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DETERMINATION OF STUDENT TEACHERS' VIEWS ABOUT REACT STRATEGY

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ABSTRACT: The purpose of this study is to determine student teachers' views about REACT strategy. In the study, data gathered quantitatively by the clinical interviews in the academic year of 2012-2013 at the spring term. The clinical interviews were carried out with 11 student teachers from two different classes in elementary education department. In both classes, REACT strategy was used as a teaching method by the same researcher in General Chemistry Course. In the clinical interviews, students were asked that "What are your favorite aspects of the teaching method?", "What are the aspects that you do not like about the teaching method?", "What stage of the teaching method do you like most?", "What conveniences does the teaching method provide for your understanding of the topic?", and "What do you suggest about the teaching method?". The findings suggest that student teachers liked performing experiments at most, facilitating learning and making the topic concrete. Most of student teachers did not suggest anything for REACT strategy as a pitfall, a small number of student teachers complained about an increase in students responsibility, e.g. early class preparation and overcrowding classes. As a conclusion, it can be said that student teachers liked REACT strategy because it facilitates learning by providing science experiments.

Key words: REACT strategy, student teachers, context-based approach

INTRODUCTION

Context-based approach, which becomes popular in recent days, aims at constructing connections between the context of real life issues and content. Context-based courses do not only make students active but also offers hope for improving students' engagement in learning chemistry and perceiving relevance of chemistry (Bennett, Gräsel, Parchmann & Waddington, 2005; King, 2007). As described by Gilbert (2006), the context-based approach is application oriented within the cases, scenarios from students on going lives outside of the classroom, thus application strategy helps students to construct knowledge rather than memorization of knowledge. Additionally, the context-based approach helps to contribute to students' lives or the lives of others around the world and helps them to acquire a better understanding of natural environment (Bennett & Lubben, 2006; Ültay & Ültay, 2012). Thus, participants can answer the question: "Why do I need to learn this?" and the context based learning can respond to this by linking theoretical knowledge with real world (Demircioğlu, Demircioğlu & Çalik, 2009; Ültay & Çalik, 2012). Bennett et al. (2005) pointed out that in the context-based courses, contexts are the starting points in order to develop scientific understanding.

To get more engagement of students and to develop more interest in science are the goals of context-based approach (Fensham, 2009). Looking at the literature on the effect of context-based science instruction, it is seen that some of the studies indicate increase in academic success (Acar & Yaman, 2011; Demircioğlu, 2008; Ingram, 2003; Schwartz-Bloom & Halpin, 2003) and positive effect on students' attitudes and motivation (Ingram, 2003; Belt, Leisvik, Hyde & Overton, 2005; Bennett & Lubben, 2006; Campbell, Lubben & Dlamini, 2000; Barker & Millar, 2000). To implement the context-based approach to the learning-teaching process, one of the strategies is REACT strategy (Crawford, 2001). In REACT strategy five essential forms of learning can be

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defined as: Relating, Experiencing, Applying, Cooperating and Transferring. At “Relating” stage the new information is related to everyday situations. At “Experiencing” stage points out learning in the context of exploration, discovery and invention. The aim is to allow students to experience activities that are directly related to real-life work. At “Applying” stage students apply concepts and information in a useful context through projects, activities, labs, text, and video. The “Cooperating” stage points out learning in the context of sharing, responding and communicating with other learners. This can be actualizes via group activities such as projects, labs, problem-solving, realistic scenarios. At “Transferring” stage students transfer skills and knowledge from one setting to another (CORD, 1999). Ingram (2003) described the REACT strategy as grounding on the bases of the constructivism, in which student involve in critical thinking and problems solving activities in order to improve students’ understanding of concepts.

Taking into consideration the literature, it is seen that the context-based chemistry education not only improves students’ motivation (Bennett et al. 2005; Belt et al. 2005; Bulte et al. 2005; King, Bellocchi and Ritchie, 2008; Pilling and Waddington 2005) but also increases their enthusiasm towards the subject (Ramsden 1992) and positively changes students’ attitudes towards chemistry (Demircioğlu et al. 2009; Dlamini and Lubben 1996). Starting from this point, the purpose of this study is to determine student teachers’ views about REACT strategy which is an implementation form of context-based approach in the classroom.

The Research Question

In the current study, the research question is stated as “What do student teachers think about the effectiveness of the teaching method namely REACT strategy?”

METHODS

In the study, data gathered quantitatively by the clinical interviews in the academic year of 2012-2013 spring term. Clinical interviews were carried out with 11 student teachers (aged 17-20 years) from two different classes in elementary education department. In both classes, REACT strategy was used as a teaching method by the same researcher in General Chemistry Course during 2 weeks. Classes were coded as E and C. Students in class E were labeled as E1, ... and E5, students in class C were labeled as C1, ... C6. Five students from class E and six students from class C were participated in the interview. Voluntarism was taken as a basis in the interview and firstly it was planned that five voluntary students from each class would have been selected but in class C, six students wanted to participate in the interview.

In the clinical interview, three questions were asked to the students. Two science education experts controlled the questions readability and understandability. Questions are given in Table 1. Interviews were tape recorded and lasted for 10-15 minutes. The transcriptions of the interview data were made by one of the researchers. She classified the results into the similar categories and themes. After that, rest of the researchers controlled the themes and necessary changes were made in the themes.

RESULTS and FINDINGS

To determine the student teachers’ views about REACT strategy, clinical interviews were carried out and data obtained from the interviews are shown in Table 1.

Table 1. Findings of Clinical Interview

Question	Themes	Class E		Class C	
		Students	f	Students	f

A) What are your favorite aspects of the teaching method?	Performing experiments	E1, E4, E5	3	C2	1
	Making observations	E1	1	-	-
	Facilitating teaching	E2	1	C5	1
	Making the topic more concrete	E2, E5	2	C4, C6	2
	Making individual activities	E4	1	C5	1
	Enjoyable or funny learning environment	-	-	C1, C6	2
B) What are the aspects that you do not like about the teaching method?	No pitfall in the teaching method	E1, E2, E5	3	C4, C5, C6	3
	An increase in students responsibility, e.g. early class preparation	E5	1	-	-
	Anxious about the exam	E4	1	-	-
	Leeway in the laboratory	-	-	C1	1
	Overcrowding of classes	E4	1	C2, C3	2
C) What stage of the teaching method do you like most?	Performing experiments	E1, E2, E4, E5	4	C2, C4, C5, C6	4
	Learning environment	-	-	C1	1
	Being good of all stages	-	-	C6	1
What conveniences does the teaching method provide for your understanding of the topic?	Permanency	E1, E2, E5	3	C4, C6	2
	Providing awareness in daily life	E4	1	C4	1
	Facilitating teaching	-	-	C2, C4, C5, C6	4
What do you suggest about the teaching method?	No suggestion	E2, E3, E4, E5	4	C3, C4, C5, C6	4
	Making all the classes in the laboratory	E1	1	C1, C2	2

According to Table 1, in the first question three sub-questions were asked students. In 1A question, student teachers' were asked the favorite aspects of the teaching method. In Class E, three student teachers found "performing experiments" and two student teachers found "making the topic more concrete" as favorite aspects of the method. In Class C, two student teachers stated that "making the topic more concrete" and "enjoyable or funny learning environment" were the favorite aspects of the teaching methods. In 1B question, student teachers were asked about the aspects that they did not like about the teaching method. In both classes, three student teachers from each stated that "there was no pitfall in the teaching method". However, one student teacher complained about "early class preparation", one student teacher complained about "the overcrowding of the class" and "anxious about the exam" in Class E. Also, two student teachers found the classes overcrowding and one student teacher did not like "the leeway in the laboratory" during the experiments in Class C. Meanwhile, four student teachers from each class liked "performing experiments" mostly. One student teacher liked "learning environment" and one liked "being good of all stages" mostly in Class C.

In the second question, it was asked student teachers that “what conveniences does the teaching method provide for your understanding of the topic?”. Three student teachers from Class E said “permanency” while two student teachers said the same thing in Class C. Four student teachers stated that the teaching method “facilitated learning”.

In the last question, suggestions for the teaching method were asked for the student teachers and four student teachers from each class did not “suggest anything”. One student teacher from Class E and two from Class C suggested “making all the classes in the laboratory”.

When the findings are considered, student teachers found REACT strategy effective because they stated that they liked performing experiments and daily life examples and materials helped them to make the topic more concrete (Ültay N, 2012). In context-based chemistry education the students are able to become more actively involved in their own learning processes (Stolk et al. 2009), so they will be more willing to learn. Also, their motivation affected positively and they enjoyed the classes. REACT strategy affects students’ motivation and attitudes towards the course (Saka, 2011; Ültay N, 2012). Additionally REACT strategy contributed to get a more positive learning environment (Crawford, 2001; Coştu, 2009). In the current study, student teachers asserted that they learned the topics more permanent. Because some parts of REACT strategy enabled hands-on activities, student teachers had an opportunity to see some abstract knowledge more concrete. Therefore, their learning became more meaningful and permanent. Context-based chemistry education facilitates students’ learning by linking chemistry to daily lives (Ültay and Çalık, 2012; TPSI, 1991) In context-based approach contexts that are the starting points for the development of scientific understanding (Bennett et al., 2005) are introduced to the students in order to excite their curiosity (Stolk et al., 2009).

Despite all these positive thoughts and feelings towards REACT strategy, some student teachers did not give up exam anxious. In Turkish educational system, because there are a lot of exams, student teachers hoped teachers make traditional teaching, i.e teacher writes on the board and students memorize the facts. But REACT strategy is based on context-based approach which takes students involvement and meaningful contexts as basis (Pilot and Bulte, 2006), some student teachers complained about what to do in the exam. For this negative point in REACT strategy, an explanation stage was suggested especially for Turkish educational context (Coştu, 2009; E. Ültay, 2012; N. Ültay, 2012).

CONCLUSION

The research findings reported here suggest that student teachers liked REACT strategy in the learning environment and the strategy facilitated their learning by the hands-on activities and daily life examples. Student teachers’ attitudes and interest were also affected positively and this helped them to construct coherent mental maps about the topic. Despite the positive feelings, some student teachers felt the absence of explanation part of the strategy. For Turkish educational context, an explanation step can be added as an extra part or to all steps of the strategy. There is need to new studies about searching the effectiveness of REACT strategy in the literature.

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