**CULTURE OF LEARNING PROJECT**

**Selected Intellectual Outputs**

*Guidance document for tool/matrix*

*(prepared by Jagiellonian University)*

*Learning culture evaluation and planning tool/matrix (annex) (prepared by Jagiellonian University)*

*Teaching resource packs (implementation sections) (prepared by partners)*

**CULTURE OF LEARNING**

**Scheme for school actions and matrix understanding structure**

*Something Similar to Manual*

To have life (personal, social, professional) one has to claim that it belongs to him or her. Claiming the ownership over anything is always tied to responsibility for that “object”. Anytime when we think about quality of that object or about the outcomes it brings we should be aware that quality and results depend on the level of our involvement, awareness, emotions, energy and skills. This is the same is with education, the process, which works the best when free, open, interested, and ready to learn individuals and groups take responsibility for it.

Changing the learning environment in our schools, building new initiatives, implementing theoretical ideas in practice are activities that have no sense without deep involvement. This is why in this project we want deep awareness of actions and active participation not only in “events” but also in the decision-making process. Every school and every person needs to understand what is going on and decide on the level of energy to be invested.

Similarly with materials and readings – they cannot be only given, they should be creatively used, modified, rewritten or reconstructed. The material you read now is not finished and should not be finished ever. It is an on-going project building a portfolio for “how we do things here”. Some materials are external, some are produced in one school, others in partnership, some are reports or written reflection, others teaching materials and meetings’ plans – all show and support the work over time on building the learning environments of students and teachers.

This material is a collection of various products organized in four sections:

1. the first section „milestones” summarizes our plans described in the project application,

2. the second presents and develops theoretical background of our approach to education,

3. the third offers more detailed explanations and guidance for actions within selected elements of learning environments (the context of learning that might be influenced by teachers) – every element is discussed in three steps: explanation, implementation and expected outcomes,

4. the fourth section includes useful forms and tools for group work.

**1. Milestones**

It is expected that the project’s outputs, short study courses and multiplier events will result in producing strategies and activities arranged according to “learning culture evaluation and planning matrix/tool” which will allow us to develop and adapt school learning environments to become the ‘Culture of Learning’.

The expected changes within schools are as follows:

1. Understood current school culture and necessity for effective change

2. Planned reforms and actions in order to achieve high quality culture of learning built accordingly to seven principles of learning across all sector of school work

3. Increased high quality teaching impacting on better pupil engagement in their learning

4. Pupils practising, honing and applying 21st Century skills through meaningful learning activities

5. Learning activities contextualised to promote transferability of skills and

6. Better understanding by pupils of the need to acquire high level skills for challenges of living in an increasingly globalised world

One of the tools supporting the process of strengthening the culture of learning is “matrix” (intellectual output no 1) presenting and defining areas of work in the school. Every area of the developed “matrix” and “the guidance document” (intellectual output no 2) will include explanation of values, basic knowledge of every aspect, readings, workshops plans,

case studies, good practices, teaching/learning materials, research and data, evaluation tools, ideas for implementation, procedures.

Our teaching & learning activities and leadership & management skills development will use Professional Leaning Communities (PLC) methodology approach to set up networks of practice within and between schools (as appropriate and feasible). This will ensure that the following values are central to our project delivery:

1. Supportive and shared leadership,

2. Collective creativity,

3. Shared values and vision,

4. Supportive conditions, and

5. Shared personal practice.

PLCs will serve to two broad project purposes: (1) improving the skills and knowledge of educational professionals through collaborative study, expertise exchange, and professional dialogue, and (2) improving the educational aspirations, achievement, and attainment of students through stronger leadership and teaching.

Our MAIN OBJECTIVE is the developing a 21st Century Culture of Learning for high level skills through: improvement in learner outcomes, change of the professional practice and empower practitioners, creating sustainable change, developing of the system wide leadership capacity with measurable impact. The project’s expected outcomes are

• strengthened quality of leadership, pedagogy, communities and policy in school education and

• to strengthen the competencies and learning of all students by organisation of the process of learning in school in the way that helps them to learn effectively through strengthening teachers’ professionalism.

We will try to create the organisational culture that will always utilise the following assumptions:

1. Learners are at the centre of the school operation

2. The social nature of learning decides about the educational processes

3. Emotions and motivation are integral to learning

4. Recognizing individual differences makes learning effective

5. Stretching of all students is a rule

6. Assessment should support learning

7. Building horizontal connectedness is a condition of the success

**2. Culture and nature of learning. Priorities**

It is very difficult to participate in professional discourse, to think about the quality of the education and to introduce changes in the everyday of school practice without awareness of the core themes impacting education today.

Teachers, school principals, administrators and policy makers need to understand that our societies and economies have experienced a profound transformation from reliance on an industrial to a knowledge base. Global drivers bring to the fore “21st century competences”, including deep understanding, flexibility and the capacity to make creative connections, a range of so called “soft skills” including good team-working.

Education has been reformed repeatedly and the sense of reaching the limits of educational reform invites a fresh focus on learning – we need new ways to influence the very interface of learning and teaching.

The rapid development of ICT and its importance are re-setting the boundaries of educational possibilities and augmenting the role of non-formal learning environments.

There has been a strong focus and advance in measuring learning outcomes, which in turns generates still greater public and political attention on learning. However, there is no consensus about which outcomes matter the most and educational debates have swirled around opposing poles – between talk of “basics” and demanding “21st century skills”, between “standards” and citizenship.

The research base on learning grows but, rather than guiding change, researchers and scientists lament that too many schools do not exemplify their conclusions. At the same time, far too much research on learning is disconnected from the realities of educational practice and policymaking.

(Hanna Dumont and David Istance (2010) Analysing and designing learning environments for the 21st century. In: Hanna Dumont, David Istance and Francesco Benavides (Eds.) *The Nature of Learning. Using Research to Inspire Practice*. OECD.)

More information in chapter 1, pages 19-35)

In our project we will try to creatively use and enrich the approach taken by the project Innovative Learning Environments, which encourages to focus on learning itself and to integrate the “micro” level (of every student in every classroom) into the broad frame of the educational processes. To avoid the situation, in which learning that does not happen in school is ignored by teachers, the diversity of learning settings and approaches has to be welcomed. In this way the term “learning environments” is used. The learning environment is focused on the dynamics and interactions between four dimensions:

• the learner (who?),

• teachers and other learning professionals (with whom?),

• content (learning what?) and

• facilities and technologies (here? with what?).

Such dynamics and interactions include the different pedagogical approaches and learning activities in the learning week or term or year – time is fundamental in any sets of relationships, activities cannot create only snapshots. Assessment is integral both through the way assessment objectives shape the content and through the role it plays in the interactions of teaching and learning. This is a more holistic understanding of “environment” than when it denotes only the physical or technological settings of learning.

In our project, built upon approaches presented in OECD publication *The Nature of Learning* we have decided to select the most important elements that together influence the learning environments of our students and decided to work in order to develop. Through the process of deliberation, conversation, creative thinking, testing, experimentation and implementation of plans, critical thinking and modification of our actions the matrix organizing the educational ecosystem, in which the learning processes of our students and teacher are embedded. The matrix will be only a tool or rather road map supporting our work. We hope that using the matrix we will be able to build a culture of learning in every participating school.

Figure 1: Basic areas of learning environments

Co-operative learning

Technology Inquiry based approach to

learning



Community as a resource

Formative assesement and feedback

Strategies and innovations

Emotions and motivation

To be decided

Understanding of learning

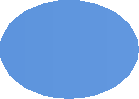
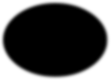


**Culture of Learning** (environment for learning)

To be decided



Source: *Nature of learning*



**3. Learning environments in construction**

A. Understanding of learning

Explanation

Teachers usually have little time for reflection over theoretical base of their profession and educational activity. Very often teaching becomes a chain of the stressful situations demanding from teachers immediate reaction to demands posed by students and different groups. Everyday duties overload teachers’ practice, so there is no time for thinking about nature of the education, nature of learning. Unfortunately, being accurate in all daily task is not enough to become “a real” teacher. To be one it is necessary to think about own role, not only about practical aspects of work, also from the theoretical perspective. It is important to find a balance between practice and theory. Theory without practice is useless, practice without support in theory is counterproductive.

The nature of teaching is not about passing information to students. Teachers’ approach to students depends on accepted concept of human nature. The way we see reality influences and decides about our opinion on what is knowledge, what are aims of the education, how the process of learning should be organized and more. It is critical for teachers to be aware of their own, “private” ideologies and understandings. Every team should share and discuss.

Implementation

There are multiple ways to uncover our hidden or not assumptions and beliefs about the world of education. In general the rule of thumb is to open the box and start to think and talk about them and about potential results of having this or this opinion. There is significant difference to work in the group that believes, for example, that every kid may learn in the social interactions and in friendly environment and in the group that is strongly convinced that our brains work like computers and what they need is information to interact with and that there are worse and better computers in our heads. Maybe some beliefs are more supporting and others less, but this is not a case. The most important is to know and understand our (principals, teachers, parents, students) convictions about learning and teaching. When we deconstruct these beliefs, reflect over the consequences and understand we have influence, we

are likeable to treat school as an institution, which might me designed and managed in intelligent way, not as natural phenomenon that we have little power to control.

Teachers have different options and methods for organizing the process of deconstruction their beliefs about education. The most important is to start and involve as many as possible and in the next step to broaden the discourse and invite teachers and students.

**Readings.** Basic: *Nature of learning* – chapter 2 and chapter 3. Additional: Jerome Brunner:

*Culture of education*, Gerald Gutek: *Philosophical and Ideological Perspectives on education*

**Metaphors.** Metaphors help to uncover hidden assumptions and allow to describe certain issue through comparisons with ideas from completely different areas of our lives. It might be start with the request to every person present during the meeting to finish the sentence: Please finish the sentence *Teaching others is like …*

In the next step, the person leading the meting should collect papers and organize it into categories. It might be done individually or better in the whole group. When all metaphors are divided among categories the group should start discussion about consequences of using such a vision of education. What should be taught and why? How these teachers plan the lessons? What style they will present? How they arrange the teacher – student relationship? What is their understanding of the leadership? It is obvious that the persons who say: teaching others is like adventure might organize their classrooms differently from people who say: teaching others is like painting a picture.

In the next step the group should take a look, which categories belong to majority and which to minority and think and talk about consequences for their school. Do we want this? How would we like to see the education process?

It is complex issue and it never should leave towards blaming or praising it is more about creating a language to talk about the school and students. Teachers’ and students’ roles, aims and methods. Working in the word where everybody has different understanding of “teaching others” makes that work very difficult. When we start to understand people that we work with we also start to understand organizational culture.

**Ideological puzzles** (instruction will be provided in the attachment)

**Roundtable discussion**. Who are we and in what do we believe? How does it influence our work? How should we react to conclusion of chapter 3 in *Nature of learning*?

Conclusions and planning. Does it change anything? And now what? What are our plans fro tomorrow, this semester, next year? (For planning process please use form no 1)

Expected Outcomes

The outcome of actions committed within this element should result in teachers and students understanding that different approaches to learning are possible and all people use some kind of it (even subconsciously). After this the common awareness of the diverse approaches in school should appear followed by the reflection on the most suitable perspective for particular group and / or school. It is not necessary to ask everyone to change and share the same understanding but it is beneficial to agree and accept the general direction of thinking about education, about processes of teaching and learning, about roles of teachers and students, about useful and adequate methods, techniques and values.

B. Emotions and motivation

Explanation

Motivation and emotion are essential to education. Without emotionally stable situation within the group and for every learning individual the learning process is very difficult or sometimes even impossible. People, at the first place, need to feel safe, they need to be sure that they are secured and may trust others involved in the situation. Fear or anger block possibility of the effective learning. More over, when learners are bored or feel not competent it also hinder the learning. In schools we usually focus on competencies to be developed and models commonly used to design teaching and learning do not capture all of the complexity that students bring to their learning.

Students develop over the years their motivational beliefs, which are cognitions about the self in a domain. They refer to the knowledge and opinions that students have about how their motivation functions in different subjects and about the effect of different teaching practices on their motivation (it is called “meta-motivation”). Students use their motivational beliefs to give meaning to learning tasks and situations and to their social and educational context.

These beliefs might positive or negative and are based on direct experiences in the domain, but also on observations how others performs and what teachers have to say. They determine the choices students make as well as how much effort they will invest and how long they will persist in the face of difficulties (Dumont, Istance, Benavides, pp. 91-94).

Implementation

**Readings.** Basic: *Nature of learning*, chapter 4

(In: Hanna Dumont, David Istance and Francesco Benavides (Eds.) *The Nature of Learning. Using Research to Inspire Practice*. OECD.)

**Principles Jigsaw.** Teachers divided in 8 groups (the same number as number of key principles) work on one principle in each group. After reading about assigned principle and discussion to develop group understanding they try to answer four questions.

1/ How is it in our school? 2/ How it should be or how would be improved? 3/ Why is it not like it should be? 4/ What should be done in order to achieve desired situation.

All 8 groups present their outcome of the group. Others react and the whole staff tries to reach the common understanding of the situation in which principle. The priority principles are selected (number depends on teachers decision) and the whole staff work together on the last question – what should be done? To conclude the meeting the plan of implementation should be prepared.

**Group Interviews.** If it is possible the interviews should be led by students, if not by teachers. The two main questions are: What do I need to be involved in my learning in school? What do I need to be involved in my learning outside of school? Results are presented by student to teachers. Size of the group 5 to 8 students. Number of the groups depends on school decision.

**Roundtable discussion.** Are we aware of the importance of emotion and motivation in the learning process? How is it visible in design of our school? How should we react to key motivation principles? What can we do to increase motivation of our students? What can we do to support “healthy” emotions of our students?

Conclusions and planning. Does it change anything? And now what? What are our plans fro tomorrow, this semester, next year? (For planning process please use form no 1)

Expected Outcomes

As a result of committed actions members of the school community should be aware of the role of emotions and motivation in the learning process and understand how does it influence students’ approaches to learning and their behaviour in the classroom. Teachers will utilize that understanding and knowledge to design and plan their actions. The well-being of students will increase, they will feel safe in the learning process, ready to take risk and not feel guilty for mistakes. The visible students’ engagement will impact their learning inside and outside of the school. Parents will be ready to support their children during learning, when experiences difficulties and also will encourage to face ambitious tasks.

C. Formative assessment and feedback

Explanation

Dylan Williams describes assessment as the bridge between teaching and learning. The concept of „formative assessment” emerged with recognition of the importance of feedback. In most classrooms across the world, evidence about the success of learning activities is typically collected at the end of the learning sequence. More than 40 years ago, Benjamin Bloom suggested that in addition to the assessment used at the end of the learning process, assessment should be also used to provide feedback and correctives at each stage in the teaching-learning process.

Others underlying the fact that the most important factor influencing learning is what the learner already knows, ascertain this and teach accordingly. Assessment is central to effective learning, so the design of the learning environments needs to take account of the fact that learning is unpredictable. Assessment has a key role to play by relating the instructional activities that teachers plan to the consequent increase in learner capabilities. Unfortunately, research shows that still the power of assessment to guide learning is not realized because the summative function of assessment - providing grades and other measures of how much had been learned - is dominant.

Formative assessment might be understood as feedback which is often described as any information given back to a learners about their performance. For bigger precision, feedback

should not be just information, but should direct students’ future actions in productive ways. The quality of feedback and how it is used are much more important than its frequency. When feedback is given through the details of the correct answer, students learn more than when they are just told whether their answer is correct or not. Formative assessment should encourage the development of autonomy in learning and for students to be able to develop their own skills of self-regulation of learning.

Learning is not just a matter of what is wrong but of developing new capabilities and this requires feedback more as dialogue rather than simply giving correct answers. This requires the learner to become active in managing the process. Feedback and formative assessment should focus on the specific features of the task, and provide suggestions on how to improve, rather than focus on learner, it should focus on the „what, how and why”. Black and Williams defined formative assessment as all activities undertaken by teachers and/or by their students, which provide information to be used as feedback to modify teaching and learning activities in which they are engaged (Dumont, Istance, Benavides, pp. 135-146).

Implementation

**Reading**

(Chapter 6. In: Hanna Dumont, David Istance and Francesco Benavides (Eds.) *The Nature of*

*Learning. Using Research to Inspire Practice*. OECD.)

(P.J. Black, D. Wiliam, Inside the Black Box: Raising Standards Through Classroom

Assessment, Kings College London 1998)

**Explaining**

Conversation with students about feedback, its goals and ways of using it for the improvement of learning. Students need to understand that teachers’ opinion about their work may help them in learning and improving during learning. In order to achieve it student needs to know what he or she already knows and what should be learned to allow further development. That information might be received from teacher, friend or self.

When students accept the fact that feedback serves them, not a teacher to grade them there is a chance they will use it. In this way they may also take responsibility for their learning.

**Without grade**

Students need to know when the formative assessment will be used. That time summative assessment should not be used (no grades). Sometimes students do not know how the work (product) should look like, so to make feedback understandable discussion about correct solution is needed.

Students needs individual conversations with teachers about their work. One of the possible ways to launch the conversation is to ask about received feedback. It is difficult question for students, so it should became a custom - students should expect that question or similar like: what was easy and what was difficult? Do you have an idea how will you approach that task next time? Would you explain the concept we are talking about? Or maybe: talk to your colleagues about that, compare your solution with the example.

**Peer assessment**

To help students in using friends’ feedback teachers need to help make that feedback valuable. It is important to teach how to give useful feedback and talk about rules of the peer assessment: focus on work on on the person, address criteria of the success, point at what was good, wrong and how to improve, recommend what to do next. One of the way to learn it is to imitate a teacher. If teacher gives valuable feedback students eventually will learn it as well. Students will be able to show peers the direction of the development and tell what they should do in order to improve (if they know criteria of the success).

**Monitoring students work**

Signs - simple technique that allows self-assessment without threat of penalty from a teacher. Student assesses if he or she understands specific task or topic. Thanks to this technique teacher can easily find out which student needs help. One of the possible variation is using colors: red (I am lost), orange (I have doubts) and green (I understand everything).

Cards yes/no - teacher ask question. Students has a choice between two cards (yes and no) and raise a card with selected answer (yes when they know the solution and no when they do not know).

Students create questions - students write questions to a test and later answer these questions. These questions show what students find as important. Answers show if the know the material.

Students write at the beginning of the lesson what do they know about topic and what they would like to know more and at the end of the lesson they write down what they learned.

Students prepare a poster (individually or in group) about what they have learned and later talk about this. Thanks to it teacher and other students may see what authors of the poster have learned.

**Reflection**

In a defined time students write down all things that they would like to remember and later exchange the list with a peer. In this way they reflect on what they have learned and learn from each other.

Teacher together with students write down 10 the most important aspect of the present subject. The most important part is the discussion about aspects and their importance.

Teacher stops the lecture or presentation and invites students to short conversation in pairs about what they just heard. Thanks to this techniques students may reflect on this what they heard and ask questions.

(D. Sterna, Jak wprowadzić informację zwrotną do uczenia się uczniów?, https:// [www.edunews.pl/system-edukacji/nauczyciele/4276-jak-wprowadzic-informacje-zwrotna-do-](http://www.edunews.pl/system-edukacji/nauczyciele/4276-jak-wprowadzic-informacje-zwrotna-do-) uczenia-sie-uczniow.

D. Sterna, Narzędzia OK, które pomagają uczniom i nauczycielowi, https:/[/www.edunews.pl/](http://www.edunews.pl/)

narzedzia-i-projekty/narzedzia-edukacyjne/4304-narzedzia-ok-ktore-pomagaja-uczniom-i- nauczycielowi)

Expected Outcomes

Formative assessment, when used appropriately allows receiving information, which allow to recognize how the process of learning is going on in order to help teacher in modification of the further teaching and to help students in learning.

We know that formative assessment is in use when teachers describes goal of the learning in language that is understandable for students and check at the end of the lesson if students reach this goal. Moreover, teachers define criteria of the assessment and build climate supportive for learning, which increases students’ self-esteem, involvement, independence, cooperation and responsibility for learning.

D. Co-operative learning

Explanation

The popular conviction that learning happens in silence when students read and/or study quietly have changed recently and teachers encourage students to interact with each other more often. The belief that learning happens through interaction with others gains popularity and scientific support, while impacting teaching and learning. However, it is worth to mention that work in groups can turn into cooperative learning and be enormously beneficial or it can be a little value in this kind of learning while poorly implemented.

Cooperation today became a key concept in the discourse about contemporary, diverse, societies. It is believed that we need to cooperate in order to face extremely difficult challenges of modernity. It is also widely believed that members of the societies struggle with that soft skill of ability to cooperate, and that schools are not dealing well with the expectation that students will learn to cooperate while in school.

A specific type of cooperation – co-operative learning has been suggested as the solution for wide array of educational problems. It is often cited as a means of emphasizing thinking skills and increasing higher-order learning, but which forms of co-operative learning are the most effective and what components must be in place for co-operative learning to work? (p. 162)

Implementation

There are many different forms of co-operative learning, but all of them involve having students work in small groups or teams to help one another learn academic material. Co- operative learning usually supplements the teacher’s instruction by giving students an opportunity to discuss information or practise skills originally presented by the teacher. Sometimes co-operative methods require students to find information on their own (p. 162).

Two main categories of the co-operative learning methods are: structured team learning and informal group learning methods. The first one involves rewards to teams based on the learning progress of their members and is characterised by individual accountability (where learning counts not products) and the second one includes methods more focused on social dynamics, projects and discussions. (Read more in chapter 7th of Nature of learning).

**Readings:** Nature of learning, chapter 7

**Group planning:** teachers discuss the main questions: how will we increase the frequency of co-operative methods used in our school (classrooms)? And which methods shall we use in the first place?

**Discussion about selection of students for group work:** let’s talk about possible ways of group construction

**Using different group work methods:** method „Task in group – change of the group” (students work in group on the task that does not take too long and after finishing they change the group and present the result of their work - jigsaw explained below), method

„Debate” (students divided into smaller groups prepare arguments “for” and “against”),

method „Support group” (students create a group that work for longer time together offering support during classes and after classes), method „Working on task while mastering social skills” (besides instructions concerning group task students receive also instruction concerning their behaviour and interactions like: be sure that everyone has spoken, go back to task if you notice that you changed subject, ask for help, try to involve everybody in work...) (Look for more methods, for example in Merrill Harmin, *Strategies to inspire active learning).*

**Jigsaw**:

The jigsaw classroom is a research-based cooperative learning technique invented and developed in the early 1970s by Elliot Aronson and his students at the University of Texas and the University of California. Since then, thousands of classrooms have used jigsaw. Just as in a jigsaw puzzle, each piece — each student's part — is essential for the completion and full understanding of the final product. When each student's part is essential, then each student is essential; and that is precisely what makes this strategy so effective.

A jigsaw classroom is highly structured. Interdependence is required. It is the element of "required" interdependence among students which makes this a unique learning method, and it is this interdependence that encourages the students to take an active part in their learning. In becoming a teacher of sorts, each student becomes a valuable resource for the others. Learning from each other gradually diminishes the need to try to out-perform each other because one student's learning enhances the performance of the other students instead of inhibiting it, as is usually the case in most competitive, teacher-oriented classrooms. Within this cooperative paradigm the teacher learns to be a facilitating resource person, and shares in the learning and teacher process with the students instead of being the sole resource. Rather than lecturing to the students, the teacher facilitates their mutual learning, in that each student is required to be an active participant and to be responsible for what he learns.

How does it work? Students are divided into small groups of five or six students. There is a big task to learn divided into smaller task (the same number of tasks as members of the group). Students responsible for the certain topic meet with students from other groups responsible for the same topic in the group of experts. Eventually each student will come back to his or her jigsaw group and will present a well-organized report to the group. The situation is structured in that way, so the only access any member has to other assignments is by listening closely to the report of the person responsible (https:/[/www.jigsaw.org](http://www.jigsaw.org)).

Expected Outcomes

Use of co-operative learning almost always improves affective outcomes. Students love to work in groups and they feel more successful and like subjects taught co-operatively. They have more friends of different ethnic groups and are more accepting of others different from themselves. Regarding achievement outcomes depend on how co-operative learning is used (p. 170).

Learning environments for the 21st century must be ones in which students are actively engaged with learning tasks and with each other. Co-operative learning offers a proven, practical means of creating social and engaging classrooms environments to help students to master traditional skills and knowledge as well as develop the creative and interactive skills needed in today’s economy and society (p. 173).

A large body of research show that students involved in cooperative work demonstrate higher level of academic learning and retention than their peers working individually. (…)

Cooperative group work increases self-esteem, improves relationships among students and enhances social and educational skills (Frey, Fischer, Everlove, 2009, p.3).

E. Learning with technology

Explanation

Learning with technology refers to situations in which someone uses technology with the goal of promoting learning. The most common learning technologies of today involve computers, information technology and Internet, which has become an important venue for online courses from schools, training for jobs and informal learning.

There are different types of technology-based learning environments:

1. Computer-based training: lessons, tests and feedback that are presented on a computer screen, usually in a mastery format in which the learner goes on to the next section after passing a test on the current section.

2. Multimedia: instruction that consists of pictures (such as illustrations, photos, animation, or video) and words (such as printed or spoken text).

3. Interactive simulation: simulations over which the learner has some control, such as being able to slow down an animation or set input parameters and observe what happens.

4. Hypertext and hypermedia: instructional material consisting of click- able links, such as used in web pages.

5. Intelligent tutoring systems: instructional systems that track the knowledge of the learner and adjust what is presented accordingly.

6. Inquiry-based information retrieval: such as using google for web searches.

7. Animated pedagogical agents: on-screen characters who help guide the learner through a computer-based lesson.

8. Virtual environments with agents: visually realistic environments that simulate interactions with real people, often using natural language.

9. Serious games: games that are intended to serve an instructional function.

10. Computer-supported collaborative learning: in which groups of learners work together on a common task by communicating via computers (Nature of learning, p.181).

Two approaches to learning with technology are recognized: technology-centered and learner- centered. In the technology-centered approach, the focus is on using technology in education through providing access to cutting-edge technology. In the learner-centered approach, teaching begins with a focus on how people learn and view technology as an aid to human learning. In this approach technology should be adapted to fit the needs of learners and teachers. That approach is often lacking when we solely seek to provide access to new technologies for learners and explore ways to incorporate computer and information technology in 21st century education.

Learning with technology involves learning situations in which the instructional experience is created with the aid of a physical device, such as a computer or the internet. At some level almost all learning involves technology. for example, in a traditional lecture, an instructor may use chalk and a chalkboard, thereby employing an old but reliable technology. Similarly, a textbook constitutes a form of technology albeit one with a 500-year old history (Nature of learning, p. 184).

An important feature of computer-based technology, and possible advantage if used appropriately, is that it allows for the presentation of multimedia instructional messages – that is, instructional messages consisting of words (such as spoken or printed words) and pictures (such as animation, video, illustrations, or photos). Computer-based technology also allows for levels of interactivity, computational power, graphic rendering and information retrieval that may not otherwise be feasible (Nature of learning, p. 184).

In developing a theory of how people learn with technology, Richard E. Mayer (Nature of learning, chapter 8) focused on three important principles from research in cognitive science:

• Dual channels: people have separate channels for processing verbal and visual material.

• Limited capacity: people can process only small amounts of material in each channel at any one time.

• Active processing: meaningful learning occurs when learners engage in appropriate cognitive processing during learning, such as attending to relevant material, organising it into a coherent representation, and integrating it with relevant prior knowledge.

Instruction with technology involves using technology – such as computer and information technology – to support instruction. It covers both instructional media – the physical devices used to deliver the instruction – and instructional methods – the way that the material is presented to the learner. The conclusion from media research points to the importance of instruction - learning is caused by the instructional method rather than the instructional medium. So, it is possible to design ineffective or effective approaches using either books or computers - although instructional media may be the most salient aspect of learning with technology, it is the instructional method that causes learning. The first goal of instructional design with technology is to reduce extraneous processing1 by keeping the learning setting as simple as possible. The second goal of instructional design with technology is to manage essential processing2. The third goal of instructional design with technology is to foster generative processing3. The central challenge of instruction with technology is to support the learner’s active cognitive processing during learning (essential and generative processing) without overloading the learner’s cognitive capacity.

A major obstacle to learning with technology occurs when the amount of cognitive processing required for learning exceeds the learner’s cognitive capacity. When the instructional message is poorly designed or contains extraneous material, the learner has to engage in extraneous processing, which may leave insufficient cognitive capacity for the essential and generative processing really needed for learning. for example, a lesson on how digestion works may include some anecdotes about sword swallowing or medical devices that must be swallowed – which constitute interesting but extraneous material (more about instruction for learning with

technology in chapter 8 of Nature of Learning, pages 190-195).

1 Extraneous processing is cognitive processing during leaning which does not support instructional objective and is caused by poor layout or „strange” material in the lesson (when text and graphic are on diﬀerent pages and learn needs to scan back and forth

2 Essential processing is cognitive processing during learning aimed at mentally representing the essential material and is caused by the inherent complexity of the material

3 Generative processing is cognitive processing aimed at mentally organising the material and integrating it with other relevant knowledge.

Learning with technology includes learning from an online encyclopedia, a multimedia presentation, or a computer game. Common topics include computer-based instruction, multimedia, interactive simulation, hypermedia, intelligent tutoring systems, inquiry-based information retrieval, games, computer-supported collaborative learning, animated pedagogical agents, virtual reality, and e-courses. Technology-centered approaches focus on providing access to technology in education, whereas learner-centered approaches adapt technology to serve as a cognitive tool for learners. Meaningful learning occurs when learners engage in appropriate cognitive processing during learning – including selecting relevant information from the presented material, organising the incoming information into a coherent mental representation, and integrating the incoming information with existing knowledge. This processing takes place in the learner’s working memory, which is limited in capacity and has separate channels for processing verbal and pictorial information. Learning is a long- lasting change in a person’s knowledge attributable to experience. Effective instruction with technology seeks to help the learner engage in appropriate cognitive processing during learning without overloading her or his cognitive system. Learning with technology is caused by instructional methods not by instructional media.

Implementation

**Web-quest**

Webquests encourage students to find and process information in engaging contexts, adding an interesting spin to the research process. These free online adventures could, for example, place students in the role of a detective. To solve a specific case, they may have to collect clues — and information — related to a curriculum topic by scouring certain sources and web pages. Teacher may create this adventure offering questions to answer through Internet search or may prepare the list of recommended address adequate to asked questios.

**Use Videos for Mini-Lessons**

Teachers can renew lesson plans by using videos as stand-alone overviews for some topics. Also available as skill reviews and previews, there are many websites that host teacher-made video content. TeacherTube is an example of an education - only version of YouTube, covering core school subjects. This easy way to use technology in the classroom adds a

multimedia element to your lessons, which can effectively resonate with visual learners. Research has shown that the use of animated videos can positively impact a child’s development in several competence areas including memory, creativity, critical thinking, and problem solving.

Short videos might be watched before lesson, not only in the classroom.

**Podcasts**

Playing relevant podcasts can support lesson and also engage auditory learners and act as a learning station. It is possible to find: interviews with the author of a book students are reading, lessons about studying techniques and strategies, explorations of a curriculum-related topic and more. It is possible to design a project that allows students to create and play their own podcasts.

**Share an Online Class Calendar**

To keep students informed regarding the content they’ll be tackling, create and share a class calendar that details lessons and highlights important dates. It is possible to use a program such as Google Calendar, emailing your calendar’s hyperlink to students or their parents. This not only keeps them informed, but helps teacher stay organized.

**Online Activities for Students Who Complete Work Early**

It is possible to set up stations for students to use when they complete work early, giving them engaging ways to further process content. Devices that have videos, websites and educational games open, which should aligned with lesson, allowing students to delve into relevant topics.

**Online Mind Maps for Class Brainstorms**

There are websites students teachers use to create clear and detailed mind maps faster than written ones. For example, some use MindMeister, as its features are designed for students and educators. Teachers may work with their students to brainstorm ideas as a way to reinforce lessons or launch a problem-based learning exercise.

Ideas from: https:/[/www.prodigygame.com/blog/ways-to-use-technology-in-the-classroom/](http://www.prodigygame.com/blog/ways-to-use-technology-in-the-classroom/)

**Games**

Game play has traversed the realm of recreation and infiltrated commerce, productivity, and education, proving to be a useful training and motivation tool. Referred to as “Game-Based Learning”, this field of practice has expanded far beyond integrating digital and online games into the curriculum. Games are effective tools for scaffolding concepts and simulating real world experiences, it should also include the larger canvas of gamer culture and game design.

**Architecture:** SimArchitect is a simulation game and social connection site for architects developed by IBM Center for Advanced Learning. Players are issued a request for proposal by a fictitious client and must respond, conducting meetings with the client and team and then proposing a solution. **History:** The Historical Williamsburg Living Narrative project at the University of Florida is an effort to create an interactive fictional game in which the geography, culture, and characters of Colonial Williamsburg, Virginia will be brought to life. **Nursing:** The University of Minnesota’s School of Nursing has partnered with the Minnesota Hospital Association and the technology firm, VitalSims, to develop web-based interactive games that engage nursing students with real-life scenarios.

**Virtual and Remote Laboratories**

Virtual and remote laboratories reflect the current trend in K-12 education toward more authentic on-line education. Though technology is four to five years away from mainstream use in schools, the benefits of implementation are already clear. Virtual and remote labs offer flexibility, as students can run experiments as many times as they like, both in and out of school. Because these labs are designed to allow for easy repetition of experiments, students feel less pressure to execute perfectly the first time. In the controlled environments of these labs, students are safe, even if they make an error.

**Tablet Computing**

It is so easy for students to carry tablets from class to class, using them to seamlessly access textbook and other course material as needed, that schools and universities are rethinking the need for computer labs or even personal laptops. A student’s choice of apps makes it easy to build a personalized learning environment, with all the resources and tools they need on a single device. With their growing number of features, tablets give traction to other educational

technologies— from facilitating the real-time data mining needed to support learning analytics to offering a plethora of game-based learning apps.

Ideas from: https://www.teachthought.com/the-future-of-learning/10-specific-examples-of- emerging-educational-technologies/

Expected Outcomes

Technology creates new opportunities for curriculum and instruction by bringing real-world problems into the classroom for students to explore and solve. Technology helps to create an active environment in which students solve problems and also find their own problems. This approach to learning is very different from the typical school classrooms, in which students spend most of their time learning facts from a lecture or text and doing the problems at the end of the chapter. Technology offers powerful tools for addressing logistic constraints and for learning through real-world contexts.

F. Inquiry based approach to learning

Explanation

Today students, in order to be prepared for tomorrow’s workplace, need learning environments that allow them to explore real-life situations and to gain media literacies, critical thinking skills, system thinking and inter-personal and self-directional skills. Recommendations from different organizations have emphasized the need to implement learning that supports inquiry, application, production and problem-solving. Students must be given opportunities to develop capacities in the context of complex, meaningful projects that require sustained engagement, collaboration, research, management of resources and development of ambitious performance.

A set of studies has found positive effects on student learning of instruction, curriculum and assessment practices that requires students to construct and organize knowledge, consider, alternatives, apply disciplinary processes to content central to discipline (for example use of scientific inquiry, historical research, literary analysis, or the writing process) and communicate effectively to audiences beyond the classroom and school. Small group inquiry approaches can be extremely powerful for learning, but to be effective, they need to be guided by thoughtful curriculum with clearly defined learning goals, well designed scaffolds,

ongoing assessment and rich informational resources. Assessment design is critical issue for revealing the benefits of inquiry approaches for group effort and individual learning as well as for promoting the success of learning. If one only looks at traditional learning outcomes, inquiry-based and traditional methods of instruction appear to yield similar results. Benefits for inquiry learning are found when the assessments require application of knowledge and measure quality of reasoning (OECD, p. 200-2001).

The goals of the PBL are broader than gaining knowledge - the approach aims to enable students to transfer their learning more powerfully to new kind of situations and problems and to use knowledge more proficiently in performance situations.

Implementation

**Readings:** Nature of learning, chapter 9

**Project-based learning**

Project- based learning (PBL) involves the completion of complex tasks that typically results in a realistic product, event, or presentation to an audience. Project-based learning might defined as central to the curriculum, organized around driving questions that lead students to encounter central concepts or principles, focused on constructive investigation that involves inquiry and knowledge building, student driven, in that students are responsible for making choices and managing their work and authentic, by posing problems that occur in the real world.

**Problem-based learning**

In problem-based learning (approach close to project-based learning) students work in small groups to investigate meaningful problems, identify what they need to learn in order to solve a problem, and generate strategies for solution. The problems are realistic and not perfectly formulated textbook problems but rather are like the in the real world with multiple solutions and methods for reaching them (often used in medical education).

**Learning through design**

Learning through design has grown out of the idea that children learn deeply when they are asked to design and create an artifact that requires the understanding and application of knowledge. Design activity supports revisions and iterative activity as projects require cycles

of defining-creating-assessing-redesigning. The complexity of the work often dictates the need for collaboration and distributed expertise and demands generating ideas, prototyping and planning. It might be found in science, technology, art, engineering or architecture.

Expected Outcomes

Group work benefits students in social and behavioral areas. Self-concept and social measures are related to academic outcomes.

G. Community as a resource

Explanation

Using the community as a resource for learning, the primary goal of academic service- learning is to enhance students’ understanding of the broader value and utility of academic lessons within traditional disciplines, while engaging young people in social activities. Academic service learning is an experiential pedagogy in which education is delivered by engaging students community service that is integrated with learning objectives of core academic curricula. Using the community as a resource for learning, the primary goal of academic service-learning is to enhance students’ understanding of the broader value and utility of academic lessons within the traditional disciplines, all while engaging young people in social activities. Ideally, the community service the students perform helps them learn better how the academic concepts taught in the classroom can be applied to the situations in their everyday lives (OECD, p. 228).

One of the difficulties students face during learning is gap between theoretical learning (things that they learn about in school) and their real lives - the world outside of the school. That gap influences motivation, ability to learn, beliefs about education and its connection to what is important for them. Ignoring the natural learning resource, which community is for the school, should be seen as waste of the great opportunity for decreasing this gap. Students can address social issues either through direct service or indirect service (for example producing a research report on important issue).

Wikipedia explains service learning as: "An educational approach that combines learning objectives with community service in order to provide a pragmatic, progressive learning experience while meeting societal needs.” So, in service learning, students learn educational standards through tackling real-life problems in their community.

Implementation

**Readings:** Nature of learning, chapter 10

**Community learning**

Community learning (service-learning) is a teaching method that promotes student learning through active participation in meaningful and planned service experiences in the community that are directly related to course content. High quality community learning blends academic learning, practical experience, personal exploration and reflection on student roles and involvement in their communities. Students explore community issues that relate to their courses, find relevance in their academic learning, gain valuable skills, and experience a deepened sense of civic responsibility, social justice, and commitment to the community. It is different from volunteering and community service. Community learners focus not only on the service they provide, but also on the academic and personal learning they gain as a result of that service experience. Community partners work closely with teachers and students to design the service and learning experience.

**Project-based learning**

Actively involves students in learning academic knowledge through the development of individual or group projects. Academic services-learning projects are purposefully community-focused and community-based, are often conducted in partnership with members of the community, and are designed with a community needs in mind. Community, like a textbook or laboratory becomes a resource for learning and environment outside school offers students learning opportunities to use their academic knowledge and skills to construct and implement solutions to real-life social problems.

Expected Outcomes

When school is successful in designing valuable community learning, students seek to achieve real objectives for the community and deeper understanding and skills for themselves.

Learning occurs through a cycle of students’ action and reflection. Students are confronted with real-life issues, they are challenged to study real problems in real time for real people. Rather than focusing on finding the right answer, service-learning experiences engage students in exploring various options, perspectives and strategies. Putting students in charge of the activities can help them to hone their decision-making skills, learn how to take responsibility for successes and failures, and build self-confidence and leadership capacities (OECD, p. 231-233).

H. Strategies and innovations

Explanation

Although the enthusiasm for innovative forms of learning, teaching and schooling grow, the difficulties of changing practice in established institutions and organisations become clear. The challenge of innovation in the education sector, where old practices of teaching are embedded in political and organisational structures, is great (even in the face of growing evidence that traditional ways of working are not “paying off”). Education has a relatively weak knowledge base compared with other service delivery organisations (especially those of the health professions). Most policy makers and practitioners are not deeply aware of the research base that might support (and sometimes challenge) their actions. worse, there is no established way of incorporating new knowledge into institutional practices in a way that would improve professional practice and student learning outcomes. Education has also a relatively undifferentiated set of roles for actors within the system, few required protocols systematically to incorporate “best practices” for managing school organisation and classroom activities, and there is little systematic in how new members are initiated into practice. as a result, education tends to be very conservative (Nature of learning, p. 286).

The science of learning has grown mostly out of psychology and cognitive science, with the core focus on individuals – teachers and students. Efforts to put this new scientific knowledge of learning and instruction into practice have encountered difficulties associated with the organisational, institutional and political environments within which schools work. Depending on canonical ways of imparting knowledge, that is, relying on an expert to tell others what they have found, also did not help. Future practitioners experience a training

process in which they read a specified set of texts that represent a canon of readings on learning and instruction. Most practitioners in the field can remember the names and claims of a few major theorists but the links between research-based prescriptions and what educators actually do in their work are thin. The same goes for principles of educational leadership: the vocabulary of distributed leadership, or “professional learning communities”, can be heard at professional meetings but is more rarely found in practice (Nature of learning, p. 287).

Teachers may also have strong beliefs, for example, about which students can learn what kinds of material and which students are “ready” for investments in learning. Beliefs about who can learn what run deep in our schooling systems and our societies. Despite substantial research showing that ability to learn can be acquired, educators in most western countries continue to believe that intelligence and aptitude set limits on learning, and we invest heavily in tests to detect that aptitude. The response of many psychologists to belief blockages is to try to intervene directly on the belief systems of students and teachers, instructing them to attribute success and failure more to their efforts than to their abilities (Dweck, 2003).

Telling can begin the process of delivering knowledge but it can never complete it, especially when the new knowledge departs significantly from existing understandings. Telling as a strategy has serious limitations because, when faced with new knowledge, human sense- making tends to conserve existing understanding.

A powerful possibility of how people can change their practices is to develop and support professional learning communities for working educators. The movement toward professional learning communities has a set of intellectual roots that lies in the discipline of anthropology and its offshoot, socio-cultural theory or, in its variant termed “situated learning” .The new theories of situated cognition treat learning as not simply a matter of individual brains at work acquiring new knowledge or skills, but as persons coming to function effectively in specific, socially-defined situations. Cognition is viewed as a social activity, “stretched over” individuals, tasks and tools. Mind and motivation, skills and self-concepts are linked in an essentially socio-cognitive theory of learning and development (Nature of learning, p. 289).

One application of socio-cultural theory to the broader framework of education is “distributed leadership”. A distributed perspective allows for the possibility that all individuals have a hand in leading and managing, whether or not they are formally designated leaders. The

concept of distributed leadership has sometimes been misunderstood as simply delegating leadership and management functions to individuals within an organisation, thus missing the crucial interactive or practice element (Nature of learning, p. 289).

Finding powerful solutions to education and learning problems requires looking beyond individuals and even beyond the face-to-face social groups that individuals participate in. We have to examine the organisations within which teaching and learning take place, with special attention given to whether and how deep shifts in organisational practice might be induced. Some influential commentators suggest that true innovation can rarely happen in an established organisation, but instead will require the formation of new breakaway institutions.

Schools function through a set of more or less interconnecting routines. These routines are critical for any organisation to function because they provide stability and continuity over time, and they structure action in the organization Groups and individuals in the organisation develop routines that constitute the normal ways in which work gets done. Research has documented how formal and informal organisational routines frame and enable interactions, provide stability across time, and assist in socialising new organisational members.

Implementation

**Redesigning school practice: “kernel routines” for organisational change**

“Kernel routine” has the potential for transforming school practice by “seeding” and “propagating” new forms of practice in schools. The idea is to introduce a routine that – because it is highly specified and supported by well-defined tools and strategies – can be implemented quickly at a reasonable level of quality under the guidance of the principal or other school leader. The routine has to be visibly focused on teaching and learning and responsive to established standards of accountability in the school.

Kernel routines link school management functions to classroom practice. The kernel routine strategy does not simply impose a new process on teachers but rather provides sets of structured opportunities for teachers to understand and embrace new forms of teaching. A kernel routine must meet the following six criteria: it must be centred on the technical core – teaching and student learning, second, it must be anchored both in the official curriculum of

the district and the enacted curriculum of the classroom – what is actually delivered to students, third, it must build common understanding about teaching and learning, fourth, it must build trust and mutual access among school staff members, fifth, it must provide routes by which new knowledge can enter the school’s community of practice, sixth, it must be open to transformation over time without loss of its core designed elements (more in Nature of Learning, pp. 293-296).

Two practices described below are examples of kernel routines.

**Learning Walks**

Group of school staff visiting classrooms. A team is composed of the principal, a coach and teachers. This kind of visit in classroom should be a routine that it evokes only a nod from the teacher. Students continue their work without interruption. Visitors notice samples of student writing from another unit posted on the wall. Some of them (visitors) concentrate on the teacher’s talk, trying to understand his/her actions. Another visitors talk with students and ask questions such as, “what are you learning today?” “what are you working on?” or “how will you know if your work is good?” after ten minutes, the team moves to the hall where they briefly describe their observations and raise questions about what they observed. after a few minutes, they move to another classroom and repeat the process.

During the day the team meets with the teachers whose classrooms were observed. The team describes what they observed and the questions that emerged during hallway conversations. The classroom teachers make comments, take notes and raise additional questions.

**Curriculum-based teacher development: the Pedagogy and Content Routine**

The pedagogy and content routine focuses on direct improvement of teaching and learning through content-based professional development within school subjects. Designed as a direct route to implementation of innovative instruction, the pedagogy and content routine is a highly participatory training routine for teachers and coaches that is specific to the demanding programmes they are expected to teach. It begins by engaging teachers in a tightly constructed routine consisting of a specific set of training practices. Training and practice of the content and pedagogy routine occur separately within each content area but if this routine is introduced in several curricula, there can be “cross seeding” and the development of a larger institutional change within a school or clusters of schools.

Teachers, coaches and lead teachers experience the following sequence.

Model lesson: the keystone component is a set of content-specific units and model lessons. The lessons are academically rigorous, engaging and accessible to all students.

Educators engage as learners: because a primary purpose of these units is to support the kinds of changes in teacher practice that support student learning and that educators may never have experienced themselves as students, educators engage as learners in a carefully chosen selection of one or more lessons from the unit and experience the classroom practice that will be expected when they teach the model lessons.

Deconstruct teaching and learning: the facilitator helps teachers step back and analyse the content, the disciplinary reasoning required, and the pedagogy and the architecture of the lesson. They discuss what it would take for them to teach the lesson to their students, including: what the lesson assumes the learner knows ahead of time, whether their students know this, and, if not, how they can provide the background knowledge without watering down the lesson.

Teach with colleagues observing: lead teachers or coaches provide teachers with a second model by teaching students and using the model lesson as their guide. coaches and lead teachers invite their principals and teachers to observe and take notes on the process and on student responses. All then debrief.

Analyse pedagogy and content: collaborative analysis of the pedagogy and content of a lesson or unit, usually led by the coach or lead teacher, is the core of the work of the professional learning community.

Modify and adapt: as teachers teach model units and deepen their understanding of the units’ content, pedagogy and architecture, of their teaching, and of their students’ learning (or lack of it), they build the capacity to understand the modifications that will improve teaching and learning, not just in these lessons but throughout their curriculum.

Both The Learning walk routine and the pedagogy and content routine, meet the six criteria for a kernel routine elaborated above.

Expected Outcomes

In school focused on improvement through inspiration taken from innovations teachers look for ideas about how to improve student learning in literature, reports, professional development events. There are established ways for reflection over practice, discussions about potential changes and routines for implementation of selected solutions. Organisational arrangements support noticing good ideas, adopting and implementing them.

4. Learning environments planning and evaluation tools

I order to provide opportunity to reflect and discuss current organizational arrangements and structures it is important to secure time and space for teaching staff to be involved in this process. Table below presents matrix that allows to manage the process of organizational reflection over practices in eight areas discussed in the material and four issues deciding about school work.

**Form 1: Planning and organization matrix**

**PLANNING AND ORGANIZATION MATRIX**

Every planned activity should be driven by following rules and questions about their presence: Learners at the centre. The social nature of learning. Emotions as integral to learning. Recognizing individual differences. Stretching of all students. Assessment for learning. Building horizontal connectedness.

**Elements of the learning environments**

**Professional**

**Learning**

**Teaching/ Pedagogy & Learning**

**Leadership & Management**

**Structures/ Policies**

*Please use spaces below to present plans, materials, activities, evaluations of school and its partners operations within the elements/areas of learning environments from the perspectives of the four sectors named above*

Understanding of learning

Emotions and motivation

Co-operative learning

Inquiry based approach to learning

Technology in the teaching and learning process

Formative assessment and feedback

Community as a resource

Strategies and innovations

**Form 2: Self-evaluation matrix**

Important condition of the introducing the culture of learning in our school is existence of the reflective and democratic self-evaluation that provides learning community with data about school operations and also about perspectives carried by different groups constituting school community. Self-evaluation matrix below show issues to discussion in groups of teachers, students and parents. Groups should discuss separately about areas discussed in this material. About how they understand every area, how they see it in their school and if they are glad with the dynamic of it (tendencies). It is useful to invite someone to lead disccuiyons of students and parents. When groups elaborate their standpoint they meet together and present to others.

**Elements of the learning environments**

**Current state from the perspective of the support for students learning**

**Tendencies**

**++ \_ \_ \_** ! "

**+**

*Form inspired by self-evaluation form used in EU project “Evaluating Quality in School Education”*

Understanding of learning

Emotions and motivation

Co-operative learning

Inquiry based approach to learning

Technology

Formative assessment and feedback

Community as a resource

Strategies and innovations