

## COMMUNICATION TECHNOLOGIES AND THE CLASSROOM TEACHING ENVIRONMENT

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*Summary* – The authors consider the present and future of new media and the classroom environment of pupils in primary education. Some experts are inclined to see the future of the classroom teaching environment solely through the perspective of new media, primarily computers and the Internet. The authors agree that these media are essential for modern teaching and for pupils in primary school, but they also stress the necessity of providing various other material and equipment to meet the development needs of children. By analysing these development needs, the authors reach conclusions on the manner in which a student-oriented classroom should be designed and equipped to enable pupils in mid childhood to satisfy their needs for knowledge and development. The basic needs of children are communication, movement and work, involvement in research and creativity (in the motor and cognitive fields), and play. Primary classrooms should provide equipment which allows for the meeting of these children's needs. The authors find ideas for designing primary classrooms in the exponents of reform pedagogy, primarily John Dewey, Maria Montessori and Celestin Freinet.

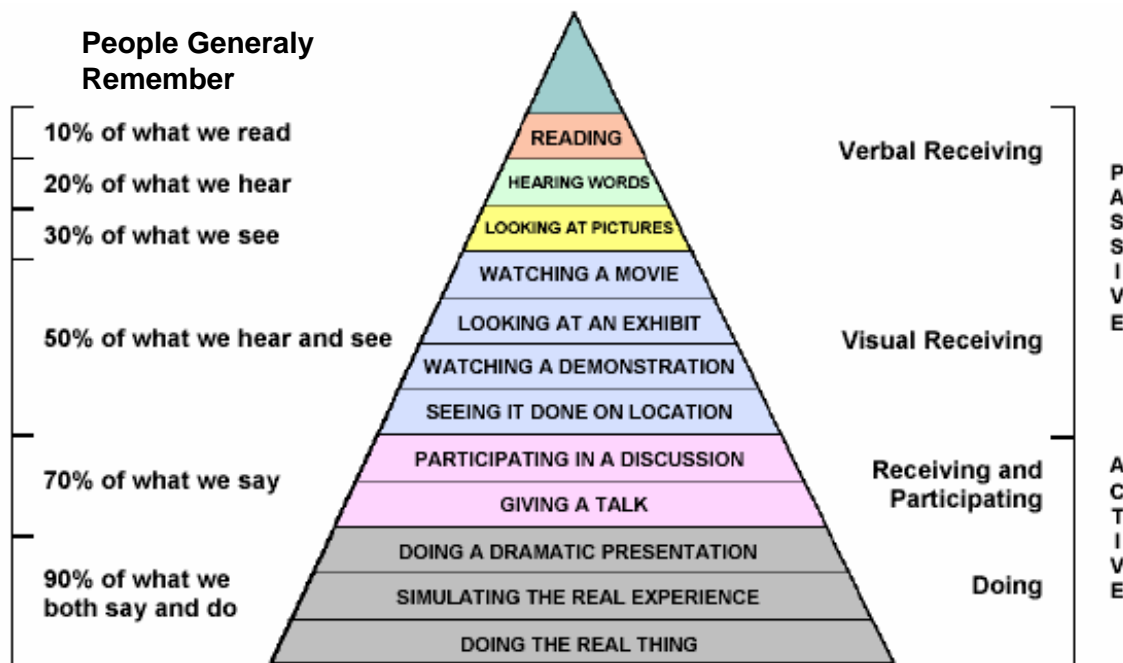
**Key words:** communication technology, classroom environment, primary education, PC

### Introduction

One of the important issues in the context of curriculum theory is the selection of the location where teaching activities are organised, and the design and equipment of the premises where these activities take place. Children spend 500 to 600 hours in the same classroom. The rest of the school year is spent on class trips or at some other places in the school or in the neighbourhood. Jensen (2003, p.103) believes that a carefully planned environment may provide for 25% of the teaching, while a poorly prepared environment, on the other hand, might make learning much more difficult. Alexander (according to Dean, 2005, p.11) reports on a study that established that pupils spend 59% of their classroom time engaged in some activity, 11% of the time preparing for this activity, 8% of the time waiting for their teachers, and 21% engaged in indeterminate activities in order to compensate for their saturation with teaching activities. J. Dean (2005, p. 13 and 14) reports on studies concerning the use of the classroom space. German authors have also dealt with adjusting the classroom and the equipment to pupils in primary classes of compulsory education (see: Langer, 2005).

It should be remembered from the outset that teaching activities are not organised only in classrooms. Educational objectives are achieved at other school locations as well (for example, the gym, the schoolyard, multimedia classrooms) and at different places outside the school (museums, galleries, parks, meadows, woods, rivers, lakes, etc.). There was a School of Forestry active in Zagreb some seventy years ago (from 1929 to 1941). It was founded by Franjo Higy Mandić. All the teaching activities in this school were organised outside the classroom, in the forests and parts of northern Zagreb (more in Matijević, 2001). Some alternative schools, for example the exponents of Steiner and Freinet pedagogy, even today prefer teaching activities outside the classroom and beyond the school building.

A famous American educationalist, Edgar Dale (1900-1985), pointed out that learning and memorising is most efficient if conducted through participation in various activities organised in real life, that is, outside the classroom, observing real life events. In addition, he underlined the need for pupils to engage in various activities in order to acquire suitable experience. Reading, listening (for example, the teacher's presentation), or watching still pictures or films are a poor guarantee that pupils will remember or learn anything (see Fig. 1).



Edgar Dale, *Audio-Visual Methods in Teaching* (3<sup>rd</sup> Edition). Holt, Rinehart, and Winston (1968).

Figure 1: Cone of learning (Developed and revised by Bruce Hyland from material by Edgar Dale)  
 Source: North Carolina State University – College of Agriculture and Life Sciences  
<http://www.cals.ncsu.edu/agexed/sae/ppt1/sld012.htm> (26.08.2007)

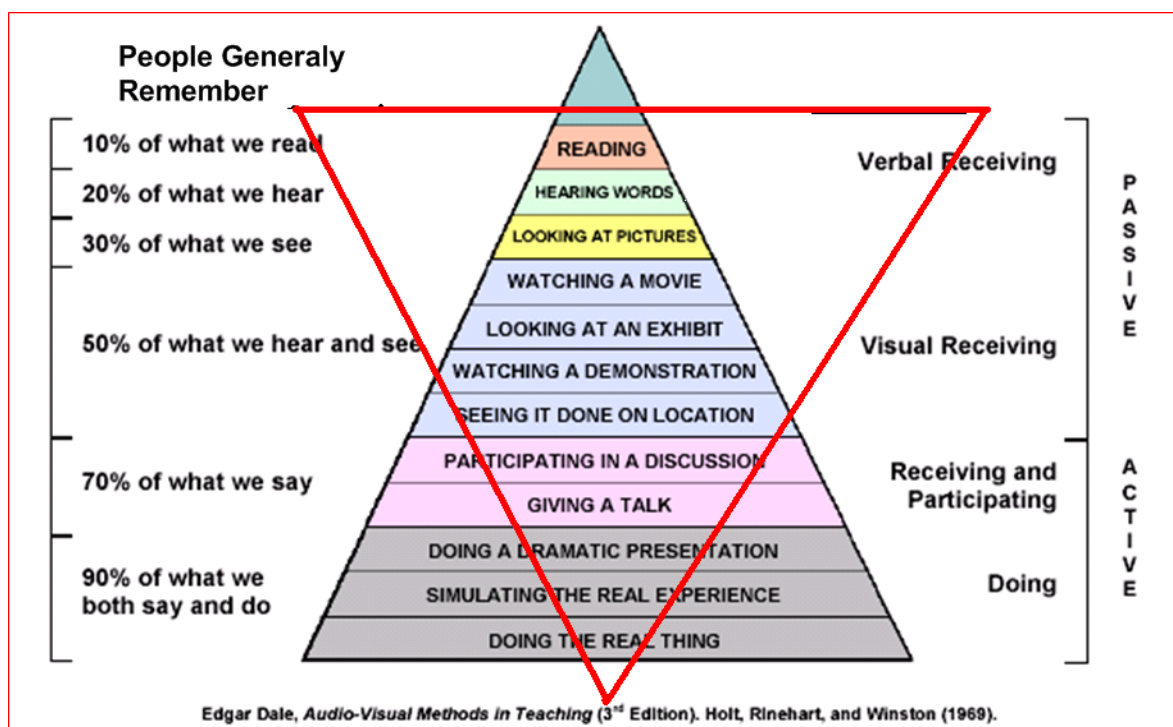


Figure 2 : Cone of Experience in Croatian Schools (red colour)

## Covering the Programme

Teachers always have a dilemma about ways to achieve the objectives of the curriculum. An expression often heard in conversations among teachers is “covering the programme”. They discuss possible ways of “covering the programme”, the time needed to “cover the programme”, the place where the programme will “be covered”, etc. Such an attitude shows that the programme is often more important for teachers than the pupils themselves. There is an expression “child-oriented curriculum” which is used in literature to indicate the need to put pupils at the forefront (Tyler; according to: Elbers, 1973, p. 143). There are, of course, other curriculum concepts, for example the “discipline-centred curriculum” (a curriculum focused on scientific disciplines) or the “subject-centred curriculum”, which starts from the traditional understanding of teaching subjects (ibid, p. 46). The aim of these terms is to emphasise the logic and philosophy behind the design of curricula, and not to stress the importance and position of those participating in realising the curriculum objectives.

Why is the expression “covering the curriculum” important for the topic under review?

Teachers often forget that they are doing their jobs for the sake of the children, and not for the sake of the curriculum. Schools are made up of children and teachers, that is, *people!* The programme is only an outline, a framework for the planning of classroom and/or individual activities. It is not the “law” that must be adhered to. There are no experts who can plan to the final detail all the activities appropriate for a group of pupils in an unknown school. Teachers are experts in education and in assisting in the development of children. When they get to know their pupils, they should choose their didactical strategies and the places where they can achieve the objectives of teaching and education. A classroom is only one of the places where teaching will take place. This should be borne in mind when choosing the equipment for the classroom and when planning how to design it.

Children must satisfy their development *needs* in school. Over a hundred years ago, J. Dewey (1859-1952) underlined the necessity to recognise the child’s needs and interests. He

then wrote that children had four basic interests: *interest for communication, interest for exploration, interest for work, and interest for artistic expression*. These interests and needs may not be satisfied in a classroom designed as a listening room, but in specially designed school workshops and laboratories or in schoolyards, in an orchard, in the park or at other places where people live and work (according to Poljak, 1965). More than a hundred years ago, Dewey offered teaching through projects as a possible means to meet these children's needs.

Today's children share the same interests, but the conditions in which they may be met are very different. The media environment in which children live today has changed significantly.

When we think of designing and equipping classrooms for the needs of primary school children, we take into account the mentioned assumptions (didactical and psychological findings). Although two-shift schools are still predominant in Croatia (the same classroom is used in one day by pupils of different classes!), what we consider here is the equipping and designing of classrooms for one class in a school working in one shift only. At the time of writing of this paper, a comprehensive move aimed at creating conditions for the application of a one-shift school day in all schools is in progress in Croatia. This action will probably take three to five years, but teachers and school buildings need to be prepared for it in advance.

### **Specialised primary classrooms**

Pupils of one class in Croatia are guided and taught by one teacher. This teacher teaches six subjects and spends about 18 to 20 classroom hours per week with his or her class. In addition to this teacher, pupils have another two teachers, a religious education teacher and a foreign language teacher. The class teacher in primary education spends about 600 to 700 classroom hours per year with the same pupils, and in the course of four years of this system of teaching, the same teacher generally spends 2,500 to 3,000 classroom hours with the same pupils!

The advantage of this kind of teaching system is that a small group of experts deals with one group of pupils. These teachers (experts) may get to know each pupil well during the time they spend with them and become well acquainted with the social relations and the overall classroom atmosphere. They may also use certain educational and organisational measures to influence these social relations and the classroom atmosphere.

Nowadays, primary education experts do not insist that every pupil always sits at the same desk. The choice and change of a pupil's place in the classroom depends on various factors, including teaching objectives, size of the class, equipment in the classroom, etc.

Teaching is seen as teachers and pupils working jointly. Pupils are often free to choose the place where they carry out their tasks. Teachers take into account the different social aspects of various classroom activities so that, in the course of the day or week, pupils work individually, together with a school friend, or participate in small group activities (3 to 5 pupils). Classrooms are equipped with a sufficient number of tables and chairs for such activities.

Instead of one pupil being in charge of cleaning the board and the classroom for one day or for the whole week, most teachers now choose to give each student in the class a chore to complete. These chores may be exchanged on a weekly or monthly basis, and there may be class specialists for certain chores who will be in charge of these chores throughout the year (for example, looking after the computer lab, the classroom library, the fish tank if there is one in the classroom, opening and closing the windows to let in fresh air, looking after the arts and crafts corner, writing messages to the partner class, etc.).

The pedagogical literature usually does not say anything about the technical details, but teachers with many years of experience tend to notice problems and introduce certain rules. For example, every teacher will accept the idea that a tool box (or several boxes) should be put in the classroom (with different types of scissors, different kinds of glue, a wire-bending tool, metal-cutting tools, hammer, pliers, screwdrivers of different sizes, etc.). It is also useful to have different brooms and cloths among the classroom equipment (or somewhere near the classroom) because it often happens that something gets spilt, broken, scattered, etc.

A novelty which has recently been introduced in classrooms is different computer equipment. We cannot expect all classrooms to be equipped with computers for every pupil. From the pedagogical point of view, we believe this is unnecessary because competences that are most important for everyday life are not acquired behind a computer but by doing different individual or group activities away from the computer. Teachers are often concerned about the question of where to place computer equipment in the classroom and how to use it. The briefest recommendation in relation to such equipment could be summed up in one sentence: such equipment should be used less for teaching from the front and for lectures, that is, for teaching work, and more for pupils' individual work and for groups of pupils working on different projects.

Every specialised primary classroom needs one personal computer with a printer and a scanner, and one laptop that may be used by the pupils anywhere in or outside the classroom. The list of tasks to be completed by pupils individually or as a group while using a personal computer or a laptop is a long one, but here are some ideas that have already been accepted by pupils and teachers: making a class newspaper, preparing presentations of results of individual or group projects, composing wall newspapers, presenting pictures or filmed material that pupils have found on the Internet, writing tasks for individual or group activities, individual computer-assisted learning on the basis of special software based on a game or problem solving task, preparing radio shows or processing auditory material, preparing class photo albums and yearbooks, writing messages and sending pictures to pupils in partner classes, etc.

Sometimes, children with special needs very skilfully find their way in the virtual world, and appropriate help from the teacher may help such a pupil to achieve success and affirmation especially where he or she could not do this without computer equipment. In any case, teachers are expected to be proficient in working with the basic MS Office tools because otherwise there is no point in having a computer in the class. Practice has shown us instances which should be avoided in terms of computer use in the classroom. Sometimes a computer in the classroom is not even used by the teacher (perhaps because he or she does not want to accept new things, or perhaps because he or she does not know how to use it), and in this case pupils are free to use it during their free time, school breaks, which results only in playing games which pupils are tired of because they do this at home as well. A computer in the classroom requires guidance from the teacher who should be aware of the pedagogical, methodological and didactical reasons for its use.

A special novelty is the introduction of an LCD projector in the classroom, or of the so-called "smart board" (SMART Board interactive whiteboards or just "whiteboards"). This is an interactive computer screen for projecting from the hard disk, or for showing material downloaded from the Internet. Some regard it as an electronic replacement for the traditional whiteboard or flipchart. Both of these IT and technical teaching aids (interactive whiteboards and the LCD projector) are more suitable for teacher-oriented teaching, so, in our opinion, it is not necessary to equip every classroom with such equipment. If this equipment is bought and installed, then teachers are recommended not to overuse such projectors or boards because as a rule, they place pupils in the passive position of a listener and viewer.

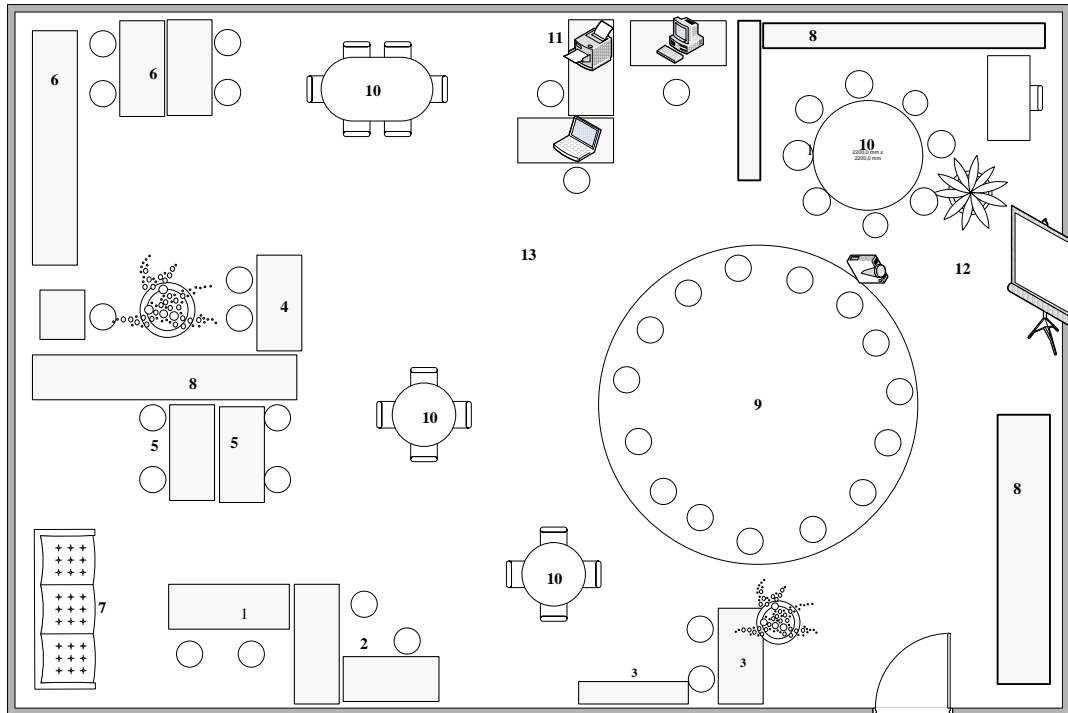


Figure 2 Specialised primary classroom

Explanation:

- |                                    |   |
|------------------------------------|---|
| 1. Reading corner <sup>1</sup>     | 8. Shelves for materials                        |
| 2. Writing corner                  | 9. Carpets for talking in circles or working on |
| 3. Modelling corner                | 10. Space for group activities                  |
| 4. Painting corner                 | 11. Computer lab                                |
| 5. Hobby corner                    | 12. LCD projector                               |
| 6. Maths corner                    | 13. Space for floorwork                         |
| 7. Chairs for relaxing and resting |   |

Note: Above the shelves there are panels to display pupils' projects

## Conclusions

This paper mentions only a few issues relating to the design of a room where pupils spend most of the time during one school year (600 to 700 classroom hours). We have dealt mostly with equipment, and activities organised with the aid of this equipment.

It has been our intention to describe a classroom adjusted to a teaching process in which pupils are more active than teachers, in other words, a classroom organised for the joint work of pupils and teachers. In such a classroom, strategies for the achievement of teaching and educational objectives must provide different activities and experiences for pupils. Indeed, learning by exploring and discovering, and by participating in various individual and group projects will contribute much more to the acquisition of competences important for further education and life than teaching based on strategies where it is the teacher who is active, and where pupils are passive observers and listeners.

It is difficult to recommend a single off-the-peg model for designing and equipping primary classrooms. It is more advisable to offer pupils and teachers the freedom to choose

<sup>1</sup> In the literature and practice of alternative schools, this expression is sometimes replaced by the expression "atelier" (Freinet) or "interest centre" (Montessori).

the equipment and the way it will be used the classroom. This also applies to the choice of the colour of the walls and the arrangement of equipment in the classroom. Equipment arranged and chosen by pupils and teachers according to their wishes is always much better than an off-the-peg solution.

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