

Different Aspects of Updated Media Integration in Biology Education in Israeli High Schools

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Abstract

This research deals with different aspects of integrating up-to-date science media within the biology teaching programs in high schools in Israel. At the base of this research lies the assumption that integrating science media with the learning process is a necessary part of learning, which is essential for instilling scientific literacy and critical thinking among the students. The responsibility for integrating media within the teaching lies with the teacher in the field, and therefore this research focuses on examining the teachers population for whom the importance of the integration of media and instruction is of great importance. The research questions focus on characterizing the extent and nature of the utilization of current media by biology teachers, their attitudes, and the factors that influence their readiness to combine media and instruction. In addition, we examined the influence of the web site "Hadash Bamada" (Life Sciences Group 2005) and the electronic news-letter we provided for teachers, on the coping of the teachers with the difficulties involved in integrating media within teaching. Another part of the research dealt with the different aspects of integrating media with teaching from the pupils' point of view. The research questions focus on characterizing the habits of consumption of science media by pupils outside of school and their attitudes toward the integration of media within the biology teaching. The research utilized both qualitative and quantitative methods.

The main findings of the research point to a gap between the positive attitudes of teachers towards the integration of updated media into their teaching practices. The teachers bridge this gap by presenting conflicting viewpoints which devalue the use of updated media in teaching, and by a variety of factors which, according to the teachers, prevent them from integrating media within their teaching. The main factors that teachers raised dependent on external variables and on the pupils and much less on the teachers themselves. It was found that only a few teachers are aware of the potential embedded in media-based teaching. This is expressed in the teachers' attitudes toward the contribution of media to the affective dimension of the pupils, and less to the promotion of other goals, such as promoting scientific literacy and critical thinking. In addition, it was found that in choosing suitable media for teaching, teachers mainly utilize utilitarian considerations such as time saving, and utilize less educational and scientific considerations. The teachers were found to frequently integrate updated media using teacher-centered instructional methods.

In the course of this research I characterized three types of teachers: achievement-orientated, curriculum-orientated, and citizen-oriented. Each type has a different approach towards the scope and the use of updated media in biology teaching. Two of the identified types, which most of the teachers belong to, perceive the integration of media with teaching as an enrichment for the sake of enrichment per se, and not as an integral and important part of teaching and learning. Many teachers expressed interest in receiving current material on scientific subjects and it was apparent that receiving materials increased the use of media among the relatively small sample of teachers who participated in this research. Observing one teacher, who combined ready-made activities from the electronic news-letter, showed that providing teaching materials is not enough to change the teacher's pattern of media usage. The findings indicate that teaching based on media demands a change of perception for most of the teachers, and it is not enough to provide a steady supply of up-to-date materials to promote a change. Therefore, from a practical aspect, it is advised that in addition to a continuous supply of up-to-date materials, in which the teachers are interested, in-service professional development courses should be offered in order to develop awareness and prepare them to independently create teaching sequences, integrating teaching and media, while being aware of the unique potential of media for teaching and learning.

Analysis of the pupils' attitudes and consumption habits showed that they also consume science media outside of school and hold positive attitudes toward the integration of media and teaching. Few pupils though, raise subjects and bring updated science media to class. In addition, it has been found that pupils of citizen-orientated teachers, who frequently integrate media within their teaching, tend to consume more media and bring more media to biology lessons in comparison to pupils of teachers of the two other types.

Understanding the attitudes and the needs of teachers and pupils contributes to our understanding of the subject and may assist in improving and deepening the array of science teaching approaches using updated-media in high schools.