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Examination of the place of cognitive coaching approach in computer assisted instruction in terms of student opinions

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Abstract

This study aims to examine to what extent cognitive coaching approach when saving cognitive awareness skills in computer aided education according to pre-service teachers' views. For this purpose, a cognitive coaching survey (CCS) which is developed by researcher was administered to sophomore, junior and senior pupils of faculty of education in two different university of Turkey. Data was analyzed to ANOVA and Pearson product-moment correlations. The research questions were formulated in the direction of scope: "What are the pre-service teachers' views about size of schedule, thinking, evaluation of cognitive coaching approach?" and "Is there statistically significant difference the pre-service teachers' views about size of schedule, thinking, evaluation of cognitive coaching approach according to gender, university, type of high school where graduated and age?".

1. Introduction

Assisting individuals in the development of the skills of assessing their own progress, explaining what they do and why they do it, talking about their feelings, planning, problem solving, organizing and controlling themselves, in short the process of learning to learn (cognitive awareness) is a necessity in effective learning. Those teachers who are cognitive coaches have the responsibility of gradually moving the focus onto the learner and creating the situation in which he or she can become an independent learner.

Cognitive coaching is based on assumptions that thinking and understanding are the basis of all behaviors, learning is a constant decision making process, changes and involvement in the opinion is necessary in the process of learning new things and individuals continue to develop cognitively (Costa & Garmston, 2005). Considering these assumptions, it can be seen that a cognitive coach serves as an intermediary between himself/herself and individual's opinion. While trying to develop the student's cognitive awareness skills, cognitive coaching offers an infrastructure for students and teachers to establish confidence by developing physical and verbal adaptation, facilitating learning by expressing sentences with different words and asking questions, developing more sensitivity in communication, developing group consciousness and independence by increasing efficacy and self-awareness,

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distinguishing between coaching and other assistance services, establishing coaching communications in compliance with various styles, implementing coaching skills which include intellectual processes, efficiently making plans with others, reflecting on them and solving problems (Ellison, 2003; as cited by Slinger, 2004).

Cognitive coaching, which is one of the efficient strategies in establishing cognitive awareness, is a concept which can also be effective in computer-based instruction. Since it requires the development of self-awareness, communication with others and different thinking processes as explained above it is important to organize the education environment to facilitate the learning-teaching process. Therefore, teachers need the knowledge and skills to undertake the creation of an appropriate environment. As a result, it was considered important to ascertain prospective teachers' opinions on creating appropriate classroom environments. Accordingly, the purpose of the research is to examine how much the cognitive coaching approach is used in computer-assisted instruction to develop cognitive awareness skills. In line with this main purpose, the research questions were determined to be:

1-What are the prospective teachers' opinions on creating learning-teaching environments based on cognitive coaching in computer-assisted instruction?

2- Is there a significant difference among the prospective teachers' opinions concerning the creation of learning-teaching environments based on cognitive coaching according to their grades?

3- Is there a significant difference among the prospective teachers' opinions about creating learning-teaching environments based on cognitive coaching according to their genders?

2. Method

2.1. Research Model

The research is a descriptive study in scanning model conducted with the aim of ascertaining opinions on creating learning-teaching environments based on cognitive coaching approach of 1,020 students, from various departments in 2 different universities. The research was carried out in the fall term of the 2010-2011 academic year.

2.2. Data Collecting Instrument and Data Analysis

A cognitive coaching environment in computer-assisted learning questionnaire was used in the research as data collecting instrument. The questionnaire is prepared according to the steps of the cognitive coaching approach and consists of sentences explaining the system which directs the instruction process and is used in directing the interaction between students and instruction sources during the lesson. These sentences were prepared by researchers using relevant sources (Aldrich, 2005; Costa & Kallick, 2000; Ladyshewsky, 2006; Ladyshewsky & Ryan, 2002; Velde, Witman & Vos, 2006). A literature review was undertaken and the opinions of 3 experts were obtained to ensure the validity of the questionnaire. The final version of questionnaire was in a 3-Likert type form of; "Yes, Sometimes, No". In the analysis to determine the validity of the questionnaire, the Cronbach Alpha value was found to be 0.89.

The frequency and percentage distributions of the data were obtained using the Statistical Package for the Social Sciences (SPSS). Since the data fulfilled the conditions of the parametric tests, the variances according to gender and grade were determined by a t-test and a one-way factor analysis for independent groups after ascertaining that the variances were homogenous.

3. Findings

Research findings are presented according to the order of research questions given above. Accordingly, the first question was: "What are prospective teachers' opinions on creating learning-teaching environments based on cognitive coaching in computer-assisted instruction?" The frequency and percentage values for the responses to the questionnaire items were calculated. The item with the highest frequency (f: 360) at "yes" level in prospective

teachers' planning category was: "Can confidence-based relations be established in the computer-assisted instruction and learning process (teacher, education technology tools, etc.)?". The item with the lowest frequency (f: 206) at "no" level was: "Can students generate efficient questions in the computer-assisted instruction and learning process?". The item with the highest frequency (f: 526) at "yes" level in the thinking category was: "Do academics help students to associate new information they are learning with old information they have learned in the computer-assisted instruction and learning process?". The item with the lowest frequency (f: 95) at "no" level was: "Do academics help students to associate new information they are learning with old information they have learned in the computer-assisted instruction and learning process?". The item with the highest frequency (f: 301) at "yes" level in evaluation category was: "Do academics help students to summarize what they remember in their own words in the computer-assisted instruction and learning process?" while the item with the lowest frequency (f: 164) was: "Do academics help students to summarize what they remember in their own words in the computer-assisted instruction and learning process?".

The second question was: "Is there a significant difference among prospective teachers' opinions on creating learning-teaching environments based on cognitive coaching according to their grades?". Data obtained from the teachers 'responses were tested with a one-way variance analysis. Considering the items in the cognitive coaching in computer-assisted instruction questionnaire, there is a significant difference among prospective teachers' opinions according to their grades in the items 2, 4, 5, 6, 14, 16, 17, 19, and 22 to 33. The Tukey HSD test was conducted in order to determine in which groups the difference occurred according to the grades based on the results of the one-way variance analysis. According to the findings obtained, there was a significant difference in the 4th, 5th, 19th, 24th, 25th, 26th and 30th items in favor of the second and third grades; in the 6th and 3rd items in favor of the fourth grades; in the 14th item in favor of first and fourth grades; for the 16th, 17th, 23rd, 28th, 29th and 33rd items in favor of the second and first grades; in the 22nditem grade in favor of the 3rd grades; and in 27th, 31st and 32nd items in favor of the second grades.

The third question was "Is there a significant difference among prospective teachers' opinions on creating learning-teaching environments based on cognitive coaching according to their genders?". The data obtained from the teachers' responses to this question were analyzed with an independent group's t-test. When the results showed that a difference was seen in favor of males in the 8th item (X= 1.91), 10th item(X= 1.77), 11th item (X= 1.89), 12th item (X= 1.93), 24th item (X= 1.93) and 28th item (X= 2.04). However, a difference was found in favor of females in the 25th item (X= 2.03) and 26th item (X= 2.39). A significant difference was not found in terms of other items.

4. Conclusion

From the literature review it was seen that there is agreement on the fact that the most efficient students are those who are able to manage themselves (Butler & Winne, 1995). Thus, teachers have an important role in developing this ability in their students. Accordingly, when the research results were examined the opinions of teachers who have active roles in the instruction process, give important clues about their status of adopting cognitive awareness skills. The prospective teachers in the study indicated their opinions on planning dimension of cognitive coaching as follows; "identifying students' skills and fields of interest, establishing confidence-based relations with students by being physically and verbally close to students in the teaching process", "generating effective questions with students", "helping students in the instruction process to make choices in accordance with lesson's purposes". The teacher's opinions about the thinking dimension were as follows; "enabling students to be aware of the knowledge and behaviors that they will acquire; helping students to associate new information with the information they had already learned", "providing students with the necessary assistance during discussions". Prospective teachers' opinions on the evaluation dimension of the cognitive coaching were as follows; "controlling whether the objective set in the beginning of the lesson was achieved or not with students", "increasing students' awareness by asking

them open-ended questions and asking them to complete the incomplete sentences", and "asking students to keep a diary concerning the activities they make".

When the items in planning category of cognitive coaching were examined, it was determined that the prospective teachers mostly replied "yes" to the question: "Can confidence-based relations be established in the computer-assisted instruction and learning process (teacher, education technology tools, etc.)?", while a few answered "no" to the question: "Can students generate efficient questions in the computer-assisted instruction and learning process?". When the items in the thinking category were examined, the teachers mostly answered "yes" for: "Do academics help students to associate the new information they are learning with the old information they have learned in the computer-assisted instruction and learning process?", while they answered "no" for the same item at minimum level. When the items in the evaluation process were examined, it was seen that the teachers mostly answered "yes" for the question: "Do academics help students to summarize what remember in their own words in the computer-assisted instruction and learning process?", while the least "no" answers were given for the same item. In the questions related to the creation of learning environments based on cognitive coaching, a significant difference was found in the 4th, 5th, 19th, 24th, 25th, 26th and 30th items in favor of the second and third grades; in the 6th item for the third and fourth grades; in the 14th item in favor of the first and fourth grades; in the 16th, 17th, 23rd, 28th, 29th and 33rd items in favor of the second and first grades; in the 22nd item in favor of the third grade and in the 27th, 31st and 32nd items in favor of the second grade.

In line with these findings, it can be said that prospective primary schoolteachers think it necessary to create activities which involve the planning, thinking and evaluation dimensions of the cognitive coaching approach in the instruction process. However, it can be said that the prospective teachers' opinions on the necessity of actively using guided learning support in instruction process are consistent with the theoretical bases of the cognitive coaching. It is thought that offering guided learning support in the instruction process by teacher's increases student achievement. In the cognitive coaching approach, the guided learning support given while teaching cognitive awareness skills will help students to use these skills in the daily life and to make links between the knowledge they are acquiring and different situations.

The necessity for teachers to give a place to problem solving activities in the thinking dimension of cognitive coaching was seen in students' opinions. Cognitive coaching is a guided support approach which includes dialogues, direct explanations, acting as a model and offer encouragement. Ladyshewsky (2006), Muchlinksi (1995), Ushijima (1996), Waddell & Dunn (2005), stated that cognitive coaching increased students' cognitive awareness, their skills in asking efficient questions and problem solving skills. What is important in the instruction process is to raise independent learners. The teacher who takes on the role of a cognitive coach gives a place to different thinking skills and provides guided learning support in organization, arrangement and evaluation dimensions, thus, making the learning process more entertaining and helps to provide the basis for life-long learning when he/she. Other research findings (Ladyshewsky, 2006; Ushijima, 1996; Waddell & Dunn, 2005) also support the idea that teachers should give sufficient attention to creating activities which can develop thinking skills of learners for self-improvement and the development of their own personal characteristics.

In line with the findings obtained in the research, based on the frequent "yes" response to the questionnaire items by the students, it can be said that students have a positive attitude towards educational environments prepared in accordance with computer-based instructional principles. In the cognitive coaching in computer-assisted instruction questionnaire, there were differences in items in favor of male students, which show that male students have positive opinions on cognitive coaching-based learning environments. Similarly, observing the significant differences among opinions in favor of the third grades can be explained with the fact that third grade students start specialization beginning from the first year until the fourth year; and the subjects become more complicated and difficult. On the other hand, students who have positive opinions about learning environments based on cognitive coaching will develop their own cognitive awareness skills. The development of cognitive awareness skills increases achievement in various lessons, supports lifelong learning (Copper, 2008; Georghiades, 2004), improves question asking skills (Kramarski, 2008) and provides cognitive organization (Mevarech & Amrany, 2008). Consequently, this will lead to a more efficient use of computers and technology.

In conclusion, today it is important that students have the skills of problem solving, creativity and self-efficacy. Thus, it is vital that teachers can apply cognitive coaching in the learning environment. In this research the positive answers to the questionnaire shows that prospective teachers are aware of the importance of creating educational environments that are in line with the concept of cognitive coaching.

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