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On Electronic Media Teaching Competence (EMTC)

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# On Electronic Media Teaching Competence (EMTC)

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## SUMMARY

*In the present discussion most of all definitions of electronic media competence of teachers are linked with terms such as electronic media education, communication competence, competence of teaching specific subjects. The discussion shows two levels: (a) the more theoretical level: On this level we are interested to develop the structure and meanings of the specific phenomena and definitions, (b) the more practice oriented level: On this level we are interested in discovering dimensions of electronic media teaching competence of teachers. In my presentation I put this in the foreground. In our research we found 8 dimensions of EMTC which teachers realize in their job or which are required of the teachers as professionals. We put PC and Internet in the foreground of our research. The dimensions are: technical or instrumental competence, knowledge about the functions of electronic media, ability to coordinate activities, instructional knowledge, aesthetic and affective literacy, systemic knowledge, ethic responsibility, critical thinking. In theory all the dimensions are interdependent. In the practice of teaching only some of them are realized because the majority of teachers lack most dimensions EMTC. Therefore we are convinced that the above-mentioned dimensions have to become part of the official teacher-training curriculum.*

**KEYWORDS:** *electronic media teaching competence, teachers, teachers' education, teachers training curricula*

## INVESTIGATING PROFESSIONAL DIMENSIONS OF EMTC

In the recent discussion on computer and Internet learning in schools, there is one question which came more and more in the foreground: Does teachers have a professional electronic media teaching competence? This question is a very exiting one to plan a research project. So we did.

The objectives of the practice-oriented part of our study were to find concrete answers. The overall goal of our study was to investigate professional dimensions of EMTC. More specifically the objectives were:

- To focus our investigation on teachers only,
- To find definitions or interpretations of dimensions of EMTC,
- To identify tools in the dimensions which help teachers to implement their EMTC in a more professional way.

The perspectives of our project were the following: In the present discussion the definitions of EMTC are linked with terms such as electronic media education, communication competence, competence of teaching specific subjects.

There are two levels of discussion: 1) the more theoretical level on which the discussants are interested in developing structures of EMCT and theories to legitimate EMCT 2) the more practice-oriented level. On this level most of interest is put on teacher's models, concepts and tools to include electronic media in their teaching.

Both levels were part of our project. In my presentation I put the practical level especially PC and Internet work in the foreground.

Our research methods and data sources were based on qualitative empirical research. Specifically we applied the following methods:

- Analysis of publications from 1993 on (books, articles, papers)
- Classroom observations of teaching and learning with PC and Internet
- Open interviews with students and teachers.

The results and conclusions of our research activities, which started in 1999, are presented in the following in three steps: - Explanation of the term EMTC, - Eight dimensions of EMTC as results of our project, - Educational und scientific conclusions.

### **EXPLANATION OF THE TERM EMTC**

Our analysis of publications from 1993 on shows that EMTC is mainly linked with terms like electronic media education, communication competence or professional teaching competence. In the social sciences the term competence is used in the sense of ability or capability or qualification. The professional competence of teachers is defined 1. As to be qualified for a specific subject i.e. mathematics, or first foreign language and 2. To be able to arrange learning processes on the background of these definitions. Teachers have to have two professional competences: 1. Subject competence and 2. Social competence.

If we agree to the proposed definitions, we may now ask: What means EMTC in this context? The answer is not easy to give. If we observe teachers in action we recognize that they use and apply many instruments, machines and media (in a wide definition) during their work. They implement their teaching mainly with their voice, their body and body-language: they use blackboard and chalk for actual writing and painting; they give students handouts, such as pictures, paper cuttings, puzzles; they present slides, videos, films and make students aware to work with TV, computer and internet. We may suggest, that EMTC is part of their professional work. And indeed: We found out several abilities, capabilities or qualifications for electronic media teachers realize in private and school practice. We categorized them into 8 dimensions, which I am going to present in the following. In addition to this I have so say, that our classroom observations and interviews also show, that - in most of the cases – teachers show not very high levels in EMTC in practice. About this fact I would like to talk in the 3. Part of my presentation.

### **EIGHT DIMENSIONS OF EMTC AS RESULTS OF OUR PROJECT**

The 8 dimensions of EMTC are:

- Technical or instrumental competence,
- Knowledge about the functions of electronic media,
- Ability to coordinate activities,
- Instructional knowledge,
- Aesthetic and affective literacy,

- Systemic knowledge,
- Ethic responsibility,
- Critical thinking.

1.) Technical or instrumental competence means that teachers are able to handle computer and Internet communication. Most of teachers operate cameras, videos, books etc but less can operate a computer and the Internet on a higher level; that means to be able to teach or demonstrate students how to operate. We found a small number of skills, which teachers apply in practice or wish to:

- Basic knowledge how to install a computer
- Knowledge about technical equipment i.e. modem, scanner, sound
- Making WebPages with editors
- Producing, linking and storing information, memos, texts, materials.

These knowledge and abilities are competences teachers should have. They differ obviously from those of engineers and technicians.

There is one remark to add: The technical competences of teachers are to be linked with teaching subjects and social competence. But most of the teachers have to learn more about this dimension.

2.) Knowledge about the functions of electronic media includes first knowledge about the functions of:

- Browsers
- Servers for education and instruction
- Files
- Data sources

and second abilities:

- To differentiate the data and information relating to several purposes
- To work on criteria for the process of differentiation
- To implement the formal curriculum with new data and information
- To integrate the new criteria and information into the own knowledge (Sofos 2002).

Ability to coordinate activities. In this dimension teachers are to be seen as searchers and researchers. We found that teachers main epistemological interest is to fit different knowledge and activities together to achieve their own way of preparing data and information for their students i.e. in form of papers, handouts, leaflets. Such interests show teachers as real professionals. To master their activities they develop the following coordinating activities:

- To recognize a problem and to set the method and start of research
- To define the problem and the search questions
- To plan the steps of work including the students needs, interests, expectations and knowledge about the subject in the making
- To collect, evaluate, set data and information and to include the findings in their own knowledge
- To evaluate the findings in accordance to their authenticity and credibility, developing respective teaching materials, teaching methods and strategies.

4.) Instructional knowledge. This is one of the most important dimensions of EMCT. It concerns the ability of teachers to combine and to apply common concepts of teaching with concepts of electronic media teaching i.e. web-based programmes and systems. Important for the planning process are two skills teachers have to have:

- Knowledge about the students' specific electronic media competences. This knowledge is important relating to the implementation and adaptation processes to the students needs.
- Criteria to evaluate the online contents in regard to the defined objects in the official or school based curriculum.

This process may be understood as a process of constructing knowledge and teaching concepts including the application of computer and Internet.

5.) Aesthetic and affective Literacy. The activities in and with electronic media teachers and students are involved may be defined as learning process. There are different models or theories of learning which can be used to define or explain this process; i.e. the behaviouristic model, model learning, the cognitivistic and the constructivistic model. All models make clear that beside the behavioural or cognitive based acting activities actors produce emotional, affective, and aesthetic energies. They feel funny and gay, they suffer and cry, they enjoy to communicate or to have finished a procedure. They perceive with all their senses. They produce "emotional intelligence" (Goleman 1997) and this kind of intelligence is basically part of teaching and learning in and with electronic media.

Teachers have to have basic knowledge about this dimension. They also have to have a basic number of skills to manage emotions and aesthetic expressions, such as:

- Ability to stop activities to ask students how they feel
- Ability to make students motivated and aware to talk about their emotions and feeling during their work
- Knowledge about gender and age differences
- Empathy.

6. Systemic knowledge. This means that teachers have to have knowledge about the structures and functions of their school system. Normally schools are relatively closed societies which can be defined as "rational systems" (Scott 1986). Working with electronic media produce the basic tendency to open the system, to dissolve the defined objects and relations of the rational systems and to transform them into more "natural" or "open systems". In these systems the actors get new roles and status. Working in the context of electronic media put them in a new situation. All actors have to learnt to define their mediated roles and status. To master this new situation teachers must have knowledge of the system in which they do their task. They must know i.e.

- The places computer are installed in their school
- The persons who are responsible for the computer
- The time tables of the usage of the computer room
- The installed programmes
- The persons who immediately can give support and help.

7. Ethic responsibility. In modern times it may be ridiculous to suggest that ethic responsibility should be one of the dimensions of EMCT because all processes are obviously based on technique. But it is true. The reason is easy to find. The electronic media are instruments, which are invented, produced and implicated by men, in schools by young people on their way to become responsible adults. They define the purpose of the usage and application of computer and Internet. The instruments have not per se this ethical perspective and purpose. They have an immanent technical structure to function and to reproduce the technical system; the ethical definition is external to them and lies in the responsibility of the users. This idea belongs to the educational impacts of a professional EMTC.

8. Critical thinking. All dimensions can be put together and then represent what we call critical thinking. Critical thinking is the way teachers are aware to handle electronic media in a human sense.

## **EDUCATIONAL AND SCIENTIFIC CONCLUSIONS**

The study is considered important because it shows the central role of teachers as personal guarantors for the implementation of electronic media in teaching processes. In addition to psychological statements students motivation (intrinsic as well as extrinsic) requires a supplement or support by teachers EMTC. If teachers realize skills of EMTC in practice students meet them in a similar role of an expert as they understand themselves. They learn to accept their teachers in this new role and teachers learn to reduce their anxiety of students EMTC and to accept role and status changes.

The fact in schools is that in many cases students have more EMTC than their teachers. Teachers who are on the way of learning EMTC have critical awareness enough to approve students as tutors, as speakers of learning groups, projects or crash courses and as assistants or electronic media advisers. On the basis of these experiences we developed a curriculum to train students as electronic media advisers (EMA). This training programme, which includes a certificate was fully accepted and the students serve their teachers as "assistants" during the respective lessons.

Last but not least we are convinced that EMTC has to become part of the official curriculum in teacher training and in further teacher education. The presented dimensions of EMTC and the proposed skills may bring this request for EMTC as a curriculum a bit forward.

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