Life's Learning Path Towards Cross-disciplinary Competencies: An Assessment

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ABSTRACT---- ***At the moment, the changes affecting school and education are topics of discussion more than ever before. The new core curriculum for basic education (2014) and digitalization of learning tools serve as major ignitors of discussion: nowadays information and communication technology reach the teacher and the pupil elsewhere, not just in the ICT class of the school - it moves wirelessly everywhere, backpacks and pockets too. The change in school and in education is not only the new introduction of premises, places or tools but also above all the updating of the teachers' professionality to correspond with today's ideas of good learning and of realizing the curriculum as a part of the pupil's life. It means the awareness and skills of what today's teaching and learning contain, what kind of learning theory directs operation and how the teacher's own professionality meets these changes.***
In this article we examine the pupil's assessment as a part of the multi-disciplinary learning process from the points of view of transformational pedagogy (transformational pedagogic, QED) and the core curriculum (2014). The objective is to identify ways which are based on these and methods to develop teaching and learning so that every learner has equal chances to learn, grow and to develop in the environments which support learning whilst developing their cross-disciplinary skills. The article presents and explains one multidisciplinary learning module, Dive into culture through games -learning project, which is based on the learning theory of the new core curriculum 2014. The model of contextual pedagogical approach for learning and the examination of the different dimensions of the teachers' knowledge and skills of the 2000s (Piispanen & Meriläinen 2013) form a theoretical frame of reference for the learning project.
The results show that the planning and implementation of teaching, which is based on the contextual pedagogical model of teaching and learning, supports the individual learning of the pupil in the National Curriculum 2014 (OPS 2014) frame of reference in the context of the basic education.

Keywords--- multi-disciplinary, project learning, assessment, authentic learning, contextual-pedagogical learning environments

1. INTRODUCTION

The root of the word assessment is from the Latin assidere, which means, "to sit beside"

On a pedagogic field one must confess that the modern world operates differently than the one we have got used to over the course of the years and it often differs from our image of the learner and learning. The choices which are related to the learning environment and to pedagogics should be reflected through the pupils' world and their approaches (Piispanen 2013). In the article we approach the planning process of teaching from a contextual pedagogical frame of reference (Meriläinen and Piispanen 2012, 2013, 2015) where the learning takes place in such learning environments and in such learning situations and through learning processes which give the learners an opportunity to think and to operate as the professionals and experts of the field in real life.

The point of view of the assessment sets the planning and implementation of teaching in a new light: studying which consists of separate lessons and content does not make the assessment possible in the frame of reference of the curriculum (Ops) 2014. Instead, wider learning tasks must be created where the objectives are directed towards the level of good performance at each grade making the subject of the assessment visible. The tasks can be cross-disciplinary or wider modules proceeding within the subject (Finnish National Board of Education 2014). From the point of view of the planning this means that from when a study module begins, pupils already have to know what the objectives of the study module are and how they can reach the level of good performance. The purpose of the knowledge and skills based assessment is to help the pupils to see the learning process as a possibility irrespective of skills and strengths. Openness and transparency need to be present as a starting point for the assessment according to Piispanen and Meriläinen (2015) in which case each pupil is aware during the whole learning process of what is expected from them and how they can

fulfil these expectations. The pupils' skills and strengths will become part of the operation of the group and the assessment is directed at demonstrating the skills from the points of view of the subjects of assessment that have been defined in the curriculum.

In creating the cross-disciplinary and multi-disciplinary learning modules, the expertise of the contents, pedagogical knowledge as well as the desire to develop learning diversely towards the cross-disciplinary skills and competence are required. These are different dimensions of the teacher's professionality which direct the teacher's actions and which the teacher must be aware of in order to be able to develop their skills in order to answer the demands for professional skills set by the new curriculum. (Meriläinen & Piispanen 2013a). The model of the dimensions of the teacher's skills of the 2000s offers teachers a tool to examine their own professionality from the points of views of the skill demands which are related to teachers' professionality. The cross-disciplinary teacher professionality makes possible the planning and implementation of the learning modules that are in accordance with the curriculum (OPS) 2014 and are based on the transformational pedagogics, develop the cross-disciplinary skills of the pupils, allow for authentic learning and are built within the contextual pedagogical frame of reference.

2. RESEARCH SUBJECT AND STUDY TASKS

In the planning of the teaching the key role is on how the teacher enables learning in the frame of reference of the transformational pedagogics. The new curriculum (Oph 2014) indicates the objectives and the significance of assessment clearly but concrete models are not really found for planning and implementing this kind of learning process where in practice the assessment serves as a starting point for planning and from the pupil's point of view as a guide for learning. This research article presents and explains one learning project which is planned for the pupils and carried out with the pupils. The learning project is based on the learning theory of the new curriculum, where assessment acts as the central factor in planning and points in the direction for the learning. The learning project has been implemented in a contextual pedagogical frame of reference in which great weight is given to the pupils' authentic living world and pupils' awareness of their objectives (Meriläinen & Piispanen 2012). Meriläinen and Piispanen (2012, 2013a) define the contextual pedagogical approach as follows:

> *The contextual pedagogical approach to learning is a model developed for the transformational pedagogics which embodies the coming together of society's and the child's everyday life in the pedagogics and operational culture of the school. As the historical veins in the background of the model the following elements can be seen: Dewey's idea of the uniform operational models of society and school, a point of view which observes the level of development of the child emphasized by Piaget, paying attention to the child's individual growth and learning emphasized by Montessori as well as versatile enabling of the learning environments from the point of view of the present day. The model has developed as a dialogue between research and education and in it an attempt is made to combine the historical, still useful pedagogical starting points as well as the more contemporary starting points which are currently at the centre of research, such as, phenomenon centered, interdisciplinary, examination of the curriculum, the skills of the 2000s, the pedagogical principles of the transformational school as well as the social and individual points of view in learning and its contexts. In the model, the starting point for the pedagogics is the attempt to pay attention to the authenticity of the contexts of learning and the phenomena of the pupil's living world and its approaches. (Meriläinen & Piispanen 2012; Piispanen 2013.)*

The contextual pedagogical frame of reference attempts to concretize how a multi-disciplinary, cross-disciplinary and authentic learning unit is built from the starting points of the curriculum (2014) so that the point of view of the evaluation emphasized by the curriculum will be clarified both for the teacher and the pupil, becoming a factor which directs the objectives of the learning task and learning.

The contextual pedagogical model emphasizes the utilising of the pupil's world in reaching the curriculum objectives for knowledge and skills. On this journey, the criteria for assessment which directs knowledge and skills and the communal interaction with teacher and the peer learners function as the pupil's map and guide on the individual learning path.

Dive into culture through games -learning project (Naumanen, Pyhältö & Riihonen 2015), a multi-disciplinary, contextual pedagogical learning project created by the students of the class teachers' adult education programme of the Kokkola University Consortium Chydenius acted as the research intervention. In the project practice the task of class teacher students is to plan and to implement with the pupils an experiential 15-lesson learning unit, in which the authentic learning environments, authentic learning tasks and criteria of the assessment which directs the objectives and knowledge are emphasized. The learning unit expresses the curriculum 2014 frame of reference from the point of view of the cross-disciplinary, multi-disciplinary learning unit (the class teacher adult education curriculum 2014–2017; Tech4learning 2015). The unit that has been presented and explained in this article has been designed for pupils in the fifth grade. The fifth grade class in question consists of the pupils of two classes with two teachers who practice simultaneous teaching together. During the teaching practice, three teacher trainees were placed in the class and they were supervised by both of

the class teachers and the university teacher. In the project the pupils worked in pairs or in small groups.

The creation of the multi-disciplinary learning module from the frame of reference of the new curriculum (2014) forms into a study question and the subject of the examination. How is the learning module built and how the assessment is paid attention to in the planning process? What is the role of the information and communication technology in the multi-disciplinary learning process?

In the study, a qualitative approach is used. The class teachers' essays and plans have formed the research subject and the material. Partly a material based content analysis, partly a theory bound content analysis has been adopted in handling the material. In addition to the materials, the experiences of the students have been collected in the supervision processes of the teaching practice and the thoughts of the supervising teachers regarding the progress of the process have been listened to. The students' operation has also been empirically observed during the process. During the practice process the teacher students updated their plans and recorded their thoughts daily on the shared website. The teacher students' plans and recorded thoughts have been used as main sources in the study. The discussions, observations and other material that has been shared in the Internet has served as strengthening support material in the study.

3. AUTHENTIC LEARNING PROJECT AND EVALUATION IN THE DIVE INTO CULTURE THROUGH GAMES - PROJECT

Bookhart states (2004, 5) that according to a wide definition, the assessment means that the information is gathered for a purpose. The interesting question is, who gathers the information and for what purpose? Traditionally, the teacher has been perceived as an evaluator who gathers information in order to assess the pupils. As the collector of information one can see – and one should see – above all, the pupil who gathers information which is related to own learning as a reflective operator, sets their own targets with the help of the information and carries out self-assessment. The teachers'- other pupils'- and the possible experts'- task is to help the pupils to benefit from the information collected by them (see Bookhart 2004, 6). At its best the pupils' environment serves as an interactive mirror in the learning process.

How can the pupils notice the advantage which is brought about by their learning? Herrington, Reeves & Oliver (2010) state that the learning environment has a high significance from the point of view of the learning: the authentic learning environment offers the content and context which express in which ways the information will be used in the real world. The authentic context is created if the learning becomes personally meaningful for the learner (Rule, 2006).

The actualization of the authentic context in the pupil's life can be examined by considering whether the learning task and the learning environment and context planned for it reflect a setting where the information will be used? Will the objectives of the curriculum be successfully created in such authentic tasks in the learning process that the pupils can acquire those skills, methods, tools and contents which they need in their operation and which they identify as part of their world? (see Tech4learning 2015) This means that the same factors which direct the operation of the children and adolescents in their leisure should also be seen as possibilities of the school to help pupils to improve learning in the frame of reference of the 2000s: the identification and recognition of individual knowledge, strengths and creativity rise in the key position in learning (see Meriläinen & Piispanen 2013b, 160). These can, at their best, be the starting points for getting excited about learning – and teaching – as well as for individualizing learning. The teacher students brought up the authentic environment in their reflections about Dive into culture through games -learning project as follows:

> *The authentic and concrete task, which is related to the real-life functions, is one important stage of the planning. At this stage answers are thought about to the questions of: In what way? In what environment? What kind of stages will it contain? So the set questions are unravelled in regard to what topics they contain, in what kind of an environment the pupils can study them and what kind of information they need for reaching the solutions. At this stage the concrete product which is essential from the point of view of the project and which determines the starting point for the project is also defined. Tailored, motivating units of tasks, which are connected to their authentic world of experiences and meet the objectives of the curriculum should be designed for the pupils. This is the most essential and most time-consuming stage, in our opinion, from the teacher's point of view. The teacher must carefully plan the pedagogic methods, which are used to implement the teaching. (Naumanen, Pyhältö & Riihonen 2014, an essay task of the Project practice)*

In the examined Dive into culture through games -learning project, the class teacher students started by thinking about the pupils' world of experiences, from which they brought up the games. In the project the pupils act as the players in the chosen major European cities, the special cultural characteristics of which the pupils dived into through the learning tasks which simulate true life. In the game the pupils' authentic role changed as the game proceeded; depending on the game task the pupils acted as tourists, money changers, restaurant owners, cooks, musicians and Art Directors. The progress description of the project which was given to the pupils contained the description of the authentic tasks of the project (table 1). The objective statements of the curriculum determined the contents of authentic tasks.

Table 1. The authentic tasks of Dive into culture through games -learning project

a.	You are about to go on holiday to Europe. Before the trip you choose a hotel and a hotel room from the available brochures that is suitable for your group. Draw the floor plan of the hotel room again in the scale, which is given in the instructions. Take all the elements of the room into consideration. Calculate the total area of the room in a given unit of measure. You need a certain number of square metres for a group. Book a sufficient number of hotel rooms from the hotels preferred by you. Look for the cheapest price and calculate the total costs. It may be that you have to change the monetary unit if you travel to Great Britain or to Sweden.
b.	Flipped Classroom. Find out in advance about the following matters at home: Concept of area and how to calculate the area from the textbook, currency conversions, YouTube link for enlarging and reducing, the different types of advertisements, French and Italian traditional foods, central features of Catholic and the Orthodox Churches.
c.	Reducing in scale as new learning matter. Find out about your new hometown. You get the map from which you choose this location. Your task is to look for a certain object in your location, to study its real size and to make a reduced scale drawing of it. There must be room for the reduction on A4 paper.
d.	You have got the job from the advertising agency where the latest project is the promotion of tourism in Italy and France. Design an attractive advertisement with your partner, utilising still- and video-images, text, and narrative presentation. Create an advertisement, which is original and interesting to be presented during the parents' evening to the parents.
e.	In addition to the work in the Advertising Agency you work in a local restaurant in the evenings as a cook. Your parents have come to the town to greet you and this evening they will eat an Italian or French snack you have prepared. It is your task to count a sufficient amount of ingredients according to the diners, to acquire the tools and utensils according to the instructions and to prepare the foods carefully following the instructions. Measure the ingredients particularly carefully! Before the closing of the kitchen you must clean your workstation and the tools carefully. The focus of the assessment is on the cooperative skills of the group and following instructions.
f.	You are in France's capital, Paris and it is your task to appear in a local hotel restaurant together with your band. Learn the Lintu and lapsi -song as the band member, you can function as a drummer, soloist, player of the triangle, or as a flute player. So you can choose if you want to use percussions, string instrument, wind instrument or keyboard. There are own notes or scores for each instrument.
g.	Look for the central symbols of Churches. Empathize with the story. Play dominoes.
h.	Evaluating the project for the supervising teachers. Self-assessment of the project-work.

In the Dive into culture through games -learning project authenticity was found in the tasks stemming from real life and additionally in some of the tasks which were aimed at offering the experience of European culture to the pupils' parents. During the project the pupils made a presentation video of their target country and prepared well-known foods (pizza, baguettes, macaroons) and practised a well-known French song (Lintu ja lapsi) to perform in the parents' evening - the work had a meaning and significance which motivated pupils to work.

To solve the authentic tasks met by each pair or a small group the pupils needed information about the matters to be studied, the connected central objectives and concepts from the curriculum that have been presented in the following table (table 2). It is to be noted that when approaching a phenomenon through cross-disciplinary method from the point of view of the multi-disciplinary learning module, the exact number of lessons which are allocated to the subjects cannot be perceived in a final plan. At the planning stage, however, attention has been paid to them. In the table (Taulukko 2) the allocation for each subject is shown.

Table 2. The key objectives and concepts of the Dive into culture through games -learning

Mathematics 4h	Mother tongue 3h	Science 5h	Art 2h	Religion 1h	Music 1h
Specified objectives based on the curriculum 2014:					
Experiences of success. Investigating and making observations to understand the mathematical concepts. Understanding ratio: enlarging and reducing in scale. Guiding to follow the rules, practices and instructions and to sustain long-term work.	Practising the skills of active listening and communication. Paying attention to the audience. Practising comprehension in reading. Deepening of language and cultural relationships. Learning basic knowledge about media and to utilise media tools.	Understanding maps. Appreciation of European culture.	Learn about the ways of influencing through visual communication. Expressing own thoughts and ideas through visual means.	Finding out about some of the central, influential religions in Europe. Key focus on the different features of Christianity.	Use one's own skills as a member of a group making music. Practical observation of the following elements of music; rhythm, melody and harmony.

Key concepts from the points of view of the project objectives:					
Scale, ratio, area, unit of measure.	Media text, advertisement. Recipe, instruction. Listening, performing skills.	Culture, European, travelling.	Advertisement, perspective, visual means.	Protestant. Catholic and Orthodox Church.	Rhythm, melody, harmony, playing music together.

When curriculum forms a clear background for the authentic tasks given to the pupils, it is easy for the teacher to think about approaching the subject from the pupils' points of view and to set clear objectives for it. Assessment functions as the element which provides the direction for the objectives in this setting. The assessment is brought out clearly in the curriculum (2014) for each learning objective both from the point of view of the focus of the assessment and from the point of view of the level of good performance. In fact, the assessment becomes the core of the planning of the whole project, because when assessment directs the planning of teaching and the learning environment towards the objectives at the level of good performance then the tasks and actions also planned to show good performance will move towards the good performance. In this way the teacher defines the level of teaching in relation to the curriculum statements of good performance already when planning for the learning and learning environment. In turn, this points to the realisation that the learning process with all its stages forms into a subject of assessment instead of the assessment of the end product or success in the tests.

In the planning of the Contextual pedagogical learning process (Meriläinen & Piispanen 2012) the following stages (Figure 1) can be seen in the interaction with one another:

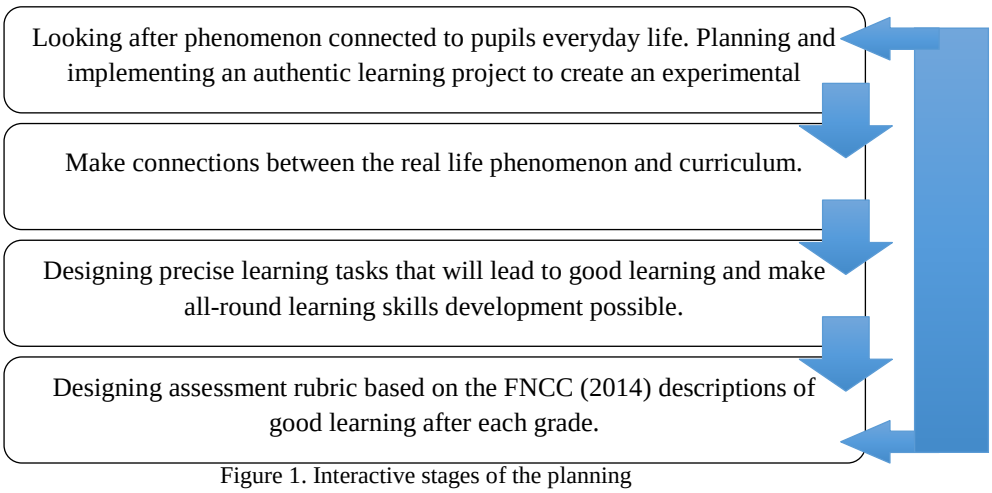

Figure 1. Interactive stages of the planning

When assessment gives direction to the learning objectives of the phenomenon rising from the pupils' own world, it is central that the criteria of the assessment is known to the pupils immediately at the beginning of the learning project so that they can set the targets for their operation accordingly (see Atjonen 2013, 104). In that case the assessment process serves as the guide for the pupils' learning, helping them to become aware of the matters concerning their learning.

When thinking about the assessment, the teacher makes value choices which have long-term effects: does the teacher help the pupils to see the assessment as a possibility to set targets for their own operation or is the assessment an external matter to the pupils? When making assessments regarding the pupil, the teachers should always also assess themselves as the enablers of learning and the further measures which are carried out with the pupil – how do we use the information received by us in the pursuit of something valuable, such as better learning for the pupils? It is primary for the teachers to understand what the information that has been received through assessment means, how it fits in with the information which we have acquired otherwise and how we use this information together to accomplish positive changes. (See Bookhart 2004, 6; Earl & Mahieu 1997.) The thinking of the assessment was also seen in Dive into culture through games -learning project at the planning stage as one of the central subject for the students:

> *When assessment is planned for, it is essential to clarify the progress of the project and the basis of the pupil assessment, which are related to it into a clear structure. The teacher can still clarify the thoughts of the purpose of the work and, on the other hand, the pupils get the information about aims of the project and how their learning is assessed during the project. Furthermore when the teacher is unravelling the assessment, he gets a clear idea of how it is most suitable to document the work carried out during the project. Undeniably the understandable criteria of assessment from the point of view of the phenomenon-based planning of the project practice facilitate the pupils' motivation and*

orientating to the task. (Naumanen, Pyhältö & Riihonen 2014 an essay task of the Project practice)

In Dive into culture through games -learning project, the class teacher students approached assessment by concretizing the aims of the assessment in two different ways. First they collected the central areas of the assessment of each subject separately and then edited them to correspond to the level of good performance from the point of view of the fifth grade pupils (table 3).

Table 3. Areas of assessment at the level of good performances according to the subject

Maths	Pupil can follow the rules, interpret simple text, an image or an event and draw up a plan to solve the problem. Pupil can communicate their observations and thoughts. Pupil can enlarge and reduce shapes to a given scale. Pupil understands the principles of measuring. Pupil can calculate areas.
Mother tongue	Pupil gains courage to express themselves and can listen to the ideas of others. Pupil can find the key points in a text. Pupil understands the basic principles of an advert. Pupil broadens their knowledge and understanding through reading.
Science	Pupil can recognize features of their own and other cultures. Pupil knows European countries and capitals.
Art	Pupil can analyse the content, structure and visual production of an advert. Pupil can act individually and together with others in accordance with the task.
Religion	Pupil knows Christian churches in Europe.
Music	Pupil can listen and make music together with others.

After this stage, the assessment was edited into criteria of the whole project, into the criteria of different levels (excellent, good, satisfactory) with the help of the verbs from the Bloom's taxonomy (Krathwohl, 2002). This clarified the significance of the assessment to the teacher students themselves and it helped pupils to direct their own studying parallel to the objectives. The pupils discussed with their pair or the small group the criteria they will aim for in a given task, how they are able to reach it and with what kind of strategies they use to proceed. In this process the teacher has a central task in directing the pupils in their objectives. The assessment directing the working on the Dive into culture through games -learning project has been collated in the following table (table 4).

Table 4. The assessment criteria of the learning task

ASSESSMENT	EXCELLENT 9–10 (Crf. Bloom's taxonomy: Synthesizing, level of creative and critical thinking)	GOOD PERFORMANCE (Level of applying)	SATISFACTORY 6–7 (Level of remembering and understanding)
Planning	Can work with orientation to the task, can consider the problem from many points of view, and can develop the problem further.	Can interpret simple text, an image or event and draw up a plan to solve a problem.	Understands the certain key points of simple text. Can remember some of the essential facts regarding problem solving.
Responsibility	Pupil supports the operation of the whole group.	Pupil can follow the rules and instructions.	Knows the rules and instructions but are not always able to apply them.
Cooperation	Pupil is capable of interactive operation that pays attention to others. Pupil is able to make critical observations. Analyses the	Can communicate their observations and thoughts. Pupil is brave to express him or herself and can listen to the ideas of others.	Pupil makes observations and expresses him or herself. Needs support in paying attention to others.

	operation of the group in a constructive way.		
Command of concepts	Pupils are able to distinguish and use in their work the smaller parts of the concepts. Applies, for example, the mathematical concepts in the new contexts. Is able to critically evaluate information when utilising the concepts.	Pupil can utilise the following concepts with their content when working: scale, ratio, area, and unit of measure. Media text, advertisement Culture, European, Catholic and Orthodox Church Rhythm, playing music together	Pupil recognizes the concepts and understands some of their key contents.
End product/products	Pupil set themselves the highest level in the game contexts and succeeds in the tasks at an excellent level. Pupil combines in a creative and critical way the phenomena connected to the European culture at the different stages of the game.	Pupil is able to operate in the different contexts of the game whilst utilising the materials, instructions and the supervision. Succeeds in solving the tasks at a level of good performance. Pupil has adopted some of the features and details of some of the phenomena connected to European culture.	Pupil can move from a task and a function to another in the game and mainly succeeds in solving tasks at the easiest level.

The multi-disciplinary project gives the pupils a natural opportunity for individual progress because, already in the beginning of the project, the pupils are aware of what is expected of the project and of what kind of tasks it consists. Meriläinen and Piispanen (2012) state that realizing the objectives gives the opportunity to think in the small groups about what the aims are and how to reach them. In the examined Dive into culture through games -learning project, gamification motivated the pupils to set themselves tasks at their own level from the point of view of the zone of proximal development, the tasks which the pairs or small groups solved as best as they could. When choosing the most suitable task or way to work for themselves from different challenge alternatives in each task, the pupils had the possibility to proceed according to individual level of skills. It was the teacher's central task to help pupils to develop their skills on the higher level of the zone of proximal development: to help pupils to solve challenges suitable to them and to proceed according to the assessment criteria which the pupils were aiming for.

Meriläinen and Piispanen state with the reference to the contextual pedagogical approach to learning (2015) that the purpose of the assessment criteria is to show the learning process as meaningful and possible for the pupils from the point of view of their own strengths. Openness of the assessment is a starting point for this kind of operation – every pupil knows during the whole learning project what is expected of them and how they can respond to these expectations. Every pupil has a chance to bring their own strengths to their small group and assessment is focused on what has been mastered and achieved in the project. Space is give to creativity, own skills and individuality (Meriläinen & Piispanen, 2015). Piispanen states (2013, 147-149) that the pupil must be allowed to experience being in command of their own evaluation whilst being aware of the subjects of assessment and the effects of their own operation on it (see Brophy 2010, 23). This for its part develops thinking and planning skills which are seen as central areas of competence from the point of view of the cross-curricular, or as referred to in the curriculum, the transversal (generic) competences of the curriculum (2014).

The tasks and the objectives have to be in the right proportion with regards to the pupil's possibilities, skills and abilities. Then what the pupil is aiming for and what they can reach can be rightly evaluated. (Marandos 2013.) It will also be important to notice that the nature of assessment changes essentially when it is made visible for the pupil already at the beginning stage of the project. This means in practice that the teacher must think beforehand about what the objectives of the learning period are, with what kind of tasks one can proceed towards these learning objectives, what kind of information is sought after through assessment and what shows the competence (see Bookhart 2004, 13; Tech4learning 2015).

4. CONTRIBUTION OF THE STUDY

In the research study one multi-disciplinary learning unit was modelled. By doing this one wanted to clarify how new a curriculum (2014) appears in a contextual pedagogical project. The appearance of the assessment, as the enabler of the

individual learning process, the planning of the authentic learning project and the use of the technology as a part of the multi-disciplinary learning unit, were the key subjects of the examination.

During the planning and implementation of the project and after it, the students were asked to think about the factors which were central from the point of view of the project and about the factors which led to the success. These considerations integrated essentially in the research subjects that were examined in the study. The contribution of the study will next be processed from the points of view examined earlier.

4.1 Curriculum and authentic context of learning

Throughout the whole process the understanding of the significance of curriculum and of planning were emphasized. Central concepts of the new curriculum (2014), such as the phenomena of the real world and cross-curricular areas (cf. Phenomenon-based, authenticity), integrated study, inclusion (cf. community), individuality, learning environments, approaches, the multi-disciplinary learning modules and the transversal (generic) competences (Oph 2014, 20–24) became central matters from the point of view of planning the project and required deep understanding. The students' considerations showed that the strong understanding of the curriculum deepens during their education from subject-specific examination into cross-disciplinary examination and eventually into a deeper understanding of the curriculum so that they learn to raise the learning contexts and the studied phenomena from the child's world and from the surrounding society (cf. Meriläinen & Piispanen 2013a) and to combine these phenomena into authentic, multi-disciplinary modules which are directed by the objectives of the curriculum (see Herrington, Reeves & Oliver 2010.) The goal is not from the curriculum point of view either to learn the contents of subjects and objectives just for their sake but to help the pupil to understand that in fact the contents and objectives become meaningful when they are connected to a context. This naturally brings motivation and joy to learning (see Marandos and Randall 2012; Sahlberg 2013.)

4.2 Assessment as enabler

The learning project was created to give the opportunity to proceed individually, support peer learning and teach to set suitably challenging objectives for oneself. Here the key matter was the assessment that had been made visible to the pupils and which directed the setting of the pupils' objectives as well as the pair and teamwork where the members of the group supported one another's learning and solved problems together. A teacher student stated in the discussions that it was easy for the pupils to direct their working when they knew what was expected of them. The criteria of the assessment could be seen by the pupils and it was also jointly returned to a few times during the project. Especially when the different tasks changed, their objectives and criteria of the well performed task were repeated – this way the support received by the pupils directed them towards the set objectives and the pupils also knew all the time what was expected of them.

Individual strengths and thinking together were emphasized in the project in particular, in the tasks which required creativity and in which the problem-solving skills and social skills had to face the challenges: among others, the baking, the making of advertisements, reducing and enlarging the scale of known sightseeing objects and reserving of hotel rooms from the points of view of the area and the budget challenged the pupils to versatile investigation. Many of the pupils, for example, baked for the first time and making the baked goods brought on new challenges which were faced together in pairs. In the project the skills of reducing and enlarging were also studied as totally new concepts for several of the pupils. From the gamification point of view, the possibility to choose in some of the tasks and tying these alternatives to the 'level of challenge' inspired problem solving and helped in thinking about and setting of own objectives, from the point of view of assessment criteria.

Dive into culture through games -learning project showed how central a part the assessment has throughout the whole multi-disciplinary learning process when it is directing pupil's learning towards the good performance from individual starting points.

4.3 Technology as part of the multidisciplinary learning module

The curriculum for basic education raises the information and communication technology as one of the seven transversal (generic) competences. It is characterized as an important civic skill both in itself and as a part of multi-literacy. So it is both the focus and a tool for learning. (Oph 2014.) Salo states in the Opettaja (Teacher)-magazine (1/2015) that in the future the teacher does not operate according to the curriculum if the information and communication technology is not utilised in studying. The question of how the information and communication technology is used is important from the point of view of developing the skills of the transversal (generic) competence – mere use instead of a traditional notebook and work book study will not indeed be enough.

In the plan for the Dive into culture through games -learning project (Naumanen, Pyhältö & Riihonen 2015) each area

of transversal (generic) competences was made visible as follows:

- LI: Guiding for peer learning and social skills, familiarizing with information that is constructed in many ways. Problem solving and reasoning tasks as a working method. Encouragement in looking for creative solutions. Developing studying techniques, for example, in planning the work and in setting own objectives. Practising the assessment of the progress.
- L2: Studying the cultural, linguistic and religious roots. Offering possibility for experiencing culture. Experimenting with different ways of expression. Guiding for the joy of expression. Use of language in different contexts. Growing for interaction, cooperation and good manners.
- L3: Rules, agreements, confidence and decision-making in game-like operation.
- L4: Diverse texts in the different contexts and environments absorbed and used with different senses. Guidance to perceive the different purposes and aims to influence in contents.
- L5: Opportunities for finding and experimenting with the working methods suitable for oneself. Carrying out one's own ideas through ICT in pair work.
- L6: Guiding towards systematic, long-term and responsible working.
- L7: Providing positive possibilities of influencing, guidance to recognize the social effects of the media and using different media channels.

Of these areas the information and communication technology was directly referred to in the sections L5 and L7. Because an advertisement was made using mobile devices and it represented the communication and the expression from the point of view of written language, images and audio, and also the information was gathered and problem-solving activities carried out in pairs or in a group, information and communication technology was also present in practising the other areas of the transversal (generic) competences. In the tasks the information and communication technology was used, among others, in the following ways:

Table 5. The role of information and communication technology in Dive into culture through games -learning project.

YouTube	Flipped classroom: pre-task to learn in advance –key consepts: to maximize and to minimize concerning advertising
IPad Apps	Creating iMovie video, shooting a video, editing with PhotoChop
Information search	Using digital images from the internet resources, language translator-tools, searching information of the target land

In this examined project the information and communication technology appeared as a tool for learning, not as an actual target even though the pupils learned new ways to operate with information and communication technology devices. However, an attempt was made to bring the use of the technology as part of authentic tasks and not the actual targets of learning (see Tech4Learning, 2015). It was also interesting to note that in the project the students had created such tasks where the starting point was a presence of information and communication technology and not the editing of traditional tasks to utilise mobile appliances. The authentic setting of tasks and working in the authentic learning environments direct and support the utilising of information and communication technology as the enabler of the collaborative learning culture (the Samr -model, Puentedura, 2010). The students stated in the discussions concerning the evaluation of the project that the natural presence of information and communication technology as a factor which motivated the pupils. In particular, the tasks where the pupils were allowed to use creativity and act as the producers of media were motivating, even though, on the other hand, the tasks which require creativity were the most demanding in reflection to the Bloom's taxonomy (Krathwohl, 2002) and they connected the different areas of the transversal (generic) competences. This observation supports the idea of "pupil as a producer of the media" (media producing ~media consuming, Meriläinen, Valli & Piispanen, 2014) in which the pupil is seen as an active problem solver, adapter and creative producer (cf. Bloom's taxonomy, Krathwohl 2002) instead of the passive consumer of media.

Meriläinen, Piispanen and Valli (2014) state that with the diversification of information technology tools and with the increasing use of the social media, the content production of media has become a part of everyday life. Today's pupils spend leisure time among technology, operating diversely both as consumers and as producers of media. Technology is also the channel of having social influence for many children and adolescents. The content is produced together and alone and the interfaces of the production and consuming of the content cannot be totally separated from one another because the same person can be both in role of the producer and the consumer, simultaneously. In the school work the

teacher has a central task to be the constructor of the future learning and to help the pupils to learn in ways and with tools that are natural to them in the new learning environments which combine the school and the society. The pupils have to be encouraged to versatile search, handling, adapting, assessment and production of the information. (Meriläinen & Piispanen 2012.)

5. CONCLUSION

The contextual pedagogical approach to learning acted as a frame of reference on the background of the examined multi-disciplinary Dive into culture through games -learning project. The approach attempts to provide a model for how the learning contexts and pedagogics are paid attention to in the planning and implementation of the learning process. It is central in the contextual pedagogical approach that the pupils realize the objectives emerging from the assessment set for them and operate in accordance with them at their own, individual level together with the others. The operation is guided by the authentic tasks set for the pupils, the tasks which build the learning environment that makes reaching the level of good performance possible. These principles integrate well in the frame of reference of the new curriculum (2014) in which the following concepts emerge as central: phenomena of the real life and multi-disciplinary learning modules, integrated study, inclusion, individuality, learning environments, approaches and the transversal (generic) competences (Oph 2014, 20–24). The phenomenon which was studied in the Dive into culture through games -learning project was built with the help of the frame of reference of the contextual pedagogical approach to learning to epitomize these concepts of the curriculum (2014).

In the examined learning module the central factors of the contextual pedagogical project were realized in all respects. In the students' considerations, understanding the contextual pedagogical approach became a significant factor in planning a contextual pedagogical project in the first place, in which case the subject to be studied was approached through an authentic task and by utilising the pupil's world. The multidisciplinary learning module did not only connect different subjects in cross-disciplinary fashion but the transversal competence and the learning objectives were combined in authentic, meaningful task for the pupils where a real purpose – the parents' evening – created the motivation factor. In the student's thinking about the project, the importance of identifying the pupil's age level, the stage in development and the subjects of interest were particularly emphasized. This helped in planning the correct tasks and in giving precise and clear instructions. At first it was experienced as challenging that the pupils appeared restless if the instructions and stages of work were not precise and the pupils were not necessarily able to continue working independently or correspondingly and were not able to stay on task. The exact instructions and the correctly timed support (scaffolding) made individual progress possible and the division of the teacher's time especially to those who needed help.

The students who worked on the Dive into culture through games -learning project made visible the significance of careful planning in creating a multi-disciplinary learning process. A carefully drawn-up plan and the authentic learning tasks that were created for its implementation as well as the correctly timed support which directed learning, made it possible to reach the objectives that were derived from the curriculum within the frame of reference of the levels of good performance while the skills of the transversal, cross-curricular competences developed according to the plan.

6. REFERENCES

[1] Atjonen, P. 2013. Perusopetuksen opettajat oppilasarvioinnin tekijöinä. Teoksessa: P. Atjonen (toim.) Työ Arvonsa ansaitsee. Juhlakirja 113 -vuotisen kajaanilaisen opettajankoulutuksen kunniaksi. Oulun yliopisto, kasvatustieteiden tiedekunnan julkaisuja. 104-118.
[2] Bookhart, S. 2004. Assessment theory for college classrooms. http://www.gwu.edu/~fellows/GTAP/Online%20Makeup/T-L%20Presentation%20Readings/Assessment%20Theory_2004-Winter_p5.pdf
[3] Earl, L. M., & LeMahieu, P. 1997. Rethinking assessment and accountability. Teoksessa: A. Hargreaves (toim.) Rethinking educational change with heart and mind. ASCD Yearbook. Alexandria, VA: Association for Supervision and Curriculum Development. 149-168.
[4] Herrington, J., Reeves, T. C. & Oliver, R. 2010. A Guide to authentic learning. New York and London: Routledge.
[5] Krathwohl, D. (2002). A revision of Bloom's taxonomy: An overview. Theory Into Practice, 41(4), 212-218. http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf
[6] Luokanopettajien aikuiskoulutuksen opetussuunnitelma 2014-2017. Jyväskylän yliopisto, Kokkolan yliopistokeskus Chydenius, Opettajankoulutuksen julkaisuja.
[7] Marandos, S. A. & Randall, I. 2012. Engaging and Motivating Students: Five research based models/approaches for engaging students to be productive! http://asbbs.org/files/ASBBS2012V1/PDF/M/MarandosS2.pdf (luettu: 12.6.2013)
[8] Marandos, S. A. 2013. What factors determine what the ideal school should be like? What are the characteristics of effective schools? 15th Annual International Conference on Education. The Education Research Unit of ATINER. Vertaisarvioitu artikkeli konferenssijulkaisussa. Presentation 20.5.2013. Athens.

[9] Meriläinen, M. & Piispanen, M. 2012. Learning as a Phenomenon - Manuscript of Phenomenon Based Learning. Toim: L. Gómez Chova, A. López Martínez, I. Candel Torres. Edulearn12: 4th International Conference on Education and New Learning Technologies IATED. 5447–5454.
[10] Meriläinen, M. & Piispanen, M. 2013a. Phenomenon Called Learning! Atiner conference paper series no: edu2013-0598. 1-19. http://www.atiner.gr/papers/EDU2013-0598.pdf
[11] Meriläinen, M. & Piispanen, M. 2013b. Journey of exploration on the way towards authentic learning environments. Teoksessa: D. G. Sampson, J. M. Spector, D. Ifenthaler & P. Isaias (toim.) Cognition and exploratory learning in the digital age. IADIS. 159-169.
[12] Meriläinen, M., Valli, R. & Piispanen, M. 2014. Adapting iPads to Pre-service Teacher Education. The 7th International Conference of Education, Research and Innovation. Iceri 2014.
[13] Naumanen, H., Pyhältö, L-K. & Riihonen, K. 2015. Projektiharjoittelun kokonaissuunnitelma. Jyväskylän yliopisto. Kokkolan yliopistokeskus Chydenius. Luokanopettajien aikuiskoulutus. Julkaisematon.
[14] Naumanen H., Pyhältö, L-K, & Riihonen, K. 2015. Projektiharjoittelun pohdintatehtävä. Jyväskylän yliopisto. Kokkolan yliopistokeskus Chydenius. Luokanopettajien aikuiskoulutus. Julkaisematon.
[15] Opettaja 1/2015. Ops! Oppiminen uusiksi. http://www.opettaja.fi/cs/opettaja/jutut?juttuID=1408910277036 (Viitattu: 17.11.2015)
[16] Piispanen, M. 2013. Anna mun oppia ja osata! Oppimisen konteksti ja pedagogiikka uudistavan koulun avaimina. Teoksessa: P. Atjonen (toim.) Työ arvonsa ansaitsee. Oulun yliopisto, Kasvatustieteiden tiedekunnan julkaisuja. 139-154.
[17] Piispanen, M., & Meriläinen, M. 2015. Assessment as a Possibility for Individual Learning and Success in Contextual Pedagogical Learning Environment. International journal for cross-displinary subjects in education, 6 (4), 2312-2321.
[18] Puentedura, R. 2010. SAMR and TPCK: Intro to advanced practice. http://hippasus.com/resources/sweden2010/SAMR_TPCK_IntroToAdvancedPractice.pdf
[19] Rule, A. C. 2006. The components of authentic learning. Journal of Authentic Learning, 3(1), 1–10.
[20] Tech4Learning. 2015. Recipes4success. Project design. http://recipes.tech4learning.com/index.php?v=pl&page_ac=view&type=learning&catid=4
[21] Sahlberg, P. 2013 a. Uteliaisuudesta intohimoon. http://pasisahlberg.com/uteliaisuudesta-intohimoon/