

## **Challenges of Biology Teacher In The Face Of Changing Technology**

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**ABSTRACT:** *Today the education must be adapted to new needs. An educational task determine new styles of teachers' work and also challenges their competences, showing that the effects of the course of didactic process depend on the teacher's awareness to a large extent, way of understanding of the school's reality and the students themselves. Today the media are ever present. The teacher must be aware of the influence of outside school interference and psychological barriers related to the communication process. Mass media and hypermedia shape new patterns and new values. The 'overheated' and synthetic announcements often limit the intellectual effort and the critical thinking. On other hand e-communication is a stimulator of mass education. It requires from teachers use of strategies leading to rebuilding the earlier structure of students' knowledge, creating different structures in connection with new students' concepts and needs in response to new information. Teachers must be equip themselves depend on changing technology. The survey research among 63 biology teachers was conducted. Conclusions drawn from research results based on analysis of documents and survey allowed the elaboration priorities for biology teacher training in the contemporary world of media.*

**KEY WORDS:** *Social and cultural challenges, information, communication, changing technology, Information and Communication Technology (ICT), Biology, Teachers challenge.*

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### **I. INTRODUCTION**

Number of information connected with new achievements in the field biology science leads to the awareness of existence of knowledge whose resource are unavailable in the course in connection with citizens, social political, family and professional roles develops. There also is a view that fast pace of development of science and technology as well as accompanying it civilization changes causes the necessity of moving away from traditional ethics and building the foundations of a new one, capable of facing difficult challenges of the contemporary world. It means mainly culture and media. It makes biology education confront opinions, views and interests of various social and professional groups.

The professional standards are built on categories of competences, which correspond to the educational aim and school functions and teachers activities. In the real school environment among main subject, social, Psycho-Social and communication competence there are 'to know how integrate research results and knowledge of particular specialization of teaching subjects and to make links among subjects; to be able to search of information and work with information, to cope with uses knowledge of information and communication technology, and to acquire pedagogical communication aids (slavik, 2009). Communication is one of the basic professional skills of a teacher and the concept of medial communication found its legal grounds for realization in connection with the reform of the educational system. In connection with these tendencies and with changes in the way biology teaching and in connection with students interests and their professional life in the future teacher training at university level should take into a account the prospective aspect of qualifications. The main ideas about teachers' competence for future are more of them focused on mission of schools. 1. from initial to life – long learning. 2. from knowledge transmission to knowledge creation, 3. From formal to non-formal and in-formal learning, the priority for education in the contemporary world of media should be among others relationship between science knowledge and medial culture and improvement of professional opportunities and permanent education. While planning the research; conclusions and reflection published in the numerous articles

written by us have been used. They regarded students' competence against the background of global standards; tendencies in biology education in the light of contemporary social and cultural changes, role and tasks of education in the process of global integration. In the teacher training concept are also attributed an important function to the students' dialog relationship in which the teacher appear as a facilitator and the dialog feedback plays a significant role. The following objectives have been specified:

- [1] Formulating general, theoretical assumptions of teaching training with use of different ways of communication,
- [2] Studying aspects related to functioning of the models of didactics communication and mediation as instruments for formulating Meta cognitive strategies in students.
- [3] To analyze how the teachers' technologically changed their teaching tasks.

### RESEARCH PROBLEM

- [1] What kind of biology teacher' competence are necessary in connection with the social and cultural changes?
- [2] What kind of biology teachers' competence is necessary in relation with the technological changes in the present world?

**RESEARCH HYPOTHESIS :** In view of the social and cultural changes the priority a canon of new teachers' skills and understanding philosophy of reform. It means mainly: Meta cognitive competence and ability to use the dialogue ICT- aided strategies. How the biology teachers' can develop their competence relation with the changes of technology.

## II. METHOD :

63 biology teachers participated in the survey research and in the attempts. One part of the research concerned the self-evaluation of creative and informative competence. Second one was connected with the analysis of the teachers' activities connected with the practical application of different form of communication (tasks) during ICT- aided biology higher secondary schools in government schools, corporation schools, government aided schools, matriculation schools and central board of secondary education of Tamil Nadu. The studies the research was also connected with the analysis of the curriculum and teaching standards higher secondary level.

**FINDINGS:** The analysis of teaching standards points to the fact, that present educational tasks find reflection in syllabus and educational standards. Their analysis reveals the general tendencies of changes in thinking about the new school of knowledge-based society and based on changing technology. A detailed analysis of educational objectives shows in a way the direction of activity at particular stages of education. New educational thinking is governed by two new categories- in the global and local sphere and it specify new competences of teachers. On the other hand the research confirmed the preview that overloading of science and biology curricula, few hours allocated for working on them and perceiving only simple cause and effect relations accompanying the didactic processes by the majority of teachers increase the distance between the student and the concept of meta cognition necessary for the possibility of permanent education. The evaluations are presented in Table 1 the detailed skills are the indicators of the informative competence. The teachers defined level of their competence only as high or low sometimes they didn't precise this level.

Table 1 Evaluation of teachers' competence (n=63)

S.No	Types of competence	Competence level (% of answer)		
		High	Low	Lack of answer
1	Pragmatic	77	38	13
2	Communicative	88	26	-
3	Cooperative	38	30	15
4	Creative	61	34	-
5	Computer (informatics)	96	22	13
6	Ethical	77	37	10

The survey results point to the level of the teachers' interests in the new educational media. The majority of teachers declared the sufficient level of their informative competence. The results put also attention on the fact that system of ICT- aided biology and environmental teachers' education is partly adapted to the requirements of information society. The realization of teaching aims partly need help of technology and cooperation, some part of teaching contents need only the ability of information gathering (pragmatic and computer competence) and communication understanding as a simple data transmission (communicative and computer competence).

The number of tasks solved correctly by teachers and the level of their communication and mediation abilities is presented in Table 2.

**Table 2** Results of the attempts of modernizing educational process as a level of teachers activity with ICT use (n =63)

Teachers' activity	Teachers' communication and mediation skills	Results /percentage of tasks correctly solved/
Collecting information	Valuing	81.1
Interpreting	Critical thinking	68.8
Communicating	Transmitting	88.8
Hypothesis posing	Anticipating	73.3
Creating concepts and theory checking and controlling	Alternative thinking, decision making	60.0
Technology utilization	Interest	67.1

The results confirm the authors, views that necessity of the changes is connected mainly with the fact that ICT and subject education has too small number of links and such skills as critical and alternative thinking aren't sufficiently educated with thought about their utilization in contemporary world of media and technology, permanent education and Meta cognition.

### III. DISCUSSION

The need of defining canon of new teachers' skills and including such abilities as critical and alternative thinking, valuing, transmitting, anticipating and decision making (Table 2) is confirmed by Husa(2009) who precise such terms as

- [1] Information literacy – Capacity to find, evaluating organize and present information
- [2] Digital literacy – information literacy applied to digital information
- [3] Digital competence – related to logical and critical thinking to high level information management skills and to developed communication skills.

According to Fisher (1999) the creative process is to a large extent reorganizing the possessed knowledge in order to realize what we do not know. In this context, the application of ICT helps form teachers' and students' competences connected both with creative use of information and with its creation. Not every sender of information is its creator, but every user of information is its receiver. In school situation, uses of information are all the people who use it in any purposeful way. The results allow to verified research hypothesis and confirm the previous authors' views that changes in the to-date ways of work and media/information technology tools use in teaching and learning are necessary. Necessity of these changes is the consequence of psychical needs of learners in the situation of universal access to information. The changes must regard the teaching, learning and meta-cognitive strategies. Teachers need much more than just knowing how to operate the computer or specific software. They need to be convinced about the value of ICT tools in supporting and enhancing teaching and learning (kiridis et al; 2006) they need specific examples demonstrating the added value of ICT in teaching and learning they also need pedagogical content knowledge on the role of ICT tools in the respective disciplines and how that influences how we formulate learning objectives.

### IV. CONCLUSION

New criterion teachers' competence must take into account training needs; teachers' and students' individual learning style, strategies of dialogue work collaboration. It means preparing teachers to new role facilitators of students' learning and mediators of different scientist problems. The biology and environmental protection teachers' basic task not only to pass knowledge, but also to support students in the process of learning, as well as teaching and organizing real life is like by multilateral cognitive and practical activities; organization of educational forms, influencing students' attitudes and supporting them in their personal development as well as mastering the skills of being a true class tutor; care about students, diagnosing, socializing and rehabilitation; supporting students in the formation of their plans, cooperation with the family and the local environment, as well as institutions of parallel education. Developing the dialogue focused on the child, children right and duties, and also integration role of school and family in biology and environmental education; checking and evaluation students' school achievements, analysis of school and educational failure, and cooperation with all educational institutions in overcoming them The ability to organize ones' own work and actions aimed at the effective organization of one's own working habits, and to plan one's own professional

development too. Kimber and Wyatt-smith (2006) point to the educators need to understand the way of students' learning in digital environments. In their opinion it promotes the development of effective digital learning in digital environments.

In their opinion it promotes the development of effective digital learning through construction of 'students-as-designers' where teachers and students strike to use and create knowledge. Their point of view focuses among others challenges facing school in order to provide the professional development and material resources necessary for teachers to develop the types of activities and practices with ICT tools, which extended student capacity for critical engagement and knowledge and knowledge building. The biology teachers' should be aware of new technology and equipped themselves.

One can come up with a conclusion that there is a need to extend the research an individual competence which Lyle and signee Spencer illustrated by means of an iceberg (Spencer and Spencer, 1993). Values are difficult to teach, yet they have unquestionable importance for efficiency and effectiveness of learning. Motives, labor ethics, enthusiasm and own image is not enough to acquire Meta cognitive skills; and the sole knowledge and abilities shall not ensure a high level of efficiency of learning, competence must be characterized by interactivity, means its constant updating, appropriately to new contexts. The necessary to develop teacher skills in the scope of adaption of students' knowledge to their perception, taking students' interests into account and exploiting them to apply biological skills in everyday life, seems to be priority. The government should provide adequate technical training to the teachers' based on the subjects.

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