> let participants practice by trying out the tool themselves either using own exercises or ideas of the participating teachers 	individual or group work	computers, laptop and beamer		

duration	content	method	media	materials	trainer (name)
	Unit 3: ways of deployment in schools				
0,5 – 1 hour	<ul style="list-style-type: none"> discussion about possibilities of practical deployment of the tool in schools (if applicable using central questions like: <ul style="list-style-type: none"> How can I use the tool in class? What domains are suitable to involve the tool? What benefit could be achieved by using the tool? What problems are to be anticipated? collect and document ideas in written form deduce concrete plans for the application of the tool in class 	discussion (with the plenum or in subgroups)	flip chart or pin board	work sheet with central questions	
	<ul style="list-style-type: none"> answering questions of the participants 	plenum			
	Unit 1: introduction				
0,5 hours	<ul style="list-style-type: none"> welcoming the participants if applicable: introduction of the trainer(s) and into the aims of the CbKST method presentation of the agenda 	oral presentation	flip chart	flip chart sheet: agenda	
	Unit 2: presentation of the CbKST method				
1 hour	<ul style="list-style-type: none"> method presentation 	presentation	laptop, beamer	powerpoint presentation, handout	
	Unit 3: discussion and questions				
0,5 – 1 hour	<ul style="list-style-type: none"> discussion about how CbKST can be used in school/in class collect and document ideas in written form 	discussion (with the plenum or in subgroups)	flip chart or pin board		
	<ul style="list-style-type: none"> answering questions of the participants 	plenum			



4.1 ECAAD

The ECAAD Activity Planner, as part of the NEXT-TELL ECAAD Toolset is a performance support tool that allows the graphical definition and description of learning activity sequences. The Activity Planner covers the learning activity planning part of the ECAAD methodology as described in D2.1 and targets the definition of:

- High level identification of learning activity patterns
- Learning Sequences as tasks following a specific control structure
- Learning artifacts (learning service) orchestration

The Activity Planner is used by the teacher to define for individual students, student groups/classes the ideal learning path to reach certain learning objectives identified in the methodology as learning goals and Knowledge – Skill – Ability (KSA) maps. Negotiation of learning paths with students is provided through the collaborative architecture of the tool.

The ECAAD Assessment Designer, as part of the NEXT-TELL ECAAD Toolset is a performance support tool that allows the graphical definition and description of assessment methods. The Assessment Designer covers the design of assessment methods as part of the ECAAD methodology as described in D2.1 and targets the definition of:

- Assessment methods on a high abstraction level as assessment patterns, building up an assessment method catalogue.
- Assessment method design on a detailed level, identifying the detailed steps to perform an assessment (execution can be human or machine interpretation)
- Interfacing with an assessment calculation engine to “calculate” the concrete values when applying the assessment method on a dataset.

The Assessment Designer is used by the teacher to define assessment methods for specific scenarios and use cases. As a layered approach (described in D2.1) different levels of definition are targeted (from data collection to visualization).

4.2 Moodle

Moodle is the most widely used Learning Management System world-wide. It has a very strong standing in K-12. It is available freely as open-source software and can be used in many types of environments such as in education, training and development, and business settings. Learning materials can be provided through Moodle and collaboration between students and features such as grading and quizzes are provided. Moodle has several features considered typical of an e-learning platform, plus some original innovations.

Moodle consists of different tools, such as: assignment, chat, choice, database, forum, glossary and quiz.

The Assignment tool is designed for teachers to assess knowledge or skills the students gained. The assignments can be made available at any time with a start and close date.

A chat space can be made available at all times for the entire class to make comments or ask each other questions, or it can be more specific to a group of students or an assignment. Any way the chat tool is used, helpful in gathering and giving information especially in distance learning courses where face to face meeting is impossible.

The Choice tool can be used to determine the preference of students in reading a certain book or choosing topics for a project. It is an easy and convenient way for teachers to poll student opinions. This can aid the teacher in creating student centered lessons.

The Database tool simplifies the storage of large amounts of information.

The Forum tool is used to share ideas between all members of a course.

The Glossary tool is used to help students gain a working knowledge of important vocabulary in the course. This can be created and maintained by the teacher as a reference point for students, or it can be used as an



assignment or collaborative effort for the students. Either way the information becomes available and ready for viewing by all students at any point they need it.

The Quiz tool can be used to assess student knowledge before, during and after a unit of study. The quiz feature is great to use before introducing a topic to gauge student’s knowledge of the content ahead of time, as it is helpful for a teacher to adjust their teaching after viewing the results of the quiz. It can be used during a unit to determine if students understand the content, and of course as an assessment of what they learned at the end.

4.3 Google Docs and Google Spreadsheet

Google Apps comprise three productivity tools:

- Google Docs
- Google Spreadsheet
- Google Presentations

Users have access to these applications for free, through a web-browser.

They all share a number of features which are relevant for use in schools, such as:

Google Apps lets students move beyond paper drafts, one-by-one peer reviews, and waiting for teachers to complete physical edits. Online comments and real-time editing let students see comments as they come in, acting on them and streamlining the input process. As document collaborators, teachers can provide feedback whenever it’s important in the revision cycle – not just at designated due dates. Better input and ongoing feedback on changes empowers students to continue developing their work without waiting for paper-based reviews. Comprehensive revision history helps students and teachers understand how documents evolve from draft to polished papers – and to see how peer reviews and comments influenced the final product.

4.4 OpenSim

OpenSimulator is a multiuser online-environment that allows our students to meet and collaborate with each other and other facilitators. We use it in the TESL conversation-scenario to provide an immersive environment where students need to use their language skills in order to solve assignments that are given to their team. We will enforce the creation of international project teams (of different mother tongues!) to trigger the veritable need for using English as a working language and giving the students the possibility to experience themselves as part of a truly international collaboration process – of course in English, what else?

4.5 RGFA (Repertory Grids for Formative Assessment)

Repertory Grid Technique is a method for eliciting personal constructs of individuals about elements belonging to the topic of study. Within the NEXT-TELL project, for the purposes of formative assessment, we have decided to start researching RGT with an implementation of the widely adopted method of triadic sorting of elements for personal construct elicitation and subsequent five-point scale rating of the rest of the elements. Briefly put, the triadic sorting method consists of the participants being presented sets of three elements each. For a given set of three elements, the participant is prompted to select the element that is different from the other two and to state how it is different as the “opposite construct”. Then, the participant is to state how the two remaining elements in the triad are similar to each other as the “similarity construct”. The rest of the elements are then rated on a Likert-item scale ranging from the Opposite Construct (1) to the Similarity Construct (5). The participants repeat this process until all the triads of elements are sorted into different and similar and the elements for that comparison are rated. The outcome of this exercise is the Repertory Grid (RG) consisting of rows consisting of triads, columns consisting of elements with the first column being the Opposite Construct and the last column being the Similarity Construct, and the cell values consisting of the ratings given for elements.



Suggestion for Teachers

In designing repertory grid exercises, teachers should pay particular attention to the previous domain knowledge of students and to what extent the elicited constructs are grounded in the personal lived experience of the students compared to the domain knowledge. An ideal repertory grid exercise would involve 6-10 elements and 5-6 triads with each element appearing at least once and in different positions of the triad when a particular element features more than once across the different triads. The repertory grid exercise could be designed for individual students or as a computer supported collaborative learning (CSSL) exercise involving a small group of students. The pre-test and post-test paradigm could be applied to solicit individual or group repertory grids before and after a particular curriculum module has been taught. Further, the teacher can make his or her own repertory grid to the students for reflection and repertory grids of domain experts for benchmarking and guided inquiry. Post repertory grid exercise tasks could include asking the individual students or groups to reflect on their own repertory grids, inspect the repertory grids of their peers or domain experts, and/or inspect the visualizations of the repertory grids for the entire class. An additional implication from the classroom exercises and the eye-tracking laboratory studies is that teachers could also learn about students' current understanding based on the time take for construct elicitation and element rating.

With regard to formative assessment, teachers can inspect the constructs or the Word Cloud representations of the individual or collective constructs and discern students' level of domain knowledge. Similarly, teachers can scrutinize the elements ratings to discern students' ability to distinguish between the different concepts. With necessary training, teachers can make use of Treemap or some other visualization of the entire repertory grid exercise to adapt the content and didactics for that particular curriculum module.

Apart from the classroom usage scenario, another usage scenario for teachers is to employ the repertory grid exercise as lightweight appraisal method for informal learning tasks. We will research this usage scenario in future work with teachers participating in the NEXT-TELL project.

Suggestions of Students

Repertory grid exercises on topics not inherently familiar to students either from prior formal learning settings or from personal experience seem to be perceived as challenging and engaging. That said, a well-designed repertory grid exercise on the familiar and lived practice would allow students to externalize their implicitly held constructs. Students should then be motivated and guided to reflect on their intuitions and connect their personal constructs to domain concepts.

Students should also be able to co-design repertory grid exercises with peers and teachers. Co-designing a repertory grid exercise would require students to select the topic, the elements, and the number, content and order of triads. This in itself could be pedagogically effective.

Finally, students should be given the option of sharing their repertory grids with their classmates and within their social networks. Students should be able to interact with their visualizations of their individual repertory grids and those of their peers and the classroom level repertory grid. Moreover, students should be able to upload their repertory grid exercises to their e-portfolios and integrate them with their open learner models.

4.6 EVE (Educational Video Environment)

EVE is a web-based, streaming video annotation and discussion tool. Users can bookmark a series of time-points (cue-points) or time-segments (cue-segments) of a video to stimulate and share discussions via real-time collaborative temporal annotations using a web HTML editor. Learners can search information from the content of cue-points and annotations against the time-point. EVE is unique in that that it not only allows learners to view online video material as many times as, and wherever they wish, but also to collaborate, comment and discuss each segment of the video, with annotations and comments that are context-sensitive and context-rich, providing opportunities for collaborative peer- supported learning and collaborative problem solving. The aim is to foster social commitments among learners, enabling them to engage in peer learning and to gain new knowledge and understanding via interactions and negotiations.

In its most recent version, EVE includes an editor for assessment criteria, or rubrics, that can be authored by the end user (e.g., teacher), and be seamlessly made available for video analysis/annotation.



This document describes the EVA video annotation tool as it will be available in NEXT-TELL.

The document is currently a draft and will be updated when the final installation of EVA in NEXT-TELL is ready. The current information contained in this document is targeted at student users of EVA. An updated and complete version of this document will be created when the EVA tool is ready in NEXT-TELL.

4.7 Mahara ePortfolio

MAHARA is a fully featured electronic portfolio, weblog, resume builder and social networking system, connecting users and creating online communities. Mahara provides you with the tools to set up a personal learning and development environment.

With Mahara, you can create and assemble a collection of electronic evidence. Such electronic evidence may include inputted text, electronic files, images, multimedia, blog entries, and hyperlinks.

With Mahara, you control which items and what information within your portfolio other users see. Such items and information are termed Artifacts. To facilitate this access control, all Artifacts you wish to show to other users need to be arranged into one area. In Mahara this compilation of selected Artifacts is called a View. You can have as many Views as you like, each with a different collection of Artifacts, and intended purpose and audience. Your audience, or the people you wish to give access to your View, can be added as individuals or as a member of a group. It can even be made publicly available. For example you could create a View for your friend and/or colleague that includes your art work.

You could create another View for your mentor or instructor, which includes assessments and your reflective learning journal. In fact you can create as many Views as you wish for work, study and leisure purposes.



5 SPICE

Training guideline SPICE

duration	content	method	media	materials	trainer (name)
Unit 1: introduction and tool presentation					
1,5 – 2 hours	<ul style="list-style-type: none"> welcoming the participants if applicable: introduction of the trainer(s) and into the aims of the NEXT-TELL trainings presentation of the agenda 	oral presentation		flip chart sheet: agenda	
	<ul style="list-style-type: none"> tool presentation 	presentation	flip chart	powerpoint presentation, handout	
Unit 2: practice phase					
1 – 2 hours	<ul style="list-style-type: none"> let participants practice by doing their strategic planning (concerning the implementation of ICT in the school) for the next 1-3 years exemplarily 	group work		work sheet	
	<ul style="list-style-type: none"> presentation of the results of the groups collect and document the results in written form 	plenum	laptop, beamer	Flip chart or pin board	



duration	content	method	media	materials	trainer (name)
	Unit 3: needs and questions				
0,5 – 1 hour	<ul style="list-style-type: none"> subsequent to the group work: discussion about the principals needs concerning the SPICE-tool (if applicable using central questions like: <ul style="list-style-type: none"> How can I use SPICE for my strategic planning? What demands does the tool have to meet to be useful? What benefit could be achieved by using SPICE? What problems are to be anticipated? collect and document ideas in written form 	discussion (plenum)	flip chart or pin board	work sheet with central questions	
	<ul style="list-style-type: none"> answering questions of the participants 	plenum			

Introduction

SPICE is a methodology and a tool to support the methodology for the strategic alignment of a school's pedagogical goals with its use of information technologies. In general terms, the method is used to answer two questions: (a) what pedagogical purpose does the ICT as deployed in a school serve? And (b) what needs to be in place in addition to the ICT (hardware, software, network infrastructure) so that those pedagogical objectives can be realized? The general approach to answer both of these questions with SPICE is the Balanced Score Card method (Kaplan & Norton, 1992), in a form appropriate for educational institutions (Karathanos, 2005; Baldrige 2010).

Strategic Planning for ICTs in Education

The SPICE component will work with school leaders to identify and define relevant Key Performance Indicators (KPIs) and appropriate methods for adapting the BSC/Baldrige approaches to performance and change management, as well as to enhance the cultivation of innovative practices. A key component in achieving this goal is the co-development of a strategic planning tool with school leaders who will act as Strategy Planners. The Balanced Scorecard (BSC) was originally designed to help companies to communicate planning strategies to all involved stakeholders, and to clearly indicate each individual's responsibilities and accountability (Kaplan and Norton, 1992). In NEXT-TELL, the BSC approach is adjusted to suit the requirements of nonprofit organizations such as schools.

The BSC approach compels organizations to undertake rigorous and continuous strategic planning based on performance data. It promotes the "active formulation" of strategic plans, and its aim is to involve all members of the organization in the development of this plan. The BSC approach begins with the definition of the organization's vision, enabling it to derive its strategic goals and to translate them in the form of clearly measurable Key Performance Indicators (KPIs). Typical, major projects steps when implementing BSC are illustrated below (Figure 1).



Figure 1: Implementing the BSC approach

School leaders can benefit from the use of the BSC approach as it guides them through a systematic process for planning their school's vision which focuses simultaneously on both, the organization and the needs of the stakeholders (students, parents and educational policy-makers). An IT-based solution can support a reduction in the complexity of the cause-and-effect relationships.

For NEXT-TELL, a strategy and performance management toolkit based upon BOC's ADOscore implementation will be provided/ developed. This tool gives the opportunity for documenting strategic variables, goals and D5.2 TISL Modelling Method Specification.

Performance indicators, via the definition of target levels and thresholds, required for analyzing and controlling the achievement level of strategic- as well as operational goals. The perspectives of a nonprofit organization can be summarized as follows:

- Student learning
- Student and stakeholder perspectives: (customer perspectives): Customer
- Budgetary and financial perspectives: Financial
- Faculty and staff perspectives
- Organizational perspectives: Internal Business Processes:
- Governance and social responsibility

The BSC-approach in schools

In order to explore the applicability of the BSC approach for NEXT-TELL, interviews were conducted with the participating schools' principals. Due to data-protection requirements, they are not mentioned by name. Participating schools were located in Germany. Findings from the interviews suggested that German schools see a huge demand for SPICE, especially in areas such as ICT development and implementation. Principals indicated that they would like to facilitate and make their work more transparent for teachers, students and stakeholders. In schools it is often the case that their strategic planning is coordinated through a committee while the solutions and results are forwarded in a different way. This sometimes causes problems, because the results run through different instances and so the decision-making process is less transparent.

The following statements of German school principals exemplify our findings:

"The school management and advisory team is responsible for strategic planning. This team consists of the deputy principal, the school development group and an evaluation group. They jointly decide about all further / planning decisions."

"The main responsibility for strategic planning lies with the principal and the school development group. At the moment these comprise 14 people. If an external person has good ideas, or is interested in implementing something new in the school, there is a perfect collaboration from the beginning until everything is completed and settled."

"An extended team of the school board, consisting of four people is mainly responsible for the school's strategic planning. First, at the beginning of every school year, fields of development are identified. Then these fields are translated into objectives and responsibilities for these to be clearly distributed. Development issues are sorted into quality categories, guiding performance/indicators are derived and administration directives and job instructions are placed at everyone's disposal."

"If decisions have to be made by the school's strategic planning team, they can call a teacher conference if required. This facilitates communication and gives more flexibility and a quorum is realized faster. The decisions made are documented in Excel sheets and saved in the system of guide numbers. If there is need for it, or in case of upcoming decisions to be taken, the meetings are extended and held as a teachers conference. This ensures more flexible communication and faster decision making"

As the implementation of decisions takes a long time the entire process is prone to failure which otherwise could clearly be more successful. Through the usage/implementation of ADOscore/SPICE, schools could be faster and more efficient in their approach. The following statement gives an example of the complex and time-consuming decision-making process:

"The decision-making process usually consists of different phases in subsequent years: in phase 1 initiation, which lasts up to two years. After phase 1, findings and results will be presented and the next phase starts with the implementation and the legitimization of a committee. After phase 3 the anchoring of the decisions made and D5.2 TISL Modelling Method Specification.

Changes will become visible for everyone through the new school profile. Teachers who are freshly assigned approve this through their signature. The results are communicated to the parents and the student"

Compared to other organizations, German schools are far behind in their usage of ICT/BSC to support leadership and management. This lack in institutional development can be exemplified through the next statements.

“Concerning ICT, our school is not as far developed as we would like to be. Adequate tools and software are missing.”

“Besides Excel for data collection and Word for text processing, no special tool is being used in our schools’ strategic planning”

To achieve the required IT-standard, principals get help in developing a strategic vision for ICT, to realize their own potential and integrate it in the improvement of strategic planning for schools.

“We would like to have a strategic planning tool for this school. Our key requirements for this tool are user-friendliness and the possibility/option for/of directly interpretable graphic interpretation. It should be installed and used without a long introduction and should offer/ provides data privacy”.

“The greatest difficulty of strategic planning is the scarcity of time for it”.

As the above statements showed, IT-usage is an optimal need for German schools’ strategic planning. It is of paramount importance that these schools are on at least a similar level of IT-usage in their planning process as other countries. As summarized in 2003 by the DfES in England, for example:

- Providing opportunities for school leaders at all stages of their professional development to gain the knowledge and insights they need to realize the benefits of ICT and to influence and develop staff to ensure that ICT becomes structurally and fundamentally embedded in learning, teaching, organizational and management processes;
- Making investment in ICT an integral part of the design and building of new schools and the renewal of existing facilities, and of school planning and budgeting processes (with account taken of sustainability, total cost of ownership, and the environmentally friendly disposal of obsolete kit);
- Delivering quality procurement guidance and advice that enables schools to purchase equipment and services of an assured quality and fit for educational use, including safe Internet services;
- Encouraging development of integrated (curriculum and management) networks in all schools in order to build coherent managed learning environments (MLEs) which maximize pupils’ opportunities to learn and schools’ capacity to manage this; and
- Making effective use of electronic communications to enable schools to receive important information in a timely manner and use their own professional judgment to select the information they wish to receive. (p. 9/10, DfES Publications, 2003)

We experienced problem awareness within the partner schools we interviewed. They claimed that:

“Our school has the desire of an internet based network for simplification of communication and a platform should be installed, where we can exchange documents. At the same time this platform must provide an opportunity to use this network for posting documents”.

“Our desire is it to get a tool for strategic planning, because right now, we don’t have any. Counseling and assistance in the field of new media would be especially helpful, as these trainings are very cost-intensive for the school”.

Better IT-solutions provide for better strategic planning which leads to better decisions and a more efficient exchange of information between schools and other organizations, such as local educational authorities. Through the improvement in the tracking of achievement, presence and behavior of students, especially risky ones, problems can be solved at an early stage. Another effect of better IT solutions in schools is the improvement in collaborative learning and better communication forms with parents.

“The most important development-fields are tuition, our schools external relations and human resource management. Additionally our school would like to increase the usage of Moodle and a revised, IT-based communication with the parents. Parents are regarded as important partners and the communication works via the committees (teacher conference and parents council)”.

“Within the school, strategic planning is communicated via the parent’s association and the students”.

Strategic planning – effects on teachers

Especially for teachers, strategic planning should increase professionalism, create and define capacities and give further opportunities for career-development. Other points:

- Develop a comprehensive range of advice, guidance and support for teachers of all subjects at all levels on how ICT can be used effectively in classroom practice, thereby helping to underpin subject specialism;
- Look at how hardware and software assessment systems can support this agenda, and how effective assessment contributes to teaching and learning; (8, DfES Publications, 2003)

“In the principal’s opinion, school development and teachers trainings belong together and cannot be regarded separately. Without continuous staff-development, school development stagnates”.

“In our school the slogan is: “training on the job”, meaning that every teacher should get and have relevant things which he needs to offer a good school lesson and also reflect his work and himself constantly. Additionally the teachers have a very close and good exchange amongst each other and with external partners. The school cooperates also with schools abroad, their school systems and teachers”.

If strategic planning is implemented in schools and comprises an effective IT infrastructure, as indicated in the NEXT-TELL approach, it should support teachers and other staff to get the best out of their non-contact time to enable them to integrate ICT in their planning and delivery of lessons. It provides the opportunity to access a variety of additional sources to facilitate the preparation of lessons and the knowledge transfer. ICT gives access to extensive advice, instruction and support for teachers of all subjects, as well as advice on curricular materials and content.

“As a facilitation further trainings in the field of communication and IT-based networking, for example internet based rooms, would be helpful. For that we need also help and a better structure in time management”.

Strategic planning – effects on students

IT development and strategic planning in schools gives students a better education and more knowledge about digital and visualized skills. Furthermore it should help students and teachers to individualize the learning-process and to meet individual-student needs. So teachers can achieve an exciting, active and more interesting learning process for their students, to get better results. Through wider access to information, guidance and support, teachers and students get a tool-box for expressing themselves creatively.

“A further hope of the principal is that a platform will be created for independent design of the learning rooms in the school. Technologies, such as smart/ active boards support the dialog between teacher-student and the further development of the school”.

The SPICE focus in NEXT-TELL is on ICT. To explain this, the following overview (Table 1) will show how the perspectives are adjusted and based on the ICT fields where BSC will be implemented:

Table 1 Baldrige criteria comparison and explanation within NEXT-TELL (Karathanos, 2005, adapted)

Baldrige Criteria for Education	Baldrige Criteria Explanation	Baldrige Criteria within NEXT-TELL
Student learning perspective	Results should be based on variety of assessment methods, should reflect the organizations overall mission and improvement objectives, and together should represent holistic appraisals of student learning	Within NEXT-TELL the results and progresses of the learning processes are documented with IT. Through the usage of NEXT-TELL the progress in learning can derive out of exercises in STEM using OpenSim or teachers feedback using OLM or ePortfolio. Learning results and aims have to be compared, the learning progresses should be improved in the broadest sense, via usage of IT.



Baldrige Criteria for Education	Baldrige Criteria Explanation	Baldrige Criteria within NEXT-TELL
Student and stakeholder perspective	Student and stakeholder satisfaction measurement about specific educational program and service features, delivery, interactions, and transactions that bear upon student development and learning and the students and stakeholders future actions	Student- and stakeholder-retention is achieved through more sophisticated communication and better integration of the actors involved. This leads to faster and more transparent communication possibilities, and disclosure of committee decisions. School example about equal opportunities for students, who don't have the opportunity at home, to work with computers. In our days it's so important to work with and use new technologies. So every student should have a chance to use it.
Budgetary and financial perspective	Instructional and general administration expenditures per student, tuition and levels, costs per academic credits, resources redirected to education from other areas, scholarship growth	How big is the schools budget within one school year, for different school domains? How could the budget be managed and distributed within these different domains? For example IT-purchase and maintenance. In this budgetary context it is important to mention, the aspects of cost-efficiency should always be considered.
Faculty and staff perspective	Innovation and suggestion rates; courses or educational programs completed; learning; on-the-job performance improvements; cross training rates; collaboration and teamwork; knowledge-and skill-sharing across work functions, units, and locations; employee well-being, satisfaction, and dissatisfaction.	Within NEXT-TELL teachers get the opportunity to further qualify themselves in the field of IT. The trainings should cover the usage of new technologies as well as their didactical and methodical utilization and support in preparation and implementation of IT in lessons. The goal of IT implantation is to create more effective working methods, which – through better time-management increase teacher's satisfaction.
Organizational effectiveness perspective	Capacity to improve student performance, student development, education climate, indicators of responsiveness to student or stakeholder needs, supplier and partner performance, key measures or indicators of accomplishment of organizational strategy and action plans	Effectiveness can be shown via IT, NXT-TELL especially with the Open Learner Model. Within this tool increases of performance and development of every single student can be shown. On the other hand, schools can compare each other through benchmarking, eventually exchanging best practices and "lessons-learned".
Governance and social responsibility	Fiscal accountability, both internal and external; measures or indicators of ethical behavior and of stakeholder trust in the governance of the organization; regulatory and legal compliance; organizational citizenship	Strategic planning becomes tangible through IT. The stakeholders have more trust in the principals decisions as they get more comprehensible. Stakeholders get automatically informed about the undertaken planning steps. For example, even though schools in Germany are not allowed yet to use their money independently, the deployment of school fees can be disclosed and shown. This disclosure strengthens the stakeholders trust towards the principals and the organization.

Development and adaption of the BSC-approach at schools

Using the BSC-approach, strategies and actions should be converted and made be measurable. Through the definition of general principles and strategy in daily routines, their implementation is ensured. As partner schools are at different stages in the implementation of ICT, it doesn't make sense to give a general description of the process-courses within an "e-confident" school. But it is possible to suggest/define certain mutual key-characteristics which promote/facilitate and enable ICT usage/deployment in schools.

Trainings should be distinguished between:

- BSC method trainings for school leaders:

In these trainings BSC vocabulary and implementation steps are explained. Also, existing strategy documents of the school should be analysed and an initial scorecard should be modelled. As a result, such training may often change into a 1-2 day strategy workshop. After the workshop, it should be possible for school leaders to continue with BSC implementation on their own but with strong support from a coach (e.g. with regular direct contacts or web/teleconferences).

- BSC tool trainings:

School leaders do not need to know the BSC tool – they only need to learn how to read results/documentation generated by the tool. Therefore BSC tool trainings can be organized for only a small part of a school leaders' group or even for people who are not part of school management (preferably with some IT know-how). Such training can be face-to-face training (preferred) or web-training, e.g. a good solution is to organise a 1 day training with direct contact and then, as the project moves on, to offer additional web-training and coaching.

For both types of trainings mentioned above, additional training materials in the form of presentations and screencasts (for tool handling) are advisable.

Method adaption (BSC) in schools:

- The first demo-version/prototype is created according to the demands of participating school principals, based on the evaluation of the baseline studies (see D6.2).
- Framework of principal training: Introduction to Balanced Scorecard and SPICE. General Methods and first exercises. No paper handouts in the training – documents made available on network
- Principals begin to see the benefits of having a strategic approach towards ICT planning. Feedback from principals on what could be modified especially to meet their school's requirements.
- Based on this feedback on the school's demands for SPICE, the software will be further developed and updated versions are again tested by the cooperating schools.

SPICE Tool

The **SPICE strategic planning tool** is currently in a preliminary mode of design. This 'light' version of the SPICE strategic planning tool will cover functionalities for document vision, strategy, creating perspectives and developing strategic and operational goals. In future SPICE releases, functionalities allowing for the definition and measurement of performance indicators as well as initiatives will be added.



Figure 2: Functionalities covered by SPICE 'light'

A first prototype of the SPICE web modelling tool is available under following URL (requires Java to be enabled):

<http://85.124.32.234/8080/adowf/modellerSPICE/>

Login: spice

Password: password



6 Translation (German) of the training materials

The German materials are too extended and therefore kept together with the English training materials, separate. And also because of the trainings, that each and every trainer can use the materials on the specific needs of the schools.

7 Conclusions

As in the conclusion of Deliverable 7.1 described, the training materials that are released in German/ English will be trained to other cooperation partners from NEXT-TELL, who will train their teachers in the other participating countries. Trainings will be conducted in a combination of face-to-face workshops and on-line activities for each of the major releases before they are subjected to trials in pilot studies. Refreshment trainings and introductions for newcomers will be conducted online on a continuous basis.

The training in NEXT-TELL aims at enabling teachers to work with the advanced learning technologies and applications that support appraisal and decision making (thus improving their assessment literacy) that will be developed and provided within the framework of the NEXT-TELL project. Training programs for participating teachers in English and German need to be designed, all required materials need to be provided, and the training needs to be conducted in participating schools. Given the need in the project to cater to many teachers spread over a number of countries (and languages), and given that teachers will work with different combinations of learning applications and NEXT-TELL tools, the training will need to be centrally coordinated, but delivered in a distributed, demand-based manner.

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9 Glossary

Terms used within the NEXT-TELL project, sorted alphabetically.

Partner Acronyms

JRS	JOANNEUM RESEARCH Forschungsgesellschaft mbH, AT
Uni Research	UNI RESEARCH AS, NO
KMRC	Medien in der Bildung Stiftung, DE
TUG	Technische Universität Graz, AT
CBS	Copenhagen Business School, DK
BHAM	The University of Birmingham, UK
IOE	Institute of Education, University of London, UK
EXACT	eXact Learning Solutions SPA, IT
TALK	Verein offenes Lernen, AT
BOC-AT	BOC Asset Management GmbH, AT
BOC-PL	BOC Information Technologies Consulting SP.Z.O.O., PL
MTO	MTO Psychologische Forschung und Beratung GmbH, DE

Abbreviations

BS	Baseline Study
CbKST	Competence-based Knowledge Space Theory Training Course
CBT	Computer Based Training
DBR	Design-Based Research
ECAAD	Evidence Centered Activity and Appraisal Design (builds on the ECD)
ECD	Evidence Centered assessment Design (PADI project eg)
EFL	'English as a Foreign Language'; EFL refers to learning English in a non-English-speaking region, such as studying English in an Asian or Latin American nation. Typically, EFL is learned as part of a student's school curriculum or for career purposes if working for an international corporation.
ENA	Epistemic Network Analysis
ESL	English as a Second Language
HCI	Human Computer Interaction
ICT	Information and Communication Technology
IT	Information Technology
LEPP	Longitudinal Evaluation of Performance in Psychology (2nd generation e-portfolio)
NEXT-TELL	Next Generation Teaching, Education and Learning for Life
OLM	Open Learner Model
PADI	The PADI project aims to provide a practical, theory-based approach to developing quality assessments of science inquiry by combining developments in cognitive psychology and research on science inquiry with advances in measurement theory and technology.
RA	Requirement Analysis
RDS	Researcher-led Design Study
SRI	Stanford Research Institute

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STEM	The Science, Technology, Engineering, and Mathematics (STEM) fields are collectively considered core technological underpinnings of an advanced society, according to both the National Research Council and the National Science Foundation
TDS	Teacher-led Design Study
TEL	Technology Enhanced Learning
TESL	Teaching English as Second Language
TISL	Teachers Inquiry into Students Learning

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