AN EXAMINATION OF TEACHER'S PEDAGOGICAL PHILOSOPHICAL BELIEFS OF SECONDARY SCIENCE TEACHERS IN SOFIA PUBLIC SCHOOLS, SOFIA, BULGARIA

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Abstract. This investigation sought understand of the pedagogical philosophies of Bulgarian secondary science teachers in public schools in Sofia, Bulgaria, using the instrument that derived information for this study was an interview protocol consisting of six open-ended questions, with a numerical scoring analysis: the Teachers Pedagogical Philosophy Interview (TPPI). A review of literature shows there is no research on the pedagogical philosophical basis of teacher's beliefs on teaching or on the effect of integrating constructivist teaching methodology in Bulgarian secondary science classrooms.

Keywords: Bulgarian education, teacher pedagogical philosophy, constructivism, teacher's beliefs

Introduction

This paper was designed to develop understanding of the pedagogical philosophies of Bulgarian secondary science teachers in public schools in Sofia, Bulgaria. The beliefs regarding teaching and learning, science and school have been changing and developing during their teaching and the transition of the Republic of Bulgaria since the change from a socialist state.

A review of literature shows there is no research on the pedagogical philosophical basis of teacher's beliefs on teaching or on the effect of integrating constructivist teaching methodology in Bulgarian secondary science classrooms. This research project is one of three projects investigating the status of science education in Bulgaria.

The schools were recruited by the Faculty of Chemical Education of the University of Sofia for adequate sampling, demographic similarity and efficiency in transportation and communication. The actual population of the schools selected was determined by the number of schools and science educators that elect to participate.

The instrument that derived information for this study was an interview protocol consisting of six open-ended questions, with a numerical scoring analysis: the Teachers Pedagogical Philosophy Interview (TPPI) developed by Fraser (1994) and has been used in several investigations and dissertations (e.g. Tillotson,[1)] Craven,[2)] Hollenbeck,[3)] Miller;[4)] cf. also Miller (2008)).

The specific research question investigated in this project

The research question in this study was: what is the pedagogical philosophy of secondary science teachers in Bulgarian schools? For brevity and ef-

fectiveness six questions were selected for the teacher interviews, the questions were focused on teaching and learning. The selected questions were: (1) describe yourself as a teacher; (2) what are your main strengths as a teacher; (3) how do your students learn; (4) how do you, the teacher, learn best; (5) what is a good learner; (6) how do you know your students understand concepts.

The interviews were conducted in Bulgarian by the Bulgarian researchers, and then responses were independently ranked, and results were co-related for an average for each response and participant.

The data results

Table 1 Consensus Responses to the Teacher's Pedagogical Philosophical Interview (TPPI)

Question	Consensus response
Q1. Describe yourself as a teacher.	The teacher describes self as a professional.
Q2. What are your main strengths as a teacher	Teacher is open to students and uses personal experiences to enhance instruction.
Q3. How do your students learn?	Through student interaction and interaction with the teacher.
Q4. How do you, the teacher, learn best?	Half the teachers cited actively doing and teaching the subject. Half surveyed cited through multiple methods.
Q5. What is a good learner?	Hard worker, willing to learn and ask questions.
Q6. How do you know your students understand concepts?	Teachers cited observation of positive student attitudes and comfort in applying new knowledge to problem solving.

Table 2. Actual Interview Rankings of Individual Teachers.
Teacher Pedagogical Philosophical Interview (TPPI) Evaluation Form

Evaluators ranked the teacher's response to each other listed questions and inter-rate the responses derive a ranking.

Question	1	2	3	4	5
Q1. Describe yourself as a teacher.	Teacher does not know	Teacher describes self through personality traits.	Teacher describes self as a professional	Teachers describes self as sympathetic to students	Teacher describes self through actions of the students.
general		**2**	**7**	**1**	
Q2. Main strengths as a teacher.	Describes personality traits of the teacher.		Teacher is open to students, uses background to enhance instruction.		Strong content background, utilizes the skills and expertise of others.
general	**1**		**6**		**3**
Q.3 How do your students learn?	The same way I learn.		Through student action and interaction with the teacher.	Through interaction with the teacher.	All students learn differently.
general			**9**	**1**	
Q 4. How do you, the teacher, learn best?	By a single method.		By visually doing and teaching the subject.		Through multiple methods.
general			**5**		**5**
Q 5. What is a good learner?	A good learner has natural ability to learn.		A hard worker, willing to learn, and ask questions.		A reflective learner, willing to take risks, and is inquisitive.
general			**7**		**3**
Q 6. How do you know your students understand concepts	Student self reports, exams or assignment performance.		Based on classroom recitation and performance.	Student applies new information.	Based on student to student interactions
general			**4**	**6**	

Discussion of the research questions

Research results indicate that teachers believe students learn by doing. Students learn best by hands-on activities and by listening and reading. The teachers believe that teaching is providing information and facilitating student initiatives in learning. They stated numerous times that learners should be good listeners and self-motivated. The teachers in the study were more open to individual student learning styles and multiple learning styles. The teachers stated their top priority was to help their students to acquire problem-solving skills.

The teachers' view on curriculum has changed from being totally dependent on the district curriculum and guidelines, or following other teachers. All teachers now report that they are open to students' and community input into their curriculum. The teachers incorporate educational research into their classroom teaching practices to promote positive changes in their science programs. The TPPI shows a particularly strong positive correlation between beliefs with regard to teaching and learning (Table 1). Perceptions of their students indicate that the subject matter in the courses is personally relevant to the teacher and learner. Since personal relevance is prerequisite to meaningful learning (e.g., Yager, 1996; Ausubel, 1978; Taylor[5]), it may be inferred that those teachers who hold views that are more aligned to the National Science Education Standards[6] and are more likely to establish learning environments for meaningful learning. The National Science Education Standards (NSES) are not well known in Bulgaria, but the goals and objectives presented are very relevant and are being introduced in Bulgarian Schools through the Chemical Education Faculty of University of Sofia. The premise that effective teachers apply the NSES goals is indeed international. However not all teachers are aware of inquiry and constructivist education and need to be introduced to improve education. Table 1 is a consensus of the teacher’s responses

and it indicated that teachers were aware of teaching in an inquiry model or constructivist methodology, but had mixed opinions on how to apply the methods in their classes. The investigation was gender balanced and in terms of experience, they spanned the years in experience. There was no relationship between experience and gender in responses offered.

The second table, Table 2, lists the individual questions, and the individual rankings of the teachers, identified only by number. Most of the teachers ranked their responses in the middle of the scale. One is considered to be traditional and teacher-centered, with five as ranked as a constructivist, inquiry-based teacher with a student centered classroom. Almost all of the responses were in the center of the scale with exceptions of teaching strategies and perceptions of learning which showed strong constructivist beliefs. This indicates that the educators are quite willing to learn more how they can be more effective educators in their classrooms, and reflects an attitude held by many educators.

Future research

The results of this study indicate that Bulgarian educators are eager to learn new teaching skills and willing to collaborate on future projects. It would be to the benefit of teacher trainers to be privy to what practicing educators are thinking. This investigation was concentrated in the Sofia metropolitan area (population estimate at 2,000,000) but it would be beneficial to query more educators from the entire country. Time constraints did not allow us to. The researchers realize that even though Bulgaria is a small country; it offers much social and economic diversity which must be accounted for.

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NOTES

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