Digital technologies in education of preschool children – preparing for future

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Abstract – This contribution presents research findings about possibilities of using digital technologies in education in pre-primary level in Slovakia. Many discussions are devoted to the impact of digital technologies on the quality of pre-primary education, but also to the use of these technologies in kindergartens. The implementation of digital technologies and electronic digital aids in pre-primary education is one of the alternatives to developing complex literacy for preschool children. Observation aided research brings research findings that primarily support the promotion of the learning process of pre-school children manifested by increased internal motivation and self-reliance in the learning process. Research findings create the basis of the subsequent research direction oriented to the learning outcomes of children during the period of several years.

Keywords – child; digital competences; digital technologies; pre-primary education; teacher

I. INTRODUCTION

The digital technology is an umbrella notion for all kinds of communication devices. Development in this area does not stop over time but expands and it brings new quality for many parts of society. In practice, it means preparing new digital content that requires continuous learning. Society is becoming a huge learning community. Digital world connectivity is created, and the new competences acquired allow for quick access to ideas and experiences from a wide range of people, communities and cultures. Our planet becomes increasingly “smaller” as nations in our post-modern era, are under the influence of digital technologies. We can see many convergent tendencies in our culture and states around the world. A cosmopolitan meaning is formed in the society, education and culture.

We can understand digital technologies in the context of education as a set of means, tools, environments and practices that are used for teaching and learning, communication, collaboration, presentation, creation and other factors, which make influence for the comprehensive development of a child in the learning process. We have seen great progress in the development of digital technologies in the last years of the 20th century and the beginning of the 21st century. The tools for recording, processing, transmitting and reproducing data have been improved to a level, which we had never known years ago. We can speak today about the time of digitization, if we observe the development of society.

Digital technology is an important and essential part of the learning process around the world. This process is characterized by the fact that the child learns globally and acquires new experiences, knowledge, values and attitudes every day through digital technologies that help in his / her personal development. For this reason, we include among important competences also digital and information competencies that need to be developed in pre-primary education. Their continuation is developed in further education.

The child meets itself very early in the nowadays globalised society with development and using of digital technologies (in the surrounding of his / her family). Partially, digital technology has place also in the teaching process in schools. For this reason, we connect digital technologies with development of digital literacy of children.

A. Developing competences by subjects in the teaching and learning process through digital technologies

The competences of the child are conglomerates, which are content-related to the whole teaching process. They express the current state of competence in the every stage of the solving of the various learning situations of children. They are based on the child’s individual potential and level of its current development. The competencies of the child are compact units that express how the child can handle the process, content, goals and other learning situations in the reality. These components are connected with the teaching in relation to the specific school context and knowledge of current sciences. We can observe these competences in various complexity, because there exist competences in the form of metacompetencies as well as microcompetencies.
According to [9] competences form clusters and according to actual use, some competencies can be integrated under other competencies. They regroup according to current problem solving and also, they dynamically change and develop (are constructed and reconstructed according to the dissemination of the child's thinking in the context of his/her activity) and often they are intertwined in cognitive part of the competence (one part of the cognitive structure of one competence overlaps with the cognitive structure of another / other competence).

Acquisition and improvement of competences is considered as a lifelong learning process of the human. This process is realized not only in the family, cultural and social life of some human, but also in school. The main goals nowadays include identifying and defining new transferable competencies, how and whether these competences can be better integrated into curricula, how they can be maintained and learned throughout the whole life of some human.

According to [4] we can generally understand digital literacy as a set of competences of knowledge by subjects. These subjects transfer their knowledge to appropriate, safe and productive use of digital technologies for teaching and learning. It is a set of capabilities related:

- to the use of digital resources for own needs, knowledge, presentation and comprehensive development;
- to effective solution of problem situations in the digital environment; decision making and use of appropriate digital technologies for information acquisition, processing, usage and presentation;
- to critical assessment and analysis of knowledge obtained through digital resources;
- to understanding the socio-cultural implications (security, privacy and ethics), which are caused by the use of digital technologies in the digital world.

Digital competence involves the confident and critical use of information society technologies (tools, etc.) for various purposes. This competence is based on basic capabilities for the use of digital technologies. The usage of a computer for the acquisition, evaluation and assessment, storage, creation, presentation and transfer of information is an important part of this competence. We can add here the capability of mutual communicative exchange and participation in collaborative (and social) networks via the Internet. The basic knowledge, competences, values and attitudes related to this competence are as follows: digital competence requires an appropriate understanding of the nature, roles and opportunities of using technologies in the information society; in everyday contexts, in personal and social life, as well as in various professional activities. The mentioned aspects include major computer applications such as word and spreadsheets, databases, information storage and management, and an understanding of the opportunities and potential risks associated with the Internet and electronic media communications (e-mail, network tools, social networks) in the professional life, leisure, information sharing or networking, education and research.

Individuals should also understand how information society (IS) technologies can promote creativity and innovation and be aware of issues related to the validity and reliability of the available information, as well as the legal and ethical principles of interactive usage of these technologies. The necessary competencies include the ability to search, to group and to process information; to exploit them in a critical and systematic way; to evaluate and to assess relevance; whether to distinguish between reality and the virtual world; as well as recognize links.

Individuals should be able to use IS tools to create, present and understand complex information and to access, to search and to use internet-based services. Individuals should also be able to use digital technologies (in today's IS) to support their own critical thinking, creativity and innovation. The usage of digital technologies requires a critical and reflective attitude towards available information and responsible and safe use of interactive media. This competence is also developed by interest in participating in (socially shared) communities and internet / intranet networks used for cultural, social and / or professional purposes.

We can understand according to [11], [14] digital competence as a two-stage competence. We speak at the first (basic) level about capabilities, which (together with their attitudes, values and knowledge) enable an individual to use digital technologies to acquire, to concentrate, to sort, to select, to evaluate, to store, to create, to protect and to exchange information, to communicate and to participate at the usage of the Internet. The second stage is characterized by the independent, confident and critical use of digital technologies (including Internet services), digital content and digital media. This level is characterized by critical (rational) thinking in the use of digital technologies in a higher level and in the identically developed level of the communication competence.

A competent teacher is a necessary factor for the effective teaching. A 21st century teacher, in the context of the usage of digital technologies, must be competent:

- to create and to edit digital sound;
- to exploit, socially back up and to share resources with / among children; to use blogs and wikis for creating of some online learning platforms focused on their learning subjects;
- to use digital images for use in a learning group; to use audio-visual and video content together with children; to use computer graphics to visually stimulate children;
- to connect with colleagues via social networks to ensure your own professional growth; to create and to provide presentations and training; to create an e-portfolio for his / her own and learning subject development;
- to have knowledge of online safety and security; to be able to detect plagiarism in their children's
products; to create videos, images, and video tutorials; to select web content suitable for teaching and learning process in a learning / playing group;

- to provide children with the skills needed for the usage of necessary tools such as a “Task Manager”.

Such teacher should have the possibility to organize and to plan optimal teaching; to know to select software options. Software can be used for example, for creating a real-time questionnaire for the learning group.

Such teacher understands issues related to copyright and fair use of materials. He / she is able to use computer and console games for educational purposes;

- to use digital technologies to create evaluation tools; to use collaborative tools for designing and editing / changing texts;
- to search and to rate web content; to use mobile devices (e.g. tablets, etc.);
- to identify safe online educational resources for children; to use digital technologies for making adequate and rational use of time;
- to know and to discuss the usage of YouTube and its potential in the learning group;
- to know the notation tools and to share content with his children in learning / playing group.

It is important to give / to share digital technology websites and resources after discussion in the learning group;

- to make usage of graphic, online and press organizers; to use online notebooks to get interesting ideas;
- to use the tools for creating and sharing tutorials and image recordings for movie recording;
- to use online tools in the learning group for reporting; to search effectively using the Internet in the shortest possible time; to carry out research via using digital technologies;
- to make usage of tools for sharing files and documents with children.

It is possible according to [8] to expand these competences for following activities:

- to know, to teach and to learn through the usage of plans and tables;
- to know and to teach research methods through digital technologies together with information management competencies;
- to know and to use digital image editing technologies;
- to reflect and to teach children the practical, critical and ethical use of network applications;
- to understand and to manage virtual classrooms; to use digital forums with children;

- to create, to compile and to publish digital books.

Digital technologies in education are a tool for obtaining information in connection with digital communication-based technologies, and their integration into education provides information resources, opinions, possible concerns. They allow to share learning experience of children through digital technologies, to learn from others, but especially to learn together with others (concept of collaborative learning); to interact with others for enriching each other.

II. QUALITATIVE RESEARCH

A. Action research

Action research in education according to [13] is one of the arts of scientific research in which teachers systematically examine their own didactic practice in order to improve it. It is usually carried out by teachers (often in collaboration with researchers) in the frame of their teaching practice, which is a part of their teaching process. Action research responds to the actual needs of didactic practice (sometimes only partial, which the researcher does not consider because he / she considers them less relevant). This research proposes solutions, which are validated directly in the learning process and in the case of effective result, the solutions are transferred to the learning process. Action research should be a part of the process of teaching of each teacher, who wants to fulfill the quality system of his / her teaching – developing of his / her teaching competencies.

The realization of the action research is in connection with the following statement according to [6]: „If it must to come to a conceptual change in the work of teacher, then it is necessary to intervene deep layers of the teacher's professional structure. The teacher can understand in this case: the existence of his / her own concept (content, structure, boundaries, etc.); the need and nature of the expected changes; ways of change - real activities, which enrich or partially reconstruct elements of the original individual concept”.

We speak here according to [12] about the teachers, who will at the end change themselves, so that they can understand the current school system. If teachers participate in action research, they will understand the teaching process itself. What they (will) learn, will have a big impact to the learning process in the children's learning groups and in schools. At the same time, the development of teachers' professional development is the preparation of curriculum / themes / contents (focusing on the competence profile) by teachers and improving the initiative of schools. The goal of pedagogical research is to develop attentive reflection in order to support teachers' professional success.

It is possible to say according to [3] that: “School institutions are not only places where culture and ideology "are reproducing", but also where they are produced. The researcher should explicate the theoretical framework of his / her professional activity. He / she should clearly define which effects are acting on him / her, which phenomena he / she will study, which limits are possible
to apply to paradigms, and which theories frame his / her professional activity.”

It should not be forgotten that pedagogical research, as an applied research, is conditional on the priority objective to help via reflection and criticism to improve the quality of the teaching process. Action research is according to [5] “targeted research conducted by a group of researchers (teachers) under the conditions of the teaching process.”

This research according to [2] is characterized by spiral cycles of problem identification, systematic data collection, reflection, analysis, procedures which are managed on the basis of acquired data and redefinition. The goal of action research, as a part of the teacher's work, is to obtain practical results that can be used immediately in a didactic situation, while not excluding their contribution to the development of broader generalizations, or – as a higher degree – to the development of concepts and scientific theories. Research findings are disseminated as a rule by exchange between teachers within professional associations at school, lifelong learning education institutions and through higher education institutions. The methodology of the action research process is represented in a cyclic form, in a spiral or in a circle.

The decision for this type of research came from the knowledge that the phenomena under investigation are according to the angle of view of some human, which has influence on the choice of methodology and it affects the overall nature of the investigation. Subjects of our study were teachers of pre-primary education and we had the interest to know their opinions on the subject of study, which is also closely connected to other subjects of the teaching process (children). We preferred to identify opinions, beliefs, ideas, etc. that are of a human nature.

The phenomena examined in our research speak about a big variety of different phenomena. In order to understand the spectrum of the phenomenon of the child's independent action, it is necessary to give possibility, that the phenomenon will be conceptualized by the teacher. It is also important to note that the subjects of the qualitative research are researched in a natural environment, which gives both research participants the opportunity for cooperation. The essence of qualitative research is the collection of qualitative data in the form of words, images, which provide a detailed description of the phenomenon (situation) and they lead to the creation of a new theory. Qualitative research according to [15] gives possibility to find “the quality of certain educational activities, relationships and situations and their holistic (overall, complete) picture.”

B. Research problem
A dynamic and changing world around us gives demands on education that have little to do with the educational goals of the second half of the 20th century, more precisely, on the educational practice that still exists in schools today. The current educational process is oriented to the innovation of the content of education and methods in the teaching process, but especially on preparing teachers of the pre-primary education with new competences for the 21st century.

It is possible according to [1] to use digital technology in the teaching practice in a systematically and appropriate way, in order to disseminate information and expand learning and teaching opportunities, as well as to help teachers to reduce a negative impact of the media and multimedia on the child.

C. The goal of the research
We would like to identify the impact of digital technologies and digital devices on developing children's competence and autonomy.

D. Research questions
- How is the competence of children in the teaching and learning developed, supported by digital technologies and digital aids?
- Which kind of educational offer, with the use of digital technologies and digital aids, is created and delivered by the teacher of pre-primary education to children?

E. Realization of the research
The research was based on a systematic reflection on:
- professional situations; research into pedagogical reality;
- initial diagnosis of children prior to investigation (indirect observation);
- study of literature on the subject; curriculum project planning;
- the implementation of a curricular project in the process of teaching, in which the continuous diagnosis of children was carried out;
- pedagogical reflection on realized teaching activities, as output diagnostics of children.

Unstructured observations in the framework of action research were organized in Slovakian kindergartens in the years 2016 and 2017.

We observed teachers, as well as children, in their learning / playing groups in the number (2 + 3 + 2 learning / playing groups) with a total of 7 observations.

The number of children (in groups) in the research according to state-recognized legislation (registered / children present) ranged up to 102.

Direct observations were conducted in the morning hours with a time span of two weeks. Microteaching in the framework of action research was organized in the same kindergartens in Slovakia in the years 2017 and 2018. We identified the presence of quality assertion of children's autonomy, as well as the nature of the emerging model to support the development of children's autonomy, competence and collaboration, through the use of digital technologies and through the implementation of microteaching in learning / playing groups, which were observed directly and indirectly in the mentioned kindergartens. Direct observations were made in the morning hours within the one-week time interval. The behaviour of the subjects and the search for phenomena
that were indicative of the presence of support and development of digital literacy of children were observed directly in the process of learning and teaching.

F. Processing of the research material

Analysing data was a very difficult activity, via which we obtained a large amount of research material. Its processing represents countless hours of thorough analysis and repeated entry into the terrain. Qualitative methodology requires the researcher to interpret the subjective concepts that research subjects own and conceptualize them in the form of mental abstraction so that they cannot in any way deviate from the original concepts of the observed subjects.

This requires according to [7] time and maximum concentration together with the researcher’s responsibility. Thanks to that, there is a need to deal with such issues as for example, freedom, consciousness, wisdom, morality and, above all, the significance of human realities on the background of socio-cultural and historical constructing, the understanding of which is key to explaining lasting, valid and socially acceptable knowledge. Permanent (as a derivative of mentally elaborated experience), valid (as a socially valuable) and socially acceptable knowledge is continuously developed by members of society and at the same time legitimized through qualitative research of human realities by constructing consensus in dialogue (discourse) and intersubjectivity.

G. Analysis and interpretation of data from observation and microteaching

We focused in the analysis on a detailed description of the research material obtained by direct and indirect observation. We considered events and phenomena as indicators of phenomena to which we gave conceptual designation. Systematic reflection of professional situations, examination of pedagogical reality and initial diagnosis based on the evidence of children in the learning / playing group preceded the examination (indirect observation). Realization of continuous diagnosis based on the evidence of children in the learning / playing group was performed in the course of the teaching process and the outcome diagnosis based on the evidence of children in the learning / playing group was carried out in the pedagogical reflection on the realized teaching and learning activities within the microteaching.

During the research, a lot of material was obtained which took the form of video recordings and pictures / photographs. We repeatedly played / analysed them in the frame of indirect observations, focusing on teaching activities. We searched for significant elements which can document the development of children's autonomy, competence and collaboration ability through the usage of digital technologies.

### Protocol 1. Education activity: Searching for symbols in the City / Village (Illustration)

<table>
<thead>
<tr>
<th>Description of the didactic situation in the teaching activity</th>
<th>Usage of digital technologies in education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-active phase:</strong> The teacher evokes children by comparing the city/town map (printed and electronic) together with the children. Subsequently, the teacher presents the goal of the first phase in the teaching activity to the children, which was to search for and identify symbols on the map and to record the found symbols. <strong>Interactive phase:</strong> The children are divided into groups. Each group has its own map. At this stage, learners search, record, and identify symbols on the map with the help of a digital toy Bee-bot. The teacher is in the role of a partner, who advises the children in the identifying of a symbol that is unknown to the children. In the activity, children get to know the legend that serves to explain the symbols on the map. Learning subjects record the number of found symbols. They compare their results with other groups, because each group has the same map. <strong>Post-active phase:</strong> Children look for symbols identified on the map in the real world during a walk around the kindergarten. They record them later through digital technology-photographing machine, camera. They present the acquired videos and photographs through an interactive whiteboard at the end of the teaching activity in the class.</td>
<td></td>
</tr>
<tr>
<td><img src="image3" alt="Fig. 1 Pre-active phase- recording of symbols." /></td>
<td></td>
</tr>
<tr>
<td><img src="image4" alt="Fig. 2 Post-active phase – reflection of findings." /></td>
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</tr>
</tbody>
</table>

The teacher applies in the teaching activity a model of teaching that focuses on asking open questions to the learning group of children. The usage of digital technologies (computer, software searching tool Google, digital toy Bee-bot, digital photographing machine, digital camera, interactive whiteboard) by children is at maximum level. The presentation of the topic of education is in framework points. The usage of digital technologies is effective, creative, non-directive, self-contained, competent, thought-out and planned by the learners in the learning process. Multidirectional communication is applied in the learning group of children, together with encouraging talk, discussion, justification, argumentation, approval and evaluation. It is supported by self-decision-making of learners in the use of digital technologies. Other supporting activities are: promoting learning group coordination and collaboration; enabling active group participation in the curriculum, taking into account the learning aspects of children; assessment and (co) evaluation were part of the post-engagement (active) phase.

The reference framework was abstracted through the findings of direct and indirect observations (see: Table 1). Registration of the research results was evaluated on the base of the established reference framework with evaluation comments, which were used in the interpretation of the research results.
### Table I. Reference Framework

<table>
<thead>
<tr>
<th>Integration</th>
<th>Contextualizing</th>
<th>Decontextualisation</th>
<th>Coordination of points of view</th>
<th>Decentralisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children are completely independent. They need not any help. They fully develop their digital competences. They are fully competent and fully independent.</td>
<td>Children are starting to be independent. They act independently, but they are independent not completely. They are partially independent. They haven't full digital competences / they are not fully competent.</td>
<td>Children learn to act independently and gradually they become independent. They are outside the scope of digital competences.</td>
<td>Children are partially independent. They have minimal independence and they minimally develop their digital competences.</td>
<td>Children haven't got any independence. They depend on the teacher and on instructions, models and decisions defined by teacher.</td>
</tr>
</tbody>
</table>

The microteaching analyses looked at the details, in particular the micro-facts, from which the nature of the emerging model of the support the development of digital literacy of children were deduced and inferred. We studied also the interaction of children and teachers, and their actions. Microteaching analyses provided facts, not only impressions or opinions and attitudes. We registered the actual behavior of subjects in the teaching process.

The basis of microanalyses of the educational processes of teaching according to [15] is an interaction fact that has the following attributes:

- the interaction is recorded on the medium (video recording);
- the captured interaction is thus fixed, allowing it to return to it and subject this fact to analysis, judgment and interpretation;
- captured and fixed interaction fact can be analyzed by more exact methods compared to classical observation, using mainly qualitative methods;
- chronological recording of interactions enables tracking of sequences, procedures, process ability of the educational process of teaching.

We realized constant comparison as a phase of qualitative analysis of realized qualitative research. Kolb in [6] argues, that if we apply the constant comparative method, “it is not the intention to verify universality, nor to confirm the reasons or other input data. This procedure ensures the saturation of the necessary information. The goal of the constant comparative method is not to verify but to generate theory. We observe the size and deepness of the information in the text until the saturation level is reached”.

The constant comparative method according to [7] has the following levels: comparing events applicable to some category; integrating categories and their characteristics; definition of theory; conceiving theory.

### Protocol II. Significates for the Support of the Development of Children’s Digital Literacy (Sample)

<table>
<thead>
<tr>
<th>Description of the teacher’s activity during the teaching process</th>
<th>Interaction fact</th>
<th>Description of children’s activity during the teaching process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher discusses with the children different proposals, how to realize the topic. Teacher writes children’s suggestions on the blackboard. Teacher accepts proposals for activities proposed by the children.</td>
<td>$T \ni CH$</td>
<td>Children propose the teacher to vote on the proposals, so they choose only one solution for realization of the chosen topic. Children shall respect the voting rules agreed by them jointly.</td>
</tr>
<tr>
<td>Teacher supports children in their decision-making, evaluation and solving. Teacher brings up a learning problem into the teaching process. Teacher encourages children to express their knowledge verbally for solution of the problem.</td>
<td>$T \ni CH$</td>
<td>Children cannot decide and think independently. Children (as a learning group) are unable to suggest solutions for the solution of the problem. They cannot discuss how to solve the problem.</td>
</tr>
<tr>
<td>The teacher does not give children the opportunity to experience something. Children cannot fix their new knowledge based on their own experience. Teacher does not provide sufficient space for children to create their own ideas related to the subject of interest.</td>
<td>$T \ni CH$</td>
<td>Children gain new knowledge through their own experience in their area of interest. Children graphically represent the link between the concepts of interest. Children create a conceptual map via linking meanings, introducing concepts and relationships between them.</td>
</tr>
<tr>
<td>The teacher intervenes in the activity of children without asking. He / she helps children and He / she provides them material for production. Teacher does not let children create independently; he / she presents them possible methods of creation.</td>
<td>$T \ni CH$</td>
<td>Children prepare their own working material. They draw on a large wrapping paper a possible procedure for constructing the creation prepared with help of digital tools. Children evaluate and present independently their own product.</td>
</tr>
<tr>
<td>Teacher does not create enough space for independent activity and influence of children. He / she does not ask open questions for children for developing a discussion, but he / she presents his / her own knowledge obtained from experience.</td>
<td>$T \ni CH$</td>
<td>Children search in the real-world new symbols, which they identified on the map and record them with the camera. Children create a conceptual map on the base of their own initial concepts.</td>
</tr>
</tbody>
</table>

Explanations: $T$-teacher, $CH$-children, $T \ni CH$ – identity in acting; $T \ni CH$ – without the answer to some acting; $T \ni CH$ – without the answer to some acting; $T \ni CH$ – conflict in the acting; $T \ni CH$ – discrepancy in the acting.
step. They are outside the scope of digital competence. The usage of digital technologies in the activities of learners is partially represented. We evaluate the middle phase of our research by contextualization. Children are starting to be independent, they act alone, but they are not completely independent. They are partially independent, lacking full digital competence. They are not fully digital competent in the teaching process that has been carried out through the usage of digital technologies. Teacher supported the autonomy, competence and collaboration of the learning subjects in the teaching process during the final phase of our research. We evaluate this phase by integration. Children are completely independent, they do not need help, they fully develop their digital competences. They are fully competent, fully independent. The usage of digital technologies by researchers has been maximized.

III. CONCLUSIONS

The most important research finding is that the development of autonomy and competence by children depends on many other characteristics of children, as well as teachers and adults (for example a close relationship between independence, competence, self-awareness, decision-making, participation, etc. that results in collaboration) and vice versa.

These facts answer the first research question: How is the digital competence of children in teaching via using digital technologies and digital aids developed? Research findings also point to the importance of child’s personality development trajectory in supporting the development of children's digital competence as a fundamental idea of bringing “dependent” individuals (and hence children) into a state of relative “independence” that creates space for cooperation in some learning / playing group of children.

Our findings bring the result, that it is important to ensure education with high quality and digital accessibility in schools by developing of the digital literacy of teachers in the teaching process so that digital technologies can be used effectively in the educational process. It is equally important as the didactic incorporation of the use of digital technologies in the teaching process, because the use of digital technologies is not limited to one particular area of child development.

Another noted research finding is the need for the teacher / adult to respect children's interests in knowledge, role play, realized different activities, as well as respect the efforts to be self-contained, based on the children's inner need to learn, explore and discover new / unknown to them. We expect at the same time, that the children can use everything, what they have acquired. They will be able to use these things for their own benefit so they are able to solve different challenges of life.

It is important according to [10] that in the process of deliberately promoting the development of digital literacy, children are spontaneous and participate in the creation of a process in which they develop thinking, communication, creativity, self-awareness, respect for themselves and others; the ability to adapt, to agree and to cooperate in joint activities within the activities / plays and optimally assert in the learning / playing group of children.

Teachers involved in research have begun to consciously support the development of children's digital literacy in the framework of action research. What educational offer with the use of digital technologies and digital aids for children is created by a pre-primary education teacher? In the process of the educational offer from the side of teachers, many kinds of efforts have been made for integration of digital technologies and digital aids with an emphasis on independence, collaboration, imagination and complexity of view.

It was accepted and implemented fully as according to [16] in free decision-making and acting, responsibility, self-evaluation etc. in individual and group learning processes. Preference was more given to role-playing, debating than to some kinds of cooperative and collaborative learning. The more support and less external control in self-regulation the children receive from the adult (the teacher at school), the more structured, more comprehensive and purposeful their development is. Children become less dependent and more independent, competent, authentic and responsible.

Children have according to [17] the potential to learn and the teacher has different possibilities and didactically corresponding opportunities for full-scale learning and teaching. The teacher is a person with a greater and qualitatively different socio-cultural experience, the children are full of developmental goals and potentials, which was didactically reflected in the teaching process with a close relationship with the curriculum, as well with transforming and supporting components. The experiences of children from the pre-primary level of education are important for their learning at primary and secondary level.

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