

Research on Teacher Education and Training

**Edited by
Feyza Doyran**

**Athens Institute for Education and Research
2012**

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Research on Teacher Education and Training

Table of Contents

1. Research on Teacher Education and Training: An Introduction	1
<i>Feyza Doyran</i>	
<i>Part I: Improving Teacher Education and Training</i>	
2. Job Satisfaction among Faculty: Does Gender Play a Role?	13
<i>Parveen Ali</i>	
3. Childhood Government and Scholar Education. The Emergence of New Student and Teacher Identities	27
<i>Fátima Pereira</i>	
4. Instructor and Student Perceptions of Mathematics for Teachers Courses	37
<i>Lynn C. Hart, Susan Oesterle and Susan Swars</i>	
5. A Cross-Cultural Investigation into Gender Issues for Male Teachers in Primary Schools	49
<i>Penni Cushman</i>	
6. Exploring Preserves Early Childhood Education Teachers’ Views on Science, Technology and Society Issues	61
<i>Ebru Ersay Cekmecioglu</i>	
7. A Reflection on the Development and Use of Exemplification Materials and Descriptors to Embed the 2007 Revised Standards for Qualified Teacher Status (QTS) for England and to Challenge Trainee Teachers to go beyond ‘Satisfactory’	71
<i>Kevin Mattinson and Andrew Connell</i>	
8. Analysis of Factors Affecting Pre Service Biology Teachers’ Teacher Efficacy Beliefs	87
<i>Gulay Ekici, Pinar Fettahlioglu and Ayse Sert Cibik</i>	
9. Design and Research on Interactive Whiteboard based Teaching Reflection DST	99
<i>Yan Yan, Zhao Guo and Yang Hui</i>	
10. Like the Phoenix, We Will Rise Again: Improving Preparation of Novice Teachers	109
<i>Brenda E. Logan</i>	
11. Do Visual Frameworks for Professional Reflection on Planning and Lesson Delivery Impact the Range of Reflections?	119
<i>Nancy Maynes and Lynn Julien-Schultz</i>	
<i>Part II: Improving Teaching and Learning in Schools</i>	
12. Addressing Diversity: What Do We Really Know about Differentiated Instruction?	135
<i>Brenda E. Logan</i>	
13. The Effects of Social Class on Primary School Children’s Experiences of Extra-Curricular Activities and how they spend their Free Time	147
<i>Laura McClintock</i>	
14. Problem Solving in Integrated Curriculum: The Results of an Action Research Project	165
<i>Jasmina Milinković</i>	

15. Coping with Behavioural Difficulties in the Irish Primary School Classroom: An Investigation of Teachers' Experiences	177
<i>Lynda Hyland, Sinéad McGilloway and Anne Lodge</i>	
16. Increasing Opportunities for Career Education and Exploration for Students in Grades 1-12	189
<i>Mark W. Slomp, Kerry B. Bernes and Lana M. Caldwell</i>	
17. Determination of the Relationship between the Samples of Instructional Methods and Techniques Prepared for 4th Grade Elementary School Science and Technology Curricula and the Principles of Neuropsychological Theory in Turkey	217
<i>Metin Asci and Fatma Sasmaz Oren</i>	
18. Museum Education in Turkey: A Step Closer to Children's Museum	229
<i>Ceren Karadeniz</i>	
19. Using K-W-L Chart as an Alternative Assessment Tool in Science Laboratory	241
<i>Baris Eroglu and Sedef Canbazoglu Bilici</i>	
20. Socialization Values across Europe	249
<i>Nada Turnšek</i>	
<i>Part III: Improving Teaching and Learning in Higher Education</i>	
21. Acquiring Vocabulary at the University Level: A Comparison of Three Learning Strategies	267
<i>Yaacov J. Katz and Yaacov B. Yablon</i>	
22. Academic Performance in Public Higher Education Institutions: A Study on the Effects of Teacher Commitment, Teaching Methodologies and Evaluation Methodologies in Students attending Nursing and Management Courses	277
<i>Isabel Fialho, José Saragoça, Hugo Rebelo, Marília Cid, Manuela Oliveira, Jorge Bonito, Adelinda Candeias and Vitor Trindade</i>	
23. Inter-Subject Commonality of Cognitive and Linguistic Factors Relative to Learning Difficulties of College Students and its Implications for an Intervention Program	291
<i>Sachiko Asano</i>	
24. Through what Interactive Structures Teachers and Students relate to University Classrooms?	303
<i>Mar Prados and Mercedes Cubero</i>	
25. Measuring Perceived Learning in Higher Education	315
<i>Mervyn J. Wighting and M. Gail Derrick</i>	
26. Changing Pedagogy into Scholarship: Teaching and Learning in Higher Education	323
<i>Carol G. Walker, Carol Todd and Karen A. Hahn</i>	
27. The Problem of Inconsistency in Reasoning in Engineering Education – A Case Study about the Mental Model of Sound	331
<i>Arcadi Pejuan, Xavier Bohigas, Xavier Jaén and Cristina Periago</i>	

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1

Research on Teacher Education and Training: An Introduction

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One of the most important concerns all over the World is no doubt “Education.” No matter who we are, or what profession we perform, we have things to say about this important issue. We criticize the existing educational system in the countries we live in, comment on the new systems around the world or suggest new ways of teaching and learning. The impact of education is unquestionable, but another important concern is related to the teachers in these educational systems. The impact of any educational system can only be as powerful and effective as the teachers or the educational leaders who actually perform this profession. The lives of all learners are shaped by the teachers. A teacher can easily become an educational leader; can create positive change in the classroom and in the lives of his/her students and can shape the environment, or even the future of the country. On the other hand, a teacher can also ruin the lives of individuals. How should these role models be educated and trained then? This has long been debated and no perfect answer was found to solve this argument. Even if there are good programs or curricula to prepare future teachers, there is always room for improvement.

Teachers and schools need to keep up with the recent developments in the field of teacher education and training in order to be able to improve their programs and the quality of teaching and learning process. In order to support this, we need to look at the recent research conducted in the field.

The main purpose of this book is to highlight some of the recent studies conducted in the area of teacher education and training with its practical applications and implications in the teaching and learning process. There are three parts in the book. Part I includes articles related to research on improving teacher education and training. In this part, there are ten research papers. The second part covers research on improving teaching and learning in schools, which covers nine papers and the third part with seven papers center around research on improving teaching and learning in higher education. In the following paragraphs, the research articles included in these parts are briefly described.

The first paper in part one discusses the job satisfaction characteristics of higher education faculty in U.S. colleges and universities by gender at a national level. The author of this study, Parveen Ali, utilizes secondary data coming from the National Center of Education Statistics. The results suggest that intrinsic as well as extrinsic job satisfaction variables have a significant effect on faculty members' job satisfaction and significant gender differences exist with respect to most of the variables selected. Moreover, achievement, satisfaction with work itself, satisfaction with salary, institutional policy, institutional environment, and peer relationships are found to be the most influential predictors of faculty members' overall job satisfaction. Underrepresentation of female faculty in higher education is one of the pressing issues facing the new millennium.

The second research by Pereira analyses discourses about childhood expressed in initial teacher education curriculum and in biographical narratives of primary school teachers. The study considers that the school institution is the one that is most involved in intention to transform subjectivities and sociability that modernity has tried to bring about and which choose childhood as the prime subject of its intervention. It considers also that school institution is today a social place of tensions and conflicts that forces teachers to make a constant effort to produce and to justify their work. All of which interferes with the relation that teachers develop with children, with the ethical dimension of school education and with the way children live their relation with schooling. Childhood government is related with the everyday life in school and is part of the conditions that contributes to the identities' construction in school. The study reveals that the childhood government in scholar education is destabilized and more conditioned by teachers' ethics on ideology and by contextualized justifications and types of justice than by legitimized institutional social mandates.

The research article by Hart, Oesterle and Swars draws on the results from two qualitative studies. In the first study, eight instructors from seven institutions in south-western Canada were interviewed about their perceptions and approaches in teaching *Math for Teachers* (MFT) courses for elementary prospective teachers (Oesterle&Liljedahl, 2009). The second study involved interviews of twelve students from a university in the south-eastern United States who had completed MFT courses required in their elementary education program (Hart & Swars, 2009). Two themes emerge at the end of the initial and secondary analysis which resonate across both studies: the importance of connections to the elementary classroom and the role of affect in student learning. The report elaborates on these themes and discusses possible implications for teacher learning.

The worldwide shortage of male teachers in primary schools has produced a variety of strategies designed to increase their numbers. Commentators justify the need for more male teachers in primary schools in terms of their presumed ability to provide students with male role models, to inspire and engage boys in their learning and contribute to a better balance of male and female teachers. There are cultural variations in the reasons men choose not to teach, but one

common theme in a number of countries has been a fear of being accused of sexual abuse. As a result, policies have been designed to protect teachers and children, but these have impacted on the freedom of male teachers to engage with students in gender-neutral, nurturing ways. Men feel compelled to act in traditionally masculine ways so that their behaviors will not be seen as suspect. Simultaneously, however, gender equity policies are directing schools to challenge damaging stereotypes and encourage diversity in life choices. This paper by Cushman investigates how male teachers in three countries-England, Sweden, and New Zealand-are responding to these conflicting messages. In Sweden, the societal emphasis on gender equity is reflected in the commentaries of the Swedish male teachers on their pedagogical attitudes and actions relative to gender-based issues in schools. This emphasis is not evident to the same extent in England and New Zealand. The paper highlights the complexity of factors that influence male teachers, including cultural mores, and adds to the call for more intensive teacher education on gender.

Scientific principles have been and continue to be applied to address issues, concerns, and problems that people face in the day-to-day aspects of living. Scientific research has value and importance to the extent that it helps address problems of a practical nature. How science is taught and learned can determine its significance to the majority of students, not only to those planning careers in scientific fields. This paper written by Çekmecelioğlu documents the pre-service early childhood teachers' views on the Science-Technology-Society (STS) issues before and after taking a science education course in Turkey. The analysis reveals that pre-service teachers often confuse the definitions of technology with science and they have varied views about the influences of society on science and technology.

Mattinson and Connell's paper reflects on the development, introduction and impact of 'in house' exemplification documentation and descriptors, written to co-exist with official guidance from the Training and Development Agency for Schools (TDA), on a successful Initial Teacher Education (ITE) course. Their article commences with a description of the structure of Initial Teacher Education in England and the introduction of, and subsequent revisions to, National Standards for Qualified Teacher Status. The paper reflects on and discusses the use of new 'descriptors' and exemplification used to support the assessment of trainee teachers, from 2007. It considers the opportunities and challenges in the introduction of new documents and evaluates the initial impact of these documents on a successful ITE course. Research identifies that the documentation is impacting positively on practice, but that further development of stakeholders is required to improve consistency of engagement.

The purpose of the next study by Ekici, Fettahlioğlu and Cibik is to examine pre-service biology teachers' self-efficacy and determine factors affecting the teacher self-efficacy beliefs. The results indicate that the pre-service biology teachers' self-efficacy beliefs are not sufficient. It is also seen that pre-service biology teachers' self-efficacy increase when academic achievement and class of pre-service biology teachers increase. The study also shows that personal

effort and interest of pre-service biology teachers for their careers also influence their self-efficacy.

With the development of interactive whiteboard instructional usage in China, more and more teachers and researchers pay attention to its unique educational resource management system and video record system. It is convenient for teachers to construct learning circumstances and save and manage renewable instructional resources through interactive whiteboard which provides effective resource for teaching reflection. There are many kinds of teaching reflection, but the article written by Yan Yan, Guo Dong and Yang Hui combines interactive whiteboard and teaching reflection together, developing a new kind of reflection method—teaching reflection digital storytelling (DST). On the basis of literature retrieval, case study and action research, a proposal on designing a reflection method is developed. The results reveal that it is a new challenge for teachers to explore interactive whiteboard based teaching reflection method and a good way to improve teachers' practical knowledge and ability.

As mentioned by Logan in the next article, based on national statistics, the U.S schools are losing 30 percent of the teachers in the first three years, and 46 percent after five years. A middle education college instructor designed a survey to collect suggestions for improving the content and experiences for a required curriculum and methods undergraduate course for pre-service teachers. Middle school teachers in eleven middle schools descriptively responded to two questions pertaining to preparation of novice teachers for the classroom. The survey indicates that teachers know specifically what behaviors novice teachers need to become effective in their schools. Moreover, the teachers have precise content-based concepts and ideas that teachers need to master in an education preparatory course.

The study by Maynes and Julien-Schultz is the last article of the first part of the book. The authors in this research examine teacher candidates' reflections about the value of two graphic organizers used in their teacher education program. These organizers are designed to support teacher candidates' learning about lesson planning and delivery. When teacher candidates are asked to reflect on the value of these organizers, themes in their reflections are examined. Fourteen themes are identified. Themes related to teacher candidates' instructional focus; awareness of the value of the organizers to improve focus on their students' learning, growth and independence with instructional tasks; and their focus on professional growth. Reflections show that teacher candidates see many benefits of using these two graphic organizers that represent the complexities of lesson planning and delivery. These concepts are more typically presented in a linear fashion as teacher candidates learn lesson planning elements.

As Logan mentions in the first article of the second part of the book, the major purpose of differentiated instruction is to maximize each student's growth by meeting each student where he or she is (Hall, Strangeman and Meyer, 2003). Though differentiated instruction seems to be a broad term, it mainly refers to those classroom practices embodying student learning styles,

interest, and prior knowledge (Benjamin, 2002). For the most part, traditional instruction has been equated with teachers who “teach to the middle” or use the familiar, “one-size-fits-all approach.” Differentiated instruction may be the panacea that educators are searching for. Differentiation is not a novel concept because the one-room schoolhouse attempted to meet the needs of all students centuries ago. This study reviews the major principles of differentiated instruction, the essentials necessary for differentiating, the clichés, barriers, and myths surrounding the practice, and the available studies on differentiation.

The purpose of the next research conducted by McClintock is to examine whether any differences exist between children from differing socio-economic backgrounds in Northern Ireland regarding their experience of extra-curricular and free time activities. From the findings of this exploratory study, social class would appear to have an effect on primary school children’s experiences of extra-curricular activities and how they spend their free time. Those children from ‘middle class’ backgrounds mostly are involved in a larger number of extra-curricular activities and also differ with regards to the actual type of activity that they are involved in. There appears to also be a difference as to how both groups of children spend their free time, with ‘working class’ children in the majority of cases playing outdoors with friends in the neighborhood. ‘Working class’ children tend to spend more time watching television than their more affluent peers. The arrangements required to meet friends also appear to be different with ‘middle class’ children needing an adult to take them by car, in contrast to ‘working class’ children calling for friends at their houses.

Milinković examines the effects of integrated curricular approach on pupils learning in the third article of this section. The researcher first outlines the importance of problem solving in school curriculum and then reports findings of an action research project on integrative curricular unit of mathematics and technical education. The results suggest positive features and weaknesses of integrated curriculum approach and draw some educational and curricular research questions. It is argued that integrated curriculum reflects social need for holistic approach to problem solving but does not fit easily with contemporary educational practice.

Social, emotional and behavioral difficulties (SEBD) can pose significant challenges for teachers in terms of effective classroom management. The aims of the study conducted by Hyland, McGilloway and Lodge are to: (a) explore teachers’ experiences of dealing with challenging classroom behaviors and the effect of these difficulties on teacher stress; and (b) to assess the perceived impact of the Incredible Years Teacher Classroom Management (TCM) program/intervention (Webster-Stratton, 1999) on classroom management practices. Overarching themes which emerge from the framework thematic analysis of the interviews include teacher stress and perceived lack of control over the classroom environment. Post-intervention themes include benefits gained from TCM training- specifically, appreciation of non-judgmental support and increased teacher confidence. Problematic classroom behavior presents a major obstacle to teachers in educating children within their care,

whilst also constituting a significant stressor. The TCM program is reported to improve teachers' classroom management skills and provide an important source of support within the classroom.

It is becoming increasingly important for students in the K-12 educational system to have access to high quality career development services. Young people need to learn the skills to enable them to thrive in an environment of rapidly changing labor markets. Recent studies suggest, however, that students do not have access to effective career development instruction and support. As a result, they do not have access to the kinds of services they require to learn critical career self-management skills. To remedy this situation, the Faculty of Education at the University of Lethbridge has begun implementing a pilot project entitled Career Coaching across the Curriculum: Integrating Career Development into Classroom Instruction. This pilot project is supported by Alberta Education and by the Canadian Career Development Foundation and is designed to train pre-service teachers in career education so that they may be able to provide effective career planning instruction and support to students. This article, written by Slomp and Bernes, provides a description of the preliminary results of this pilot project, specifically with regards to its impact on students.

Brain as the center of learning process, its structure and functioning has always been a subject of substantial interest to educators. Demonstrating the close relationships between brain cells and learning, studies over the years in the field of neuroscience conclude that learning is in fact a biochemical change. The theoretician of neurophysiological theory, Hebb suggested that without developing an insight into the way the circuits in the brain work, it would be impossible to thoroughly understand the nature of learning. This theory holds that while 'cell assemblies' playing a critical role in learning process are formed in earlier years, 'phase sequence' comes in to play a role in the learning of adults. One of the chief principles adopted by the theory in question is that attribution of meaning takes place through patterning. Hence, given that education in science education is the key path to assigning meaning to life, knowledge of to what extent neurophysiological theory (brain-based learning) is reflected and practiced in Science and Technology, which occupies a crucial place in assigning meaning to life and patterning, is indeed of great importance. To this end, the present study conducted by Asci and Oren examines the 4th grade elementary '*Science and Technology*' curriculum recently started to be implemented in Turkey and it attempts to determine to what extent the principles of learning adopted by the neurophysiological theory are consistent with the objectives, activity examples and assessment methods of the curriculum. The results of the study are of importance for science education in Turkey.

Developments in the understanding of museum and museology turn from the introverted attitudes to outward applications. Each museum has a message for the visitors. The message of the particular museum with its works, objects and exhibitions may become meaningful at the end of an interactive museum life and museum education process. At present, museums exist for being in the

service of the community, open themselves to the public use, research the materials and they influence the lifelong learning process through contemporary educational concepts. Children's museums are one of the most significant components of this interactive process. In this study by Karadeniz the evolutionary development, purposes and the momentum of children's museums as 'learning by doing centers' and current situation of museum education in Turkey are discussed through related samples.

KWL charts, an instructional reading strategy to facilitate reading the text with its "Know-Want to Know-Learned" columns, can be used as an instructional strategy, a class activity, a community resource for a field trip, and an assessment tool. In the study by Eroğlu and Bilici, KWL charts are used as an alternative assessment tool for evaluating pre-service science teachers (PSTs) lab performance. Following a seven week training session, students construct KWL charts individually regarding to laboratory instruments, circulatory system, sound, heat and temperature, acid and bases, and magnetism. A total of 221 KWL charts are scored by a pair of independent raters with a rubric for KWL charts. The results show that most of the PSTs have some misconceptions about lab activity issues. These misconceptions are found in their charts' K and L columns. The results of this study point out the advantages of KWL charts as an alternative assessment tool in laboratory activities.

The next article by Turnšek presents research findings on preferences regarding children's qualities among nations of the European countries participating in the World Values Survey 2006. The respondents are asked to choose up to five children's qualities which they consider as the most important for children to learn at home from their parents. The theoretical framework of the survey focuses on the *theory of modernization* and *post-modernization* (Ronald Inglehart, 1995, 1997). Cluster analysis identified two patterns each containing five significantly linked characteristics of children. The preferred images of children in Europe vary on the continuum from the traditional-religious pattern of children's characteristics to the post-modern. The preferences are significantly linked with the percentages of "materialists" and "post-materialists", as well as with per capita gross national product (GNP) and with the level of income inequality in the societies (GINI index).

The first article of the third and last part of this book starts with a comparison of three learning strategies related to acquiring vocabulary at university level. As the authors of this paper, Katz and Yablon, point out mobile learning is rapidly developing as an effective and efficient ICT (Information and Communication Technology) learning strategy. Cell phone based SMS (Short Messaging Service) technologies are now being introduced in language and other learning at the university level. In the research, the students studying Aramaic language as part of the mandatory Talmud foundation course were divided into three groups and identical vocabulary lists were delivered weekly to these groups by SMS, email and snail mail during the year long course. Students in these three groups were tested on Aramaic vocabulary at the beginning and end of the year long course and responded at

the end of the course to a questionnaire that examined their levels of learner motivation, learner autonomy, and learner control of the learning process. Results of the study indicate that there are no significant differences in achievement attained by the three groups on the Aramaic vocabulary test. However, there are significant differences for learner motivation, learner autonomy, and control of the learning process. The students who received SMS messages attained the highest scores on all three factors. The results of the study indicate the potential for university vocabulary learning via cell-phone based SMS messaging.

Recent research on education quality shows a positive relation between student's academic performance and teaching quality. However, further research on quality indicators is needed in order to understand how students perceive quality in teaching. In order to achieve this, the authors of this article, Fialho, Saragoça, Rebelo, Cid, Oliveira, Bonito, Candeias, and Trindade, have conducted an exploratory study involving students from different higher education institutions in Portugal. The results show that students in Nursing and Management courses at the University of Évora and Polytechnic Institute of Beja recognize teaching quality in three different domains: teacher commitment, teaching methodologies and evaluation methodologies.

Abstract thinking is a prerequisite to attaining educational goals in higher education. It is reported, however, that a large number of Japanese college students have learning difficulties (LD) due to a lack of abstract thinking capability. These LD students commonly manifest their weaknesses in academic subjects such as Japanese, mathematics, and English as a foreign language. Asano, in this research article, attempts to find the root cause(s) of academic problems residing in the linguistic and cognitive functions associated with academic subjects.

Followed by a review of the literature related to educational- and neuropsychology, factor analytic findings pertaining to the academic subjects are reported. Factor analysis identifies two factors among the academic subjects, which are comprised of verbal components and non-language concept learning. Of particular relevance to LD students is a cognitive factor labeled as 'verbal-visual integration', which constitutes one of the root causes of the academic failure of LD students. It follows that the non-language cognitive factor be incorporated into a remedial instructional program for enhancing abstract thinking capability. In order to incorporate the factor-analysis findings into an instructional method for these students, the researcher adopts the Vygotskian notion of 'spontaneous and scientific concepts' for fostering concept learning and planning skills, both of which are closely linked to abstract and logical thinking.

The general purpose of the next study conducted by Prados and Cubero is to deepen the analysis and understanding of learning-teaching processes in university classrooms. The authors approach this aim from the perspective of joint construction of meanings and consider the discourse that takes place in teacher-student interactions in two university classrooms qualified as examples of good educational practices. The results reveal the functions and interactive

structures identified in each classroom and the maps of the development of the sessions and activity cycles identified for each one. The researchers assert that learning can be regarded as a process of "socialization of new modes of speech" or, in other words, as a process that let the students acquire new ways of understanding and explaining reality.

The next article written by Wighting and Derrick explores the perceptions of university students related to their learning in higher education. In the study, quantitative research design is used to investigate perceived learning among 151 students enrolled in a school of education and to explore whether a relationship exists between perceived learning and learning assessed by grade scores. The results of the research indicate a weak positive correlation between perceived learning and course grades.

According to Walker, Todd and Hahn, the authors of the next article, the change in philosophy from "stand and deliver" to active learning techniques and research regarding teaching and learning can be challenging. A change of this nature requires a systemic approach involving faculty, staff, and administration. Drawing on the work of Boyer (1990) and the Carnegie Academy for Scholarship of Teaching and Learning (SoTL) and in concert with the university's core values of community, excellence and professional development, in the fall of 2009 a newly formed committee began discussing how to actualize SoTL practices university-wide. A select group of faculty identified and agreed upon three instructional and institutional foci (Achieving Balance and Scholarship, Student Ability and Motivation, and Relationship with Adjuncts) as the foundation of its work. Reinforcing the work of Goodburn and Savory (2009), institutionally supported faculty development opportunities provided a platform to connect with and engage faculty in SoTL practices. In its infancy, the committee has engaged more adjuncts in the work of the university and faculty in peer learning professional development activities. The public sharing of learning opportunities and techniques is directed at the larger educational and university community. The university's actions to implement SoTL practices to engage students in their learning and engage faculty in scholarship are also discussed in the article.

Every planning of an efficient teaching has the aim of achieving satisfactory learning outcomes. From a constructivist point of view, it is a commonly accepted fact that such a planning has to take into account the prior ideas that students bring to the class. In order to know them, the researchers Pejuan, Bohigas, Jaén and Periaç carried out a survey about the prior ideas on the nature of sound that their fifteen third-year engineering students had at the beginning of an elective subject on acoustics. They applied a questionnaire where the students had to express their prior ideas with their own words. Although the students expressed scientifically accepted ideas in about 2/3 of the individual questions on a whole, a cross comparison between each student's answers for the different scenarios revealed a great number of inconsistencies in the mental model of the nature of sound (wave model): only about 1/3 of the students were consistent in all these scenarios. The inconsistency in their reasoning was still clearer when each student had to apply his/her respective

mental model about sound to several properties of sound, in particular the relationship between pitch and distance traveled by sound. Some suggestions are presented at the end of the paper by the authors to overcome this inconsistency problem.

This brings us to the end of our book entitled *Research on Teacher Education and Training*. All the research papers included in this volume were presented at conferences organized by ATINER (Athens Institute for Education and Research) in the years 2010 and 2011. Our special thanks, therefore, go to the authors of this book who contributed their precious insights to the conferences and to this book by conducting research on the recent trends in the field.