The Integration of ICT into Project-Based Approach to Enhance Early Literacy[1]

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Abstract

The report presents the main theoretical basis of the concept use of Information Society Technology (IST) at project-based approach to enhance early literacy. We have aimed at identifying some practical solutions to connect the digital tools and online instruments in the pedagogical interaction towards development of communicative competence in the pre-school groups. The aims of this study were: a) to compare the function and notion loading of the speech texts of the experimental and control groups before and after applying the didactic model based on the online Project-based learning; b) to examine whatever the online PBL suggested in the eTwinning educational portal stimulates child to create different types of texts in the frame of the communicative situation. The findings of the study show that at the percentage of texts, containing the main characteristics of a good quality text such as connectivity, organization, idiomatic, terminology-rich and meaningful connections, has significantly increased. This suggests that targeting to use online project-based approach pupils start to implement technology in meaningful ways.

Keywords: Online project-based approach, interactive learning, early literacy competence, e-learning

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Introduction

In the last decade the spread of digital instruments in education has turned into a markedly dynamic process. Most nursery teachers today make use of different digital tools in their teaching practice. This happens repeatedly with situation planning and for administrative purposes, test preparation, work lists and presentations, communication with colleagues and parents on e-mail. Thus the use of ICT tools is becoming an increasingly important means of streamlining and improving pedagogical communication. However, in the area of ICT tools there is much greater potential than simply increasing the effectiveness of nursery school education. Their growing usage affords new opportunities for communication, cooperation, creation, exploration, presentation, etc. They can also act as a powerful instrument towards supporting teachers' efforts to develop 21st century modern skills from early childhood.

In times of global changes when we receive loads of digital data and images on daily basis, what is growingly considered as fundamental is the ability to find, filter, grasp, analyse and interpret the increasing flood of information. With the emergence and consolidation of the new technologies, it is only a matter of a few minutes to access necessary data which sometimes can lead to superficiality and lack of analytical skills. In this sense A. Vassiliou thesis that we 'are living a paradox: while reading and writing are more important and relevant than ever before in the context of our digitised world, our literacy skills are not keeping up' determines that being illiterate makes it hard for a person to get a job and increases the risk of poverty and social exclusion (A. Vassiliou, 2012).

With the growing usage of Web 2.0 tools in the process of nursery school education, according to C. Durrant and B. Green 'the issue of 'new', 'emergent', 'changing', and 'different' literacies has increasingly become a major agenda item for literacy educators'. There are particular challenges for literacy in this new agenda, which contest traditional concepts of print and their preoccupation with reading and writing texts (C. Durrant, B. Green, 2000: 89-108).

This study builds on recent Bulgarian work on the integration of online projects in education for early literacy and represents an example how to deal with challenges for literacy in this new agenda.

Debate on ICT Use in Early Childhood Education

We still have not reached consensus on the topic of ICT use with 4-5-year-old children. Some authors define ICT as posing a threat to children's education and development arguing that ICT use leads to lack of exercise, isolated lives, poor concentration, impaired language development, etc. (C. Cordes, E. Miller, 2000). From a psychological standpoint C. Cordes and E. Miller argued that research findings across many scientific disciplines strongly suggests that later intellectual development is rooted in rich childhood experiences that combine healthy emotional relationships, physical engagement with the real world, and the exercise of imagination in self-generated play and in the arts. Intense use of computers can distract children and adults from these essential experiences (C. Cordes, E. Miller, 2000).

Currently, other authors have been promoting the use of technology as a highly effective tool for learning (R. Bolstad, 2004; M. Hatzigianni, K. Margetts, 2012: 3-20). They point to a growing body of evidence which underlines the positive effects of ICT in early childhood. According to M. Hatzigianni and K. Margetts ICT 'presents a new space for exploration and

discovery to young children, offers challenging activities and responds to children's curiosity' (M. Hatzigianni, K. Margetts, 2012: 5). R. Bolstad indicates that ICT already has an effect on the people and environments surrounding young children's learning and, as such, that these technologies offer new opportunities to strengthen many aspects of early childhood education practice (e.g. it can stimulate creativity and play, cognitive development, social interaction, etc.) (R. Bolstad, 2004).

Despite of the research results stated above, the very application of ICT in Bulgarian language learning at nursery school doesn't automatically turn it into a new method of teaching or implementing modern learning practices. The aim of establishing ICT as an instrument helping teachers to develop the children's urge to communicate with books, requires careful consideration of the way, time and place to use them. The first step on the way to elaborating one's own ICT use is to perceive the opportunities it provides and then decide on the ways to apply them.

Such type of activity is project-based and put in practice in the Web space of educational portals. Project-Based Learning (PBL) is a form of pedagogy based on the learning-by-doing approach: pupils gain knowledge of the core curriculum applying it to solve real-world problems in an authentic context. PBL is preschoolers-focused and emphasizes multidisciplinary collaborative activities where 21st century skills can be incorporated.

However, this does not mean that preschoolers do not have experiences with ICT. J. Teuwens indicates that preschoolers often have their first encounters with the internet at home (J. Teuwens, 2011). In the Netherlands, S. McKenney and J. Voogt conclude that playing games is the computer activity young children most frequently do, both at home and at school (S. McKenney, J. Voogt, 2010: 656-664). In a study in the UK parents report that 53% of children aged zero to six uses a computer at home on a daily basis (J. Marsh, G. Brookss, J. Hughes, L. Ritchie, S. Roberts, K. Wright, 2005). As S. McKenney and J. Voogt stated: 'There is little dispute that today, children are using ICT even before they know how to read and write'. Surprisingly, there is currently not much information available on the actual use of ICT in early childhood education. Existing publications typically concentrate on the possibilities and dangers of ICT for preschoolers (R. Bolstad, 2004; D. H. Clements, J. Sarama, 2003: 7–69; C. Cordes, E. Miller, 2000; L. Plowman and C. Stephen, 2003: 149–164; I. Siraj-Blatchford, J. Siraj-Blatchford, 2005, J. Van Scoter, D. Ellis, J. Railsback, 2001; N. J. Yelland. 2005), and rarely present empirical research data. ICT usage at the nursery school has given rise to a substantial interest among research scholars such as L. Plowman and C. Stephen's study (L. Plowman, C. Stephen, 2005: 145-157), A. Campbell and J. Scotellaro (A. Campbell and J. Scotellaro, 2009: 11-18). What teachers think about the use and the place of ICT in preschools, the extent to which they already use ICT, and the factors which are related to this use, are rarely examined.

The careful analysis of the authors cited above gives us a good reason to conclude that, as early as nursery school age, children have already developed skills for using a wide variety of digital instruments and technologies in different situations. More and more children nowadays have no difficulties whatsoever when using web browsers, search engines, SMS, Skype, MP3 players and online games. Their contact with the media and modern means of communication outside the nursery school often combines different web instruments for the purpose of obtaining various type and content information. Most often these could be sounds including music, written and spoken words, pictures and animations. All these means of communication enable children to focus their attention on a majority of sources which both influence them

and also represent parts of the wide online information spectrum: the visual (graphic), the auditory (sounds), the mimic (movements), the spatial (location) and the linguistic (written texts). Given that young children are more and more engaged with digital technologies and digital practices at home the opportunities afforded by these early digital experiences need to be further explored and accommodated within the classroom curriculum. In contrast to lots of previous generations whose information texts were either read or written on paper, the 21st century children have access to a variety of digital information channels. The importance to strike a balance between the language knowledge, reading and writing long before starting school is connected with children's involvement in activity formats of online PBL as a means of studying while exploring and creating products which allow them to solve problems by taking their own decisions. What follows from this is the conclusion that the ICT skills children have should be considered as an opportunity to use digital instruments in the process of the pedagogical interaction.

The use (in the stage of literacy preparation) of interdisciplinary approach with integrated ICT instruments in it, which are topical in the social educational platforms, has its advantages. They can be found on the three priority levels of using information and communication technologies in Bulgarian education:

1. National level – Strategy of ICT usage in Bulgarian education.

2. Regional level – (within the European Union) – e-plan for action.

3. Global level – Strategic UNESCO document: Programme for the ICT usage in education.

The following theses concerning early literacy stimulation through the use of digital instruments are considered basic and claim that:

• Early literacy development is connected with a process of constant intellectual growth which starts in the early years of life.

• Early literacy is formed in real life situations by means of positive interactions with materials and resources (connected with literacy as a complex phenomenon) and as a result of communication with people around.

• Speech and, on a later stage, reading and writing, are developed simultaneously and are closely connected.

The summary of some of the main priorities in pre-school education on national, European and world levels (integration of information and communication instruments, change of teaching-learning paradigm, etc.) substantiates the goals pursued by using the chosen method, namely: to integrate projects developed in an online educational platform in the process of Bulgarian language and literature teaching at nursery school thus promoting the development of language and literature competencies and ensuring their turning into sound knowledge during next educational levels.

As a result of the analysis of cited literary sources, the following conclusions should be made:

• On the problems of the main point and contents of ICT instruments usage at nursery school there exist different conceptual ideas and views.

• The ambiguity of conclusions in the cited research works determines the up-to-date character of the present study.

• Basing our argument on the study of speech development in its ontogenetic aspect, it is necessary to give an account on the interconnection between project work and improvement of the communicative speech function.

• The speech at the age under consideration- 4-5 years appears to be a mechanism for information designation which facilitates the transition from acting with materials and objects to acting on their designating sign- the word.

• Children are dependent on their perceptive experience due to their visual-figurative way of thinking. In this sense online PBL is up to the requirements of being a basis and medium for speech origination and improvement.

The up-to-date character and importance of the problem of online based projects' influence on the early literacy development with 4-5 year-old children related to gaining knowledge of language as a means of communication, i.e. as unity of language and speech, is predetermined by:

First, the necessity for an adequate, in view of its communicative purpose, speech's development of children at the age under consideration.

Second, the unexplored opportunities of online project-based teaching for exerting influence on speech development in view of improving its communicative purpose.

The stated reasons are united from the idea of integration of these activities in order to search for opportunities to influence the online-based teaching in two directions- except the one which is innate, specific (meaning acquiring and development of practical and digital skills), also the influence on speech development as a premise for increasing the level of literacy and the development of key predictive skills and abilities as: Comprehension, Phonological Awareness, Alphabetic Principle, Concepts about Print. Hence, the overall goal of this explorative study is to get a clearer picture of ICT use in early childhood literacy education.

Methods

Participants

One hundred and thirty two children took part in the study. There were: Seventy eight 4-year old and fifty four 5-year old children. All of them were attended at the kindergarten 'Yunsko Vastanie', a basic practical center to the Pedagogical College in Pleven, Bulgaria. The kindergarten is an institution with local, regional and national importance of a major center for the practical training of students and professional bachelors of Pedagogical College Pleven, a structural unit to Veliko Tarnovo University 'St. St. Cyril and St. Methodius'.

In the light of modern research and methodological ideas, the aim of the present study is clearly outlined: to explore the opportunities of online PBL, to trace out the possibilities of its use as extralinguistic environment for early literacy development.

In doing the research we stick to the following *hypothesis*: If the elaborated didactical model is used for putting into practice of online project-based activity as an extra-linguistic environment, then the created different types of texts have in a greater degree the features of the high quality text, adequate to the provoked communication situation.

The object of research is speech development with 4-5 year-old under the conditions of online PBL suggested in the eTwinning educational portal.

The subject of research are the contents and organisation of the educational process aimed at forming communicative skills with 4-5 year-olds for creating different types of texts under the influence of online PBL.

According to the formulated hypothesis and goal, the research is expected to find solution to the following tasks:

• To study the pedagogical, methodological and psychological literature and to determine which problems are investigated and experimented.

• To study the level of intellectual development of 4-5 year-old children as a starting point in view of the next pedagogical impacts.

• To work out an experimental version integrating online PBL within early literacy development activities.

• To examine the effectiveness of the teaching model under investigation which uses PBL as extralinguistic environment for creating different types of texts.

• To analyse the results from the teaching experiment and to make conclusions on the effectiveness of the experimental version of teaching.

Methods of research

• Theoretical analysis of pedagogical, methodological and psychological literature.

• Online PBL analysis.

• Didactic experiment.

• Mathematical-statistic methods.

The elaborated educational tools include:

• Tasks for matching letters with pictures of things and objects starting with the same sound as the one studied without any advance online PBL.

• Tasks for creations of texts with different communicative aim without advance online PBL.

• Experimental teaching version- tasks for materializing a previously set topic by using online PBL; tasks for matching letters with pictures of things and objects starting with the same sound as the one studied after project work; tasks for text producing after PBL accomplishment.

A system of criteria and their respective indices to render an account of experiment results.

I criteria - Internal organization of speech products

• Indices: Functional-semantic load:

• Number of descriptive-fragmentary speech products;

• Number of fragmentary-narrative speech products;

• Number of descriptive speech products;

• Number of narrative speech products.

Type of connection between text constructing sentences:

• Narrative texts:

• Linear;

• Mixed.

• Descriptive texts:

• Linear;

• Mixed.

II criteria – Composition of speech products

Indices: Structural text parts

III criteria – Lexical level of speech products

Indices: Presence of lexical components related to different text types.

The Methodology

In view of the problems considered in the article, the findings related to the first criteria research will be presented: Internal organization of speech products and indices: Functional-semantic load; Type of connection between text structuring sentences.

Procedure

Methodological version of training aimed at the development of key predictive skills and abilities of early literacy uses as a base an extra-linguistic environment of project activities. The model involves four levels:

1. Exploring: Children apply their knowledge in practical terms with 3D materials.

2. Guide for research: Creating a new product near relevant problem situations (resolvable through project activities).

3. Inventions: Children apply what they have learned in solving problems in a context of constructing or making their own idea of project theme (transfer between practical activities to oral activity).

4. Practicing: Mastering of specific capabilities about used materials and activities and each child orally explains the personal ideas in the frame of the communicative situation. (Scheme 1).

Results

The presented results are related to the Ist criteria: Internal organization of speech products and indices: Functional-semantic load and Type of connection between text constructing sentences.

Table 1 presents the data related to functional-semantic load of text, obtained by research of the experimental and control groups:

Table 1. Comparative analysis of function and notion loading of the text[1]

Function and notion loading	4 y. Ig in.	4 y. Ig out.	5 y. Ig in.	5y. Ig out	4 y. Ung out.	5 y. Ung out.
Number of **descriptive-fragmentary** speech products	34,6%	16,6%	15,8%	10,2%	19,9%	14,9%
Number of **descriptive-narrative** speech products	24,3%	19,9%	18,2%	9,4%	18,7%	17,2%
Number of **descriptive** speech products	22,8%	29,2%	28.7%	38,6%	27,7%	29,6%
Number of **narrative** speech products	18,3%	34,3%	32,8%	42,6%	32,2%	36,3%

From Table 1 it becomes clear that the number of the descriptive and fragmentary speech products in the experimental group of the 4-year-old children decreases from 34,6% to 16,6%. In the experimental group of the 5-year-old children, regarding the same indicator, there is a change from 15,8% to 10,2%. The results show a considerable increase of the

Scheme 1

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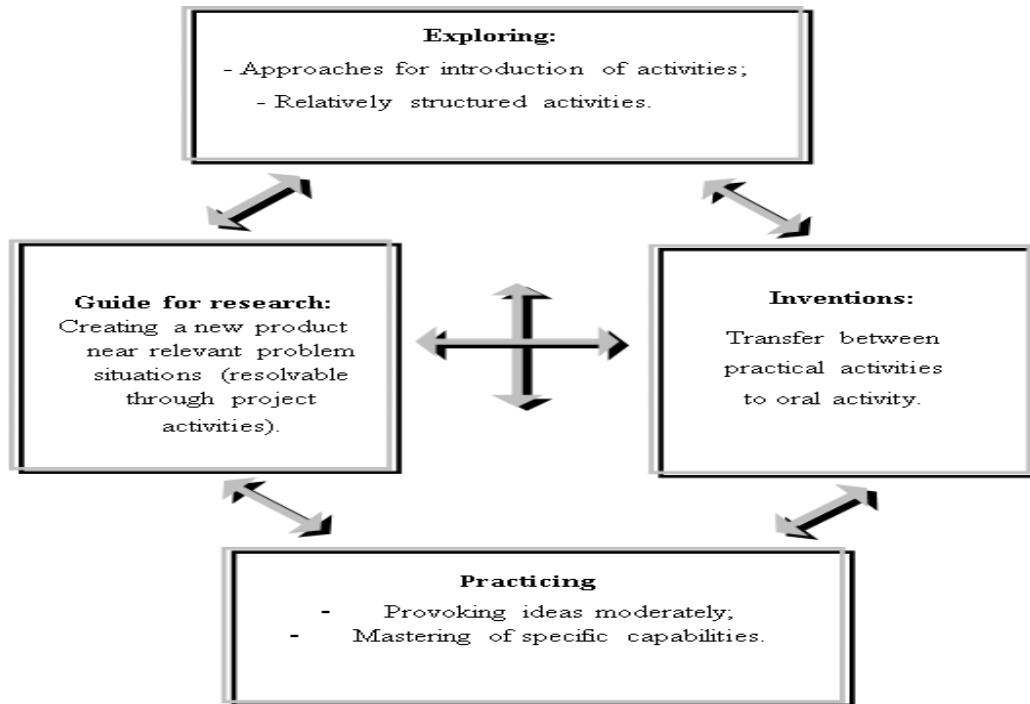
[1] Note. Key to abbreviations:
Ig in. – Instructed group incoming level
Ig out. – Instructed group outgoing level
Ung out. – Uninstructed group outgoing level

percentage of the texts 'description' and 'narration', in which there are the main features of the high quality text. The relevant linear relation of sentences respects the sequence, determined by the communication interaction during the project activity concerning the 3D materials. In the experimental group there is a considerable decrease of the number of the descriptive and the fragmentary speech products.

In the control group of the 4-year-old children there is a decrease at 19,90% in condition of equal baseline levels. The change in the control group of the 5-year-old children is insignificant. There is just a slight decrease of the number of the descriptive and the fragmentary speech products, as from 15,8%, the result at the end of the year is 14,9% in condition of equal baseline levels. The summarized experimental data by the end of the teaching experiment show a considerable increase of percentage of texts (descriptive, narrative text types) which have the main features of a quality text (exposition, statement, summary). The results of the diagnostics in the input criteria before, during and after the learning experiment are graphically represented in Diagram 1 and Diagram 2.
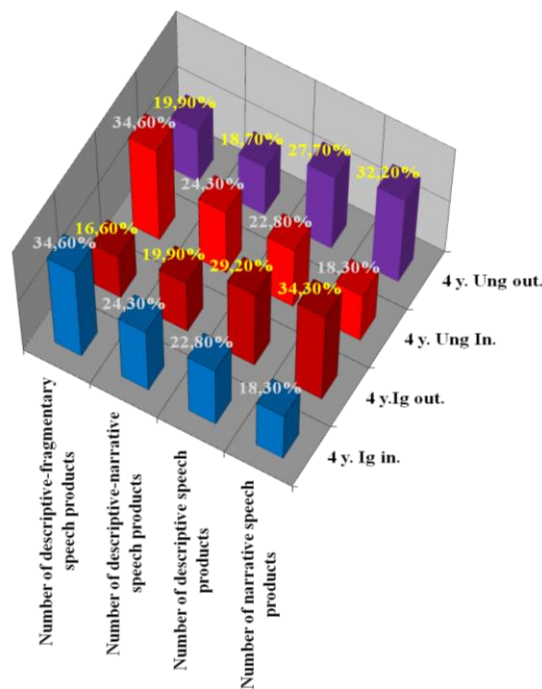

Diagram 1. Comparative analysis of function and notion loading of the texts of 4-year old children (Ig in.; Ig out.; Ung out.)
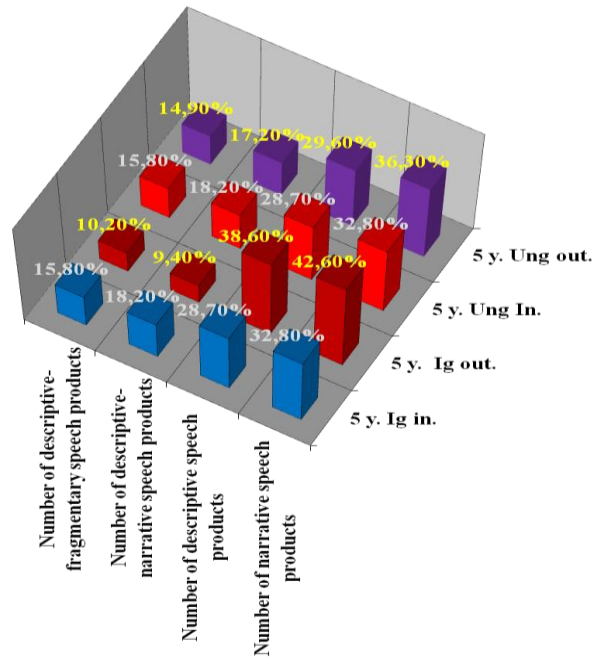
Diagram 2. Comparative analysis of function and notion loading of the texts of 5-year old children (Ig in.; Ig out.; Ung out.)

Diagram 1 presents the distribution of coherence feature (as an ability to make internal logical connections) by groups for incoming and outgoing levels during the teaching experiment and during the second experiment. Diagram 2 presents function and notion loading of the texts of 4-year old children.

The products of speech activity which are being examined show presence of their own summarized construction plan (individual style, interwining personal social experience and project work influence). This summarized construction plan can be found in the global, hierarchical order of the texts. Single sentences are consistent and logically connected. The common subject of project and speech activities creates the logical connectivity of the texts. Realized by means of the combination of formal signs and subordinate to strictly defined rules, the constructed texts reflect the subject activity and are strongly correlated with the given denote (object), which fills them up with a particular meaning.

The completed observation of the means towards achieving connectivity (conjunctions, pronouns etc.) characterise the examined speech products for their connectivity indicator but also correlate with the grammar indicator.

In view of the type of connection between the separate text constructing units of the products of children's creativity there can be recognized unities (texts) on a level above the one of a sentence with chain and parallel connection, or the combination of both which is often the case. This conclusion is confirmed by empirical data presented in a summarised way by means of the data in Table 2.

Table 2. Correlation between types of connection of separate text-constructing units

Type of connection between the text-constructing sentences	4 y. Ig in.	4 y. Ig out.	5 y. Ig in.	5y. Ig out.	4 y. Ung out.	5y. Ung out.
Narrative						
- Lineal	22,4%	34,2%	33,8%	32,6%	25,8%	26,5%
- Mixed	77,6%	65,8%	63,2%	67,4%	68,2%	73,5%
Description						
- Lineal	24,5%	39,7%	38,6%	38,3%	27,4%	30,4%
- Mixed	75,5%	60,3%	58,8%	61,7%	68,2%	70,6%

The presented in Table 2 differences in reference to the type of relation between the sentences in the texts show an increase in the number of linear relations from 22,4% to 34,2% in the experimental group of the 4-year-old children. The results of the research of the mixed type relations marks a tendency of decreasing the number: from 77,6% at the beginning of the experiment to 65,8% at the end of it. In the experimental group of the 5-year-old children the differences are not so significant. In the control group of the 4-year-old children there is a decrease of 0,7% of the number of linear relations in condition of equal baseline levels. The change in the control group of the 5-year-old children is insignificant also. There is a decrease in the number of the mixed relations within 2,4%.

The results in respect to the type relations between the different units constructing the text into the speech products of children before and after the project activity, give grounds for the conclusion that in the verbal unities of descriptive and narrative character there is a prevalence of the chain relations. Graphically the data is visualized in Diagram 3 and Diagram 4.
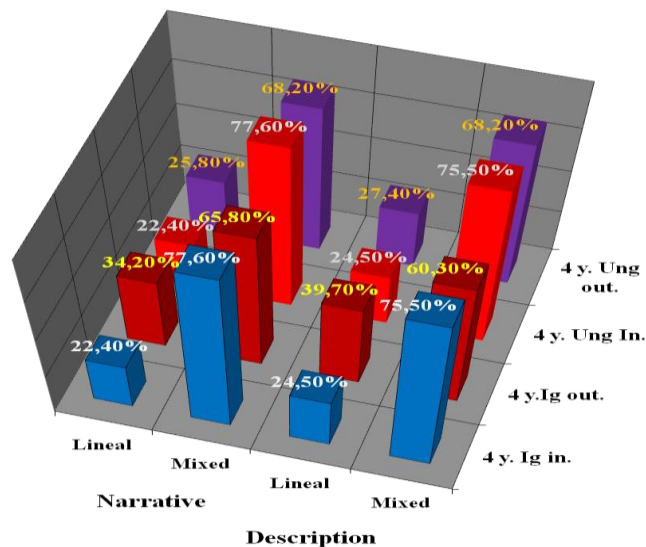

Diagram 3. Correlation between types of connection of separate text-constructing units of 4-year old children (Ig in.; Ig out.; Ung out.)
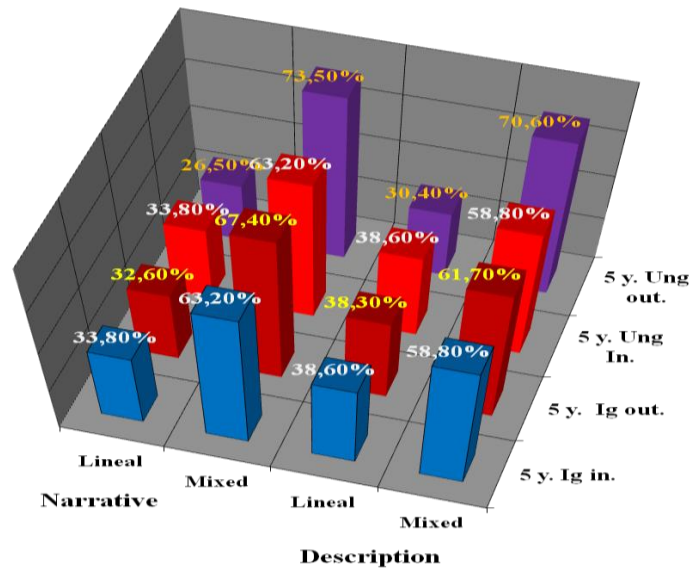
Diagram 4. Correlation between types of connection of separate text-constructing units of 5-year old children (Ig in.; Ig out.; Ung out.)

Observation over the type of connection between text constructing units show that within the text unities of descriptive and narrative character there predominate the chain connections. Each subsequent sentence evolves from the previous one and the topic is consistently elaborated.While the texts lacking the preliminary support of practical activity are deficient in consistency of topic elaboration, those created after some project activity show chain topic development. That conclusion is confirmed by the empirical data represented in Table 2.

Discussion

The present study examined the current context of ICT tools usage in pre-school age with a focus on early literacy. The theoretical analysis showed that resent years the exponential spread of ICT changed the educational paradigm 'teaching-learning' in a way that studying is no longer solely connected with its formal aspect. That has given to T. Valova good reason to conclude that 'literacy is considered necessary in every aspect of life – while playing, learning or working whether these happen in an office, on a construction site, outdoor or in a classroom'. In this way the quality of the educational process and the learning motivation is increased while at the same time the children at the age under observation extend their knowledge even further. The author also implies that working out projects in an online educational platform puts into effect a new way of pedagogical communication. It encourages the early interest in alphabet and books and stimulates the development of early literacy and digital skills (T. Valova, 2013: 669 – 683).

It is important to notice that there are different standpoints related with integration of ICT tools into the process of early literacy. Referring to H. Janice, C. Osborn, S. Sánchez, and E. Thorp's thesis that 'early literacy is what children know about communication, language, verbal and non-verbal, reading and writing before they can actually read and write' (H. Janice,

C. Osborn, S. Sánchez, E. Thorp, 2007), we are to conclude that 'in the age of digital society when loads of digital information and images sweep over young people on a daily basis, children's ability to filter out, make sense of, analyse and interpret the growing flood of information, to differentiate facts from their attitude to them and have well-developed skills for logical thinking, are considered even more important' (T. Valova, 2013). In this point of view we should mention that early or emergent literacy refers to what children know about communication, language (verbal and nonverbal), reading and writing before they can actually read and write. It encompasses all the experiences children have had with conversation, stories (oral and written), books and print (R. Parlakian, 2003).

The research work of L. Plowman and C. Stephen reviews the international research evidence on the ways in which information and communication technologies (ICT) are used in both formal and informal pre-school settings. The review addresses the debate over the value and desirability of young children using computers and computational toys; the relationship of these technologies to a media environment which encompasses television, video, books and magazines; the literacy involved in using these media; and interface design and interactivity (L. Plowman, C. Stephen, 2003: 149–164).

There is considerable evidence that young children (aged from 0 to 6) are immersed in e digital world from their birth. For example, surveys conducted in the U.K. revealed that young children were active users of digital technologies engaging in a range of multimodal experiences (J. Marsh, 2005). However, recent research has highlighted a dissonance between technology usage at home and at school and indeed a general under-utilisation of digital technologies in early years classrooms (C. Aubrey, S. Dahl, 2008). The findings of C. Lankshear and M. Knobel are very similar (C. Lankshear, M. Knobel, 2010). C. Burnett considers that 'there is a need for more extensive exploratory research in this field, which considers how digital practices within educational settings relate to other dimensions of children's literacy learning, in order to better understand how new technologies are and could be contributing to children's literacy within educational settings' (C. Burnett, 2010: 247-270).

For the purposes of the study the extra linguistic environment is the online Project-based learning. It provides an ideal pedagogical approach for implementing learning activities that are cross-curricular and pupil-centered. It uses projects to facilitate pupil-inquiry and group learning about a complex issue or problem with the teacher acting as a facilitator. In the context of online PBL, pupils are expected to use technology in meaningful ways to help them investigate, collaborate, analyze, synthesize and present their learning. While a plethora of technology tools can be used to support PBL, such as for example course management and learning management software(e.g. Interactive Whiteboard), web page authoring software (e/g/ Dreamweaver), multimedia software (e.g. Authorware), and instant messengers for synchronous communication (e.g. MSN Instant Messenger). There are several reasons why PBL might be an effective pedagogical approach for students with special needs. These reasons relate to three characteristics of PBL: it is experiential, involves cooperative learning, and occurs within a meaningful authentic context. All those characteristics are related with Cross-curricular approach. This learning uses knowledge from different disciplines or subject matters to explore an issue or solve a problem that is relevant to students' real life. It is learning that seeks to develop awareness and understanding of the connection and differences among subject-matter areas and disciplines in terms of the content they include as well as their particular ways of working and thinking. Proponents of cross-curricular learning argue that integrated curricula may help to prepare students for the challenging and multifaceted

work environment of 21st century and may facilitate the development of problem solving and critical thinking skills. Digital technologies can supplement the development of fine motor skills for handwriting. In this way teachers designing cross subject learning activities that are the bases for developing 21st century skills in classroom. It traces the modern approach towards learning: teach a person, not a subject; teach and learn how to learn, do things themselves and learn together because it doesn't matter as many children know, but what can they do.

In order to support these skills through online PBL it must be said that when children are at home they accidentally find games and exercises in the Internet which are chaotically and non-intentionally selected by their parents or other adults. In the kindergarten these products and instruments are purposefully and intentionally selected by the teacher in order the educational content and the State educational requirements to be supported. Being integrated into the pedagogical interaction, the digital instruments which are the interactive whiteboards, the use of tablets, multimedia and resources from the Internet (for example: http://prowise.com/en/presenter/; http://colarapp.com/; http://www.socrative.com/, etc.) give opportunities for stimulation of the interest of children to perform on their own different play activities in which they develop skills leading towards the literacy. The use of digital instruments leads to the performance of intellectual activities – words composition, examination of the letters sequence in a definite word, change of the words meaning through changing the position of the letters. On the interactive whiteboard children have the possibility to play with letters, to compose words, to make an analysis of the sounds and the syllables, to operate and model words by themselves, to change the position of letters until the composition of a new word, to model sentences thanks to the application for displacing of objects. They also invent stories inspired from the numerous pictures included into the 'library' of the interactive whiteboard. In that way children become active participants into the process of 'live' education, the new information is perceived visually, thus it is memorized and learnt in a better way. The video information is an effective educational resource due to the fact that it interacts simultaneously onto the different perceptions of child. The use of colour, graphics, sound and video give the chance for a simulation of different situations and ambiance from the surrounding world. All this the children put into their practice. She/he does not understand that makes an analysis, synthesis, but it makes it using these instruments. These processes gives to the child the opportunity to acquire those individual skills which represent a difficulty for her/him, separately from the others, practicing it and improving as necessary. In that way children can go fast through the new skills in order to reach others which they manage better. The work with the interactive whiteboard is used in situations for introducing new knowledge as well as for its consolidation. Thus the digital instruments and their functions transform into a kind of language. The particular elements of it are similar to the words and the ways of work with them are similar to the syntax. The child can create modules with pictures, sound, words, which on their side can become part of bigger, overall structure, which to resemble a tale or a story. Thus the whiteboard transforms into a sheet of paper or a pencil, but the activity which it proposes is more entertaining because it encourages the social interaction between the participants using it. Their personal qualities are in course of development because they are put into a new environment of interaction. Namely the communication is of significant importance for the improvement of the attention, the social communication and cooperation.

The interdisciplinary approach used in online project work holds out opportunities for building a flexible educational environment powered by children's needs, interests and ambitions. The successful project which integrates different cultural and educational fields can be compared to a similarly successful classroom situation for it also aims at achieving educational, instructive and skill-promoting goals. An important condition is providing topics and ideas transference. This means that project topics should not be an end in itself but similar to those in the curriculum, integrated in the educational process. In this way there is no risk of taking up the teacher's limited classroom time. What is more project work extends knowledge, skills and competences that are necessary according to State educational requirements and even adds to the obligatory standard.

Dedicated to the aim of acquiring knowledge of language and its figurativeness, a well-planned project motivates and provokes children to communicate and make sense of basic concepts and principles by integrating knowledge, skills and competences from different educational activities. In terms of didactics this could be defined as interdisciplinary integration. Building up graphic skills while illustrating the topic is an argument in maintenance of that thesis. These skills are later applicable when tracing and then writing elements of alphabet letters as well as numbers in mathematics classes at the primary school. Project work also affords opportunities for integration within a school subject by stimulating interest in perceiving and interpreting artistic masterpieces through connecting literature teaching with that aimed at developing knowledge and skills in the 'Vocabulary development' educational nucleus.

Interdisciplinary integration can be found in the transfer of skills for stating one's own position (merely as an act of communication) and its involvement in the process of communication not only as a way to exert influence but also as a speech object open to the influence of the environment. Children study literary characters in a different context and then take on different communicative roles during dramatization games. Consequently the project turns into a factor conducive to building up and specifying the contents of skills, considered necessary when children take in a specific work of art. Parallel to that goes the process of solving communicative tasks connected with: being able to communicate by means of the speech etiquette, information exchange, expressing the emotional attitude of the speech product creator and critical assessment and self-assessment of the produced texts contents. When being assigned the task to draw characters and story with the purpose of collecting them in a book, that acts as a stimulus for children to do the usual fine arts activity with increased willingness and creative test.

Another idea for making sense of the children's drawings and their purpose – they can be used as a part of 3D space situating. Making set-scene for the dramatizations and theatrical games includes activities from different educational directions – 'Technical-constructive and daily activities' and 'Game culture'. Participating in the didactic games gives the children an opportunity to assimilate their knowledge about objects, their use, colours, and quantities. All these activities stimulate and support different skills development and are aimed at accomplishing the project plan and realizing the final product – creating an illustrated book of fairy tales with texts from teachers, parents and students. Some instruments used for making e-books can be applied for visualization: www.calameo.com, http://myebook, http://issuu.com. What is more the book can be published and each child can receive the final joint product.

The analysis of the indicated research work gives us enough reason to conclude that project-based activities can be successfully integrated with Web 2.0 tools and digital instruments in the process of Bulgarian language and Literature teaching at nursery school aimed at developing early literacy. As a result both activities (speech and digital) are considered as the two parts of the same process. In this way together with the existing teaching model which uses traditional means- blackboards, pencils, textbooks etc., other elements of e-teaching are also used.

Conclusions

A) The results from the research and their analysis show that in the observed products of the speech activity of children there is a presence of personal generalized construction plan (i.e. – individual style in which are mixed the personal social experience and the influence of the pedagogical interference during the project activity). The global hierarchical order of texts is reflected in this generalized construction plan.

B) Realized through the combination of formal signs and respecting strict rules, the speech products reflect the models which have been created and are strongly related to the specific object (denotat) which gives them a concrete meaning.

C) The general theme of the project activities creates the theme-rheme structure, the semantic character and the global content relatedness of the produced texts. A mark of progress is the use of means as pronominal initiation and synonymization**,** which are typical for the mark of relatedness.

D) The conducted research proves the hypothesis: If the elaborated didactical model is used for putting into practice of online project-based activity as an extra-linguistic environment, then the created different types of texts have in a greater degree the features of the high quality text, adequate to the provoked communication situation.

Future recommendations

The study of Functional-semantic load index during the teaching experiment is expected to examine and isolate those elements of pedagogical impact which could be useful as far as correction activity is concerned. That could improve teachers' work without disturbing the common logics and didactic potential of educative units.

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